**Annatto powder**, derived from the seeds of the **achiote tree** (Bixa orellana), is widely used as a natural food coloring and flavoring agent. It imparts a yellow to orange hue and has a slightly peppery, nutty flavor. In commercial food products, annatto powder is typically used in low concentrations due to its potent color and flavor profile.**Typical Usage Levels of Annatto Powder in Commercial Food Products:**

1. **Cheese (e.g., cheddar, processed cheese):**
   * **Amount:** **0.5–2%** of the product weight.
   * **Purpose:** Annatto is commonly used to give cheese a rich yellow or orange color, especially in varieties like cheddar or other semi-soft cheeses.
2. **Snack Foods (e.g., chips, crackers, popcorn):**
   * **Amount:** **0.1–1%** of the product weight.
   * **Purpose:** Used as a natural coloring agent to enhance the appearance of snacks, providing a bright yellow or orange color.
3. **Beverages (e.g., soft drinks, fruit juices):**
   * **Amount:** **0.05–0.5%** of the product weight.
   * **Purpose:** Used for color enhancement, particularly in beverages with citrus or tropical fruit flavors, to create an appealing natural color.
4. **Processed Meats (e.g., sausages, hot dogs, deli meats):**
   * **Amount:** **0.1–0.5%** of the product weight.
   * **Purpose:** Provides a natural coloring for meats, enhancing the visual appeal of products like sausages, and can sometimes help mask slight imperfections in meat products.
5. **Prepared Foods (e.g., sauces, soups, dressings):**
   * **Amount:** **0.1–0.5%** of the product weight.
   * **Purpose:** Adds a vibrant yellow or orange color to sauces, gravies, soups, and salad dressings.
6. **Bakery Products (e.g., cakes, pastries):**
   * **Amount:** **0.1–0.5%** of the product weight.
   * **Purpose:** Imparts color to baked goods like cakes and pastries, especially those designed to appear golden or rich in color.
7. **Sweets and Confectionery (e.g., candy, ice cream, jellies):**
   * **Amount:** **0.1–0.5%** of the product weight.
   * **Purpose:** Used to enhance the color of sweets, giving them an attractive natural yellow to orange hue.

**Key Considerations for Usage:**

* **Color Intensity:** Annatto powder is highly concentrated, so only small amounts are needed to achieve the desired color. The intensity can vary depending on the source and processing method.
* **Flavor Profile:** While it has a mild, slightly nutty, and peppery flavor, it is usually used in amounts that don't significantly affect the taste of the final product. If the flavor is more pronounced, the amount used is usually lower.
* **Natural and Stable Colorant:** Annatto is favored in natural and organic food products as a substitute for synthetic colorants like tartrazine (Yellow 5).

**Regulatory and Safety Considerations:**

* **GRAS Status:** Annatto powder is considered **generally recognized as safe (GRAS)** by the FDA for use in food products.
* **Labeling:** It is typically listed as **"annatto powder"** or **"natural color (annatto)"** on ingredient labels.

**Shelf Life and Storage:**

* **Shelf Life:** **12–24 months** when stored properly.
* **Storage Conditions:** Store in an **airtight container** in a **cool, dry place**, away from direct sunlight to preserve color potency and prevent moisture absorption.

**Summary:**  
Annatto powder is typically used in food products at concentrations ranging from **0.05% to 2%** depending on the product. It is most commonly used as a **natural colorant** for products like **cheese**, **snack foods**, **beverages**, **processed meats**, **bakery items**, and **confectionery**.***What is a typical amount of Annatto used in commercial food products?***Annat**to**(often in the form of ann**atto powder**or a**nnatto extract**) is a natural colorant and flavoring derived from the seeds of the **achiote tree** (Bixa orellana). It is widely used in commercial food products for its ability to impart a yellow to orange color and subtle flavor.**Typical Usage Levels of Annatto in Commercial Food Products:**

1. **Cheese (e.g., cheddar, processed cheese):**
   * **Amount:** **0.01–0.2%** of the product weight.
   * **Purpose:** Annatto is commonly used to give cheese a vibrant yellow or orange color, particularly in cheeses like cheddar, colby, and processed cheeses.
2. **Snack Foods (e.g., chips, crackers, popcorn):**
   * **Amount:** **0.01–0.1%** of the product weight.
   * **Purpose:** Adds color to snack products like chips, crackers, and popcorn, giving them an appealing golden or orange hue.
3. **Beverages (e.g., fruit juices, soft drinks):**
   * **Amount:** **0.01–0.05%** of the product weight.
   * **Purpose:** Used to add natural color to drinks, particularly fruit juices and soft drinks, for a more vibrant and attractive appearance.
4. **Processed Meats (e.g., sausages, hot dogs, deli meats):**
   * **Amount:** **0.01–0.1%** of the product weight.
   * **Purpose:** Provides a natural color to processed meats, giving them a desirable red or orange tint.
5. **Prepared Foods (e.g., sauces, soups, dressings):**
   * **Amount:** **0.01–0.05%** of the product weight.
   * **Purpose:** Enhances the visual appeal of prepared foods, such as sauces, gravies, soups, and dressings, by giving them a yellow or orange color.
6. **Bakery Products (e.g., cakes, pastries):**
   * **Amount:** **0.01–0.05%** of the product weight.
   * **Purpose:** Adds a golden hue to baked goods, including cakes, pastries, and other desserts.
7. **Confectionery (e.g., candy, ice cream, jellies):**
   * **Amount:** **0.01–0.05%** of the product weight.
   * **Purpose:** Used to color candies, ice creams, and other sweets with a bright yellow or orange hue.

**Key Considerations for Usage:**

* **Color Concentration:** Annatto is a highly concentrated natural colorant, and only small amounts are needed to achieve the desired color intensity.
* **Flavor Impact:** While annatto has a mild, nutty, and slightly peppery flavor, it is typically used in low amounts to avoid significant flavor influence, especially in products like cheese or snacks.
* **Natural Colorant:** It is often chosen over synthetic colors, especially in organic and natural products, as it is derived from a plant source.

**Regulatory and Safety Considerations:**

* **GRAS Status:** Annatto is considered **generally recognized as safe (GRAS)** by the FDA for use in food products.
* **Labeling:** Annatto is typically listed as **"annatto"** or **"natural color (annatto)"** on ingredient labels.

**Shelf Life and Storage:**

* **Shelf Life:** **12–24 months** when stored in a cool, dry place.
* **Storage Conditions:** Annatto should be kept in **airtight containers** to protect it from moisture, light, and heat, which can degrade its color potency.

**Summary:**  
In commercial food products, annatto is used in concentrations typically ranging from **0.01% to 0.2%** of the product weight. It is commonly used as a **natural colorant** in products like **cheese**, **snacks**, **beverages**, **processed meats**, **baked goods**, and **confectionery**.

[1:51](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731779513944379)

BeeChoo Liang

The above are Annatto vs Annatto Powder ---> Since the amount used is "by weight", not sure why amount for Annatto Powder is 10x higher than Annatto.



BeeChoo LiangBeeChoo Liang  [1:58 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731779933959039)

**Annatto oil color** is a natural food coloring derived from **annatto seeds** (Bixa orellana) dissolved in a carrier oil. It is primarily used in commercial food products for its ability to impart a yellow to orange color and is commonly used in a variety of processed foods.  
**Typical Usage Levels of Annatto Oil Color in Commercial Food Products:**

1. **Cheese (e.g., cheddar, processed cheese):**
   * **Amount:** **0.05–0.2%** of the product weight.
   * **Purpose:** Annatto oil color is widely used in cheese to provide a vibrant yellow or orange color, particularly in cheddar and processed cheeses.
2. **Snack Foods (e.g., chips, crackers, popcorn):**
   * **Amount:** **0.05–0.1%** of the product weight.
   * **Purpose:** Adds color to snack products like chips and crackers, giving them an appealing golden hue.
3. **Beverages (e.g., fruit juices, soft drinks):**
   * **Amount:** **0.02–0.05%** of the product weight.
   * **Purpose:** Used to color beverages, such as fruit juices and soft drinks, to create a vibrant yellow or orange color.
4. **Processed Meats (e.g., sausages, hot dogs, deli meats):**
   * **Amount:** **0.05–0.1%** of the product weight.
   * **Purpose:** Provides a natural color for processed meats, including sausages and hot dogs, giving them an appealing red or orange hue.
5. **Prepared Foods (e.g., sauces, soups, dressings):**
   * **Amount:** **0.02–0.05%** of the product weight.
   * **Purpose:** Enhances the color of prepared foods, such as sauces, soups, and salad dressings, by adding a natural yellow to orange tint.
6. **Confectionery (e.g., candy, ice cream, jellies):**
   * **Amount:** **0.02–0.05%** of the product weight.
   * **Purpose:** Used to color confectionery products, such as candies, ice cream, and jellies, with a bright yellow or orange hue.

**Key Considerations for Usage:**

* **Concentration:** Annatto oil color is highly concentrated, so only small amounts are needed to achieve the desired color. The amount used depends on the intensity of the color needed and the specific product formulation.
* **Flavor Impact:** While annatto oil color is derived from annatto seeds, the oil-based solution is typically neutral in flavor. This makes it suitable for use in products where flavor impact should be minimal.
* **Natural Colorant:** Annatto oil is considered a **natural** and **safe alternative** to synthetic food colorants, which is especially important in organic and natural food products.

**Regulatory and Safety Considerations:**

* **GRAS Status:** Annatto oil color is generally recognized as safe (GRAS) by the FDA for use in food products.
* **Labeling:** It is typically labeled as **"annatto oil"** or **"natural color (annatto oil)"** on ingredient lists.

**Shelf Life and Storage:**

* **Shelf Life:** Annatto oil color typically has a **shelf life of 12–24 months**, depending on the specific formulation and storage conditions.
* **Storage Conditions:** Store annatto oil color in an **airtight container** in a **cool, dry place** to preserve its color potency and prevent degradation.

**Summary:**  
In commercial food products, **annatto oil color** is typically used at **0.02–0.2%** of the product weight. It is commonly used to color **cheese**, **snacks**, **beverages**, **processed meats**, **prepared foods**, and **confectionery**. The oil-based form of annatto ensures easy incorporation into fat-based or oil-containing foods while providing a natural, vibrant yellow to orange color.



BeeChoo LiangBeeChoo Liang  [2:11 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731780713040659)

**Annatto seeds**, derived from the achiote tree (*Bixa orellana*), are commonly used in commercial food products as a natural colorant and, occasionally, for their mild, earthy, and slightly peppery flavor. When used directly as seeds, the application is often in the form of infused oil or water rather than as whole seeds in the final product.**Typical Usage Levels of Annatto Seeds in Commercial Food Products:**

1. **Cheese (e.g., cheddar, processed cheese):**
   * **Amount:** **0.01–0.1%** of the product weight (used as a water or oil infusion).
   * **Purpose:** The seed infusion imparts a yellow to orange hue to cheeses like cheddar, colby, and other semi-hard varieties.
2. **Snack Foods (e.g., chips, crackers):**
   * **Amount:** **0.05–0.2%** (as part of a seed infusion or powder form).
   * **Purpose:** Adds natural yellow or orange coloring to the snacks for visual appeal.
3. **Prepared Foods (e.g., rice dishes, stews, sauces):**
   * **Amount:** **0.05–0.1%** of the product weight (infused and strained liquid from seeds).
   * **Purpose:** Provides a rich golden or reddish tint to foods like rice-based dishes (e.g., Spanish or Latin American recipes) and sauces.
4. **Bakery Products (e.g., breads, pastries):**
   * **Amount:** **0.05–0.1%** of the product weight (infusion or ground seeds).
   * **Purpose:** Adds a subtle golden hue to breads and pastry items for an appealing natural appearance.
5. **Oils and Fats (e.g., cooking oils, margarine, shortening):**
   * **Amount:** **0.01–0.05%** of the oil weight (as an infused oil).
   * **Purpose:** Annatto seed-infused oil is commonly used in margarine and cooking oils to give them a yellowish tint.

**How Annatto Seeds Are Used in Production:**

* **Infusion Method:** The seeds are often steeped in oil or water to extract the natural pigments (bixin and norbixin) and then strained before being added to the food product.
* **Powder or Paste:** In some cases, the seeds are ground into a fine powder or made into a paste for use in food preparation.

**Key Considerations for Usage:**

* **Color Potency:** Annatto seeds are highly concentrated in pigments, so a small amount can produce a strong color. The exact amount depends on the desired color intensity.
* **Flavor Impact:** The seeds have a mild flavor that typically does not overwhelm the food but can contribute earthy and peppery notes if used in larger amounts.
* **Natural Appeal:** Annatto seeds are favored in natural and organic food formulations as a plant-based alternative to synthetic colorants.

**Regulatory and Safety Considerations:**

* **GRAS Status:** Annatto seeds are considered **generally recognized as safe (GRAS)** by the FDA.
* **Labeling:** On ingredient labels, annatto seeds are often listed as **"annatto"**, **"achiote"**, or **"natural color (annatto)"**.

**Shelf Life and Storage:**

* **Shelf Life:** Annatto seeds can last **12–24 months** when stored in a cool, dry place.
* **Storage Conditions:** Keep the seeds in an **airtight container** to prevent exposure to moisture and light, which can degrade their color and potency.

**Summary:**  
In commercial food products, **annatto seeds** are typically used in the range of **0.01–0.2%** of the product weight, depending on the desired color intensity and the type of food. They are most commonly infused into oil or water for use in coloring **cheese**, **snacks**, **prepared dishes**, **baked goods**, and **oils**.



BeeChoo LiangBeeChoo Liang  [2:45 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731782757138149)

**Starter distillate**, a byproduct of dairy fermentation processes (often during the production of cultured dairy products like cheese or yogurt), is used in commercial food products to enhance flavor and aroma. It is rich in volatile compounds, including diacetyl and acetoin, which impart a buttery, creamy, or tangy profile to food.**Typical Usage Levels of Starter Distillate in Commercial Food Products:**

1. **Butter-Flavored Products (e.g., margarine, spreads):**
   * **Amount:** **0.01–0.1%** of the product weight.
   * **Purpose:** Adds buttery aroma and taste, enhancing the sensory profile of margarine and other spreads.
2. **Baked Goods (e.g., cakes, cookies, pastries):**
   * **Amount:** **0.02–0.1%** of the product weight.
   * **Purpose:** Provides a rich, buttery, or tangy flavor that complements sweet and savory baked goods.
3. **Cheese and Dairy Products:**
   * **Amount:** **0.01–0.05%** of the product weight.
   * **Purpose:** Enhances the buttery and tangy notes in processed or natural cheese and cultured dairy products like yogurt or sour cream.
4. **Snack Foods (e.g., popcorn, chips):**
   * **Amount:** **0.01–0.05%** of the product weight.
   * **Purpose:** Adds a buttery or creamy flavor to snacks, especially in butter-flavored varieties.
5. **Confectionery (e.g., caramels, toffees):**
   * **Amount:** **0.01–0.05%** of the product weight.
   * **Purpose:** Enhances the richness and buttery profile of confections like caramels and butterscotch.
6. **Sauces and Dressings:**
   * **Amount:** **0.01–0.03%** of the product weight.
   * **Purpose:** Provides creamy and tangy notes to dressings, dips, and creamy sauces.

**Key Considerations for Usage:**

* **Flavor Potency:** Starter distillate is highly concentrated, so only small amounts are required to achieve the desired effect.
* **Complementary Use:** It is often used alongside other flavor compounds to create balanced and complex flavor profiles.
* **Natural Appeal:** As a natural byproduct of fermentation, it is favored in "clean label" formulations where artificial additives are avoided.

**Regulatory and Safety Considerations:**

* **GRAS Status:** Starter distillate is considered **generally recognized as safe (GRAS)** by regulatory bodies when used in food products.
* **Labeling:** It may be listed on ingredient labels as **"starter distillate"**, **"natural flavoring"**, or **"fermentation-derived flavor"**, depending on the specific formulation and jurisdiction.

**Shelf Life and Storage:**

* **Shelf Life:** Typically **12–24 months** when stored properly.
* **Storage Conditions:** Store in **airtight containers** in a **cool, dry place**, away from direct sunlight and moisture, to preserve its volatile compounds and flavor quality.

**Summary:**  
Starter distillate is used in commercial food products at levels typically ranging from **0.01% to 0.1%**, depending on the application. It is valued for its ability to impart buttery, creamy, or tangy flavors to products such as **baked goods**, **snacks**, **dairy items**, **sauces**, and **confections**. Its natural origin and potent flavor make it a popular choice for enhancing product profiles while maintaining a clean label.

[2:50](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731783004098039)

BeeChoo Liang

**Steviol glycosides** are the sweet compounds extracted from the leaves of the **stevia plant** (*Stevia rebaudiana*). They are used as natural, zero-calorie sweeteners in a variety of commercial food products. Due to their high sweetness intensity (200–400 times sweeter than sucrose), only small amounts are needed to achieve the desired level of sweetness.**Typical Usage Levels of Steviol Glycosides in Commercial Food Products:**

1. **Beverages (e.g., soft drinks, juices, flavored water):**
   * **Amount:** **0.01–0.05%** of the product weight.
   * **Purpose:** Replaces sugar to provide sweetness without calories.
2. **Dairy Products (e.g., yogurt, flavored milk, ice cream):**
   * **Amount:** **0.02–0.06%** of the product weight.
   * **Purpose:** Sweetens without adding sugar, often combined with bulking agents like erythritol to replicate texture.
3. **Baked Goods (e.g., cakes, cookies, muffins):**
   * **Amount:** **0.01–0.04%** of the product weight.
   * **Purpose:** Provides sweetness, often used with sugar alcohols or fibers to compensate for sugar's role in structure and texture.
4. **Confectionery (e.g., candies, gum, chocolate):**
   * **Amount:** **0.02–0.05%** of the product weight.
   * **Purpose:** Sweetens low-sugar or sugar-free products, sometimes combined with other sweeteners for taste balance.
5. **Sauces and Dressings:**
   * **Amount:** **0.01–0.03%** of the product weight.
   * **Purpose:** Adds sweetness to low-calorie or sugar-free sauces like ketchup, barbecue sauce, and salad dressings.
6. **Snacks (e.g., bars, granola, crisps):**
   * **Amount:** **0.01–0.05%** of the product weight.
   * **Purpose:** Reduces sugar content while maintaining sweetness in healthy or low-calorie snack products.
7. **Processed Foods (e.g., jams, jellies, canned fruit):**
   * **Amount:** **0.02–0.05%** of the product weight.
   * **Purpose:** Provides sweetness in reduced-sugar or sugar-free versions.

**Key Considerations for Usage:**

* **Sweetness Potency:** Steviol glycosides are extremely sweet; precise blending is required to avoid over-sweetness or bitter aftertaste.
* **Blends with Other Sweeteners:** Often used in combination with sugar alcohols (e.g., erythritol) or other high-intensity sweeteners to improve flavor and reduce bitterness.
* **Regulatory Limits:** Maximum allowable usage levels may vary by region and food type. Manufacturers must comply with local food safety regulations.

**Regulatory and Safety Considerations:**

* **GRAS Status:** Steviol glycosides are **generally recognized as safe (GRAS)** by the FDA and approved for use in many countries.
* **Labeling:** On ingredient lists, they may appear as **"steviol glycosides,"** **"stevia extract,"** or **"Rebaudioside A"** (depending on the specific compound used).

**Shelf Life and Storage:**

* **Shelf Life:** Typically **2–3 years** when stored properly.
* **Storage Conditions:** Keep in a **cool, dry place** in an airtight container to prevent moisture absorption and degradation.

**Summary:**  
The typical amount of **steviol glycosides** used in commercial food products ranges from **0.01% to 0.06%** of the product weight, depending on the sweetness required and the application. They are widely used in **beverages**, **dairy**, **baked goods**, **confectionery**, **sauces**, and **snacks** to replace sugar and create lower-calorie options. Manufacturers must carefully balance usage to ensure optimal sweetness while minimizing potential aftertaste.

[2:55](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731783333202899)

BeeChoo Liang

**Stevia leaf** is the raw, less-processed form of stevia used in commercial food products. While it has a lower sweetness intensity than purified steviol glycosides, it is still significantly sweeter than sugar and contains a more complex flavor profile with herbal and licorice-like notes. This form is often favored for "natural" or minimally processed product claims.**Typical Usage Levels of Stevia Leaf in Commercial Food Products:**

1. **Beverages (e.g., teas, herbal drinks, natural sodas):**
   * **Amount:** **0.05–0.2%** (by weight of the final product).
   * **Purpose:** Provides natural sweetness and herbal notes; often used in brewed or infused forms.
2. **Snacks (e.g., granola bars, dried fruit products):**
   * **Amount:** **0.05–0.15%**.
   * **Purpose:** Sweetens naturally while enhancing the perception of healthfulness in minimally processed snacks.
3. **Dairy Alternatives (e.g., plant-based yogurts, flavored almond or oat milk):**
   * **Amount:** **0.03–0.1%**.
   * **Purpose:** Adds sweetness with a natural positioning; used as part of an infusion.
4. **Baked Goods (e.g., breads, muffins, cookies):**
   * **Amount:** **0.05–0.15%**.
   * **Purpose:** Acts as a sugar alternative while contributing a natural flavor.
5. **Confectionery (e.g., natural candies, herbal lozenges):**
   * **Amount:** **0.03–0.1%**.
   * **Purpose:** Sweetens with a hint of herbal complexity.
6. **Savory Products (e.g., sauces, marinades):**
   * **Amount:** **0.01–0.05%**.
   * **Purpose:** Balances flavors by adding a touch of sweetness.

**Key Considerations for Usage:**

* **Flavor Profile:** Stevia leaf has a more herbal, earthy flavor than purified steviol glycosides. Its taste can be polarizing and may need balancing with other ingredients.
* **Infusion vs. Powder:** Stevia leaf is often steeped or infused into liquids to extract sweetness without overpowering flavors. In powdered form, it is directly incorporated but can introduce more pronounced herbal notes.
* **Combination with Other Sweeteners:** To enhance sweetness and reduce off-flavors, stevia leaf is sometimes combined with sugar, honey, or other sweeteners.

**Regulatory and Safety Considerations:**

* **GRAS Status:** Stevia leaf in its raw or powdered form is not always recognized as GRAS (generally recognized as safe) in all regions. However, its use is accepted in some markets where the focus is on "natural" or minimally processed foods.
* **Labeling:** Typically listed as **"stevia leaf"** or **"stevia leaf powder"** in ingredient lists.

**Shelf Life and Storage:**

* **Shelf Life:** Typically **12–18 months** if stored properly.
* **Storage Conditions:** Keep in a **cool, dry place** in an airtight container to preserve its sweetness and herbal flavor profile.

**Summary:**  
The typical amount of **stevia leaf** used in commercial food products ranges from **0.01% to 0.2%**, depending on the product and desired sweetness level. It is especially popular in **teas**, **snacks**, **dairy alternatives**, and **natural confectionery**, offering a sweet yet herbal flavor that supports "clean label" claims. Proper formulation is crucial to balance its sweetness and prevent overpowering herbal notes.



BeeChoo LiangBeeChoo Liang  [3:23 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731784996114229)

**Celery Juice Powder** is commonly used in commercial food products as a natural flavor enhancer, a source of natural nitrates for curing meats, or as a health-oriented ingredient. Its application depends on the desired functionality, whether as a curing agent, flavoring, or nutrient booster.**Typical Usage Levels of Celery Juice Powder in Commercial Food Products:**

1. **Cured Meats (e.g., bacon, sausages, hot dogs):**
   * **Amount:** **0.2–0.4%** of the meat product weight.
   * **Purpose:** Provides natural nitrates that convert to nitrites during curing, serving as a preservative and contributing to flavor and color development.
2. **Snacks (e.g., chips, crackers):**
   * **Amount:** **0.1–0.3%** of the product weight.
   * **Purpose:** Acts as a natural seasoning or flavor enhancer, adding savory or umami notes.
3. **Soups, Broths, and Seasoning Mixes:**
   * **Amount:** **0.1–0.5%** of the product weight.
   * **Purpose:** Enhances flavor with natural celery taste, often included in dry mix formulations.
4. **Health-Focused Products (e.g., protein bars, smoothies, supplements):**
   * **Amount:** **0.1–0.2%** of the product weight.
   * **Purpose:** Adds natural celery-derived nutrients, including vitamins and minerals, for a health halo.
5. **Sauces and Marinades:**
   * **Amount:** **0.1–0.3%** of the product weight.
   * **Purpose:** Contributes to flavor complexity with a subtle celery note.

**Key Considerations for Usage:**

* **Flavor Profile:** Celery Juice Powder imparts a mild, earthy celery flavor, which can enhance savory profiles or act as a natural seasoning.
* **Nitrate Content:** When used as a curing agent, the powder's natural nitrate level must be standardized to ensure consistent and safe curing effects.
* **Blend Compatibility:** Often blended with salt, sugars, or other seasonings in dry formulations for ease of use.

**Regulatory and Safety Considerations:**

* **Natural Curing Agent:** Products cured with celery juice powder may be labeled as "uncured" or "natural" depending on regional regulations.
* **GRAS Status:** Celery Juice Powder is **generally recognized as safe (GRAS)** for use in food products.
* **Labeling:** Typically appears as **"celery juice powder"** or **"celery powder"** in ingredient lists.

**Shelf Life and Storage:**

* **Shelf Life:** Typically **1–2 years** under proper storage.
* **Storage Conditions:** Store in a **cool, dry place**, away from moisture and light, to maintain its nitrate content and flavor potency.

**Summary:**  
The typical amount of **Celery Juice Powder** used in commercial food products ranges from **0.1% to 0.5%**, depending on its role as a curing agent, flavor enhancer, or nutrient source. Its functionality makes it a versatile ingredient in **cured meats**, **snacks**, **soups**, and **health-oriented products**, often contributing to both flavor and preservative effects.



BeeChoo LiangBeeChoo Liang  [2:06 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731823569064199)

**Capsicum** (derived from chili peppers) is used in commercial food products for its spiciness, flavor, and color. The typical amount used depends on the desired heat level, type of product, and regional taste preferences. Capsicum is commonly incorporated as powders, extracts, or oleoresins.**Typical Usage Levels of Capsicum in Commercial Food Products:**

1. **Hot Sauces and Condiments:**
   * **Amount:** **0.1–2%** of the product weight.
   * **Purpose:** Provides a concentrated spicy kick and enhances flavor intensity.
2. **Snack Foods (e.g., chips, nuts, crackers):**
   * **Amount:** **0.05–1%** of the seasoning mix weight.
   * **Purpose:** Adds heat and flavor in combination with other seasonings like salt and cheese.
3. **Processed Meats (e.g., sausages, cured meats):**
   * **Amount:** **0.05–0.5%** of the product weight.
   * **Purpose:** Imparts spiciness and enhances flavor complexity in products like chorizo or pepperoni.
4. **Ready-to-Eat Meals and Soups:**
   * **Amount:** **0.05–0.3%** of the product weight.
   * **Purpose:** Adds a balanced heat profile, often adjusted for regional preferences.
5. **Sauces, Marinades, and Dressings:**
   * **Amount:** **0.1–0.5%** of the product weight.
   * **Purpose:** Enhances flavor complexity, with controlled heat levels tailored to the dish.
6. **Confectionery (e.g., spicy chocolates, candies):**
   * **Amount:** **0.01–0.2%** of the product weight.
   * **Purpose:** Provides a subtle heat to complement sweet profiles, creating a unique flavor experience.
7. **Beverages (e.g., spicy cocktails, wellness drinks):**
   * **Amount:** **0.01–0.05%** of the product weight.
   * **Purpose:** Adds mild heat for functional or novelty drinks like spicy margaritas or detox teas.

**Key Considerations for Usage:**

* **Heat Intensity (Scoville Heat Units - SHU):** Capsicum's spiciness varies widely depending on its concentration and type. Lower concentrations are used for high-SHU extracts or oleoresins.
* **Flavor Balance:** Capsicum should be blended with other ingredients to avoid overpowering the product.
* **Uniform Distribution:** Especially important in powdered forms to ensure consistent heat levels throughout the product.

**Regulatory and Safety Considerations:**

* **Capsaicin Content:** The active compound, capsaicin, should be clearly labeled if present in significant concentrations.
* **Allergy and Sensitivity Warnings:** Products with high capsicum levels may require warnings for consumers sensitive to heat.
* **GRAS Status:** Capsicum and its derivatives are **generally recognized as safe (GRAS)** for use in food.

**Shelf Life and Storage:**

* **Shelf Life:** Capsicum products typically last **1–3 years** when stored properly.
* **Storage Conditions:** Store in a **cool, dark place** to preserve potency and prevent degradation of flavor and color.

**Summary:**  
The amount of **capsicum** used in commercial food products typically ranges from **0.01% to 2%**, depending on the desired heat level and application. It is versatile, used in **snacks**, **sauces**, **meats**, and even **beverages**. Its intensity requires precise formulation to achieve a balanced and appealing flavor profile.

[2:10](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731823828380659)

BeeChoo Liang

The typical amount of **caraway** used in commercial food products depends on the type of product and the desired flavor intensity. Caraway seeds have a distinctive warm, earthy, and slightly anise-like flavor, so they are often used in moderate quantities to enhance flavor without overpowering the dish.**Typical Usage Levels of Caraway in Commercial Food Products:**

1. **Breads (e.g., Rye Bread):**
   * **Amount:** **0.5–2%** of the dough weight.
   * **Purpose:** Adds a characteristic flavor and aroma, commonly associated with traditional European rye bread.
2. **Meat Products (e.g., Sausages, Cured Meats):**
   * **Amount:** **0.1–0.5%** of the product weight.
   * **Purpose:** Enhances the flavor profile, especially in products like kielbasa or bratwurst.
3. **Sauerkraut and Pickled Vegetables:**
   * **Amount:** **0.05–0.2%** of the product weight.
   * **Purpose:** Provides a warm and aromatic note that complements the tangy acidity of fermented products.
4. **Cheese and Dairy Products:**
   * **Amount:** **0.1–0.3%** of the product weight.
   * **Purpose:** Infuses aromatic complexity, commonly found in specialty cheeses like Havarti or Tilsit.
5. **Soups and Stews:**
   * **Amount:** **0.1–0.3%** of the product weight.
   * **Purpose:** Adds depth and earthiness to hearty, savory dishes.
6. **Spice Mixes and Seasonings:**
   * **Amount:** **1–5%** of the spice blend weight.
   * **Purpose:** Acts as a key ingredient in blends for sausages, breads, or regional specialties.
7. **Confectionery (e.g., Cookies, Cakes):**
   * **Amount:** **0.05–0.2%** of the product weight.
   * **Purpose:** Used sparingly to impart a subtle, unique flavor, especially in traditional European baked goods.

**Key Considerations for Usage:**

* **Intensity:** Caraway has a strong flavor, so small amounts can significantly impact the taste.
* **Pairing:** It pairs well with cabbage, potatoes, rye, and other hearty ingredients.
* **Grinding:** Caraway is often used whole but can be ground for a more uniform flavor distribution in some recipes.

**Regulatory and Safety Considerations:**

* Caraway is **Generally Recognized as Safe (GRAS)** by the FDA for use in food.
* Its use should adhere to local food labeling and flavor regulations if used in substantial amounts.

**Summary:**  
The typical amount of caraway used in commercial food products ranges from **0.05% to 2%**, depending on the application. It is particularly popular in **breads**, **meats**, **pickled products**, and **soups**, where its warm and earthy flavor enhances the overall profile of the dish.

[2:12](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731823929144709)

BeeChoo Liang

The typical amount of **cardamom** used in commercial food products varies widely depending on the product type, desired flavor profile, and regional culinary traditions. Cardamom is a highly aromatic spice with a sweet, floral, and slightly citrusy flavor, so it is often used sparingly to avoid overpowering other flavors.**Typical Usage Levels of Cardamom in Commercial Food Products:**

1. **Baked Goods (e.g., Cakes, Cookies, Buns):**
   * **Amount:** **0.1–0.5%** of the product weight.
   * **Purpose:** Adds a warm, sweet aroma and flavor, common in Scandinavian and Middle Eastern baked goods.
2. **Confectionery (e.g., Candies, Chocolates):**
   * **Amount:** **0.05–0.3%** of the product weight.
   * **Purpose:** Enhances sweetness and adds a sophisticated, spicy note to high-end confections.
3. **Beverages (e.g., Chai Tea, Coffee, Liqueurs):**
   * **Amount:** **0.02–0.1%** of the product weight.
   * **Purpose:** Provides a subtle, aromatic flavor in spiced drinks or liqueurs like cardamom-infused gin or coffee.
4. **Spice Blends (e.g., Garam Masala, Curry Powders):**
   * **Amount:** **5–15%** of the blend weight.
   * **Purpose:** Acts as a key ingredient in spice blends, contributing to depth and complexity.
5. **Dairy Products (e.g., Ice Cream, Yogurt):**
   * **Amount:** **0.05–0.2%** of the product weight.
   * **Purpose:** Adds a delicate, exotic flavor to desserts like cardamom-infused ice creams or lassis.
6. **Savory Dishes (e.g., Rice, Meats, Curries):**
   * **Amount:** **0.05–0.2%** of the product weight.
   * **Purpose:** Used in pilafs, stews, and braises to provide a subtle yet aromatic undertone.
7. **Snacks (e.g., Spiced Nuts, Popcorn):**
   * **Amount:** **0.05–0.15%** of the seasoning mix weight.
   * **Purpose:** Adds a touch of exotic spiciness to snack mixes.
8. **Health and Wellness Products:**
   * **Amount:** **0.01–0.1%** of the product weight.
   * **Purpose:** Often included for its aromatic properties and potential health benefits in functional teas or supplements.

**Key Considerations for Usage:**

* **Flavor Intensity:** Cardamom is potent, so precise measurement is essential to balance its flavor.
* **Forms:** Available as whole pods, seeds, or ground powder. Ground cardamom is more concentrated but loses aroma faster.
* **Pairing:** Pairs well with cinnamon, cloves, ginger, and citrus in sweet dishes, and with cumin, coriander, and saffron in savory dishes.

**Regulatory and Safety Considerations:**

* Cardamom is **Generally Recognized as Safe (GRAS)** by the FDA for use in food.
* Proper labeling may be required when used in certain amounts, particularly in health and wellness products.

**Shelf Life and Storage:**

* **Whole Pods:** Last up to 1–2 years when stored in an airtight container in a cool, dark place.
* **Ground Cardamom:** Loses potency faster, best used within 6–12 months.

**Summary:**  
The typical amount of **cardamom** used in commercial food products ranges from **0.02% to 0.5%**, depending on the application. It is a versatile spice used in **baked goods**, **confectionery**, **beverages**, **spice blends**, and **savory dishes**, adding a unique and aromatic flavor to a wide variety of products.



BeeChoo LiangBeeChoo Liang  [2:27 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731824849004329)

The typical amount of **celery seed** used in commercial food products can vary depending on the type of product, but generally, it is used in small quantities due to its distinct, pungent flavor. Celery seed is derived from the plant *Apium graveolens*, which is related to the vegetable celery, and it is often used for seasoning in savory dishes.**Typical Usage of Celery Seed in Commercial Food Products:**

1. **Spice Blends and Seasonings:**
   * **Amount:** **0.1–1%** of the total weight of the spice blend.
   * **Purpose:** Celery seed is commonly found in spice mixes for pickles, salad dressings, and soups. It adds a subtle, earthy flavor with a slight bitterness that complements other spices.
2. **Pickles and Fermented Foods:**
   * **Amount:** **0.1–0.5%** of the total brine or pickling solution.
   * **Purpose:** Celery seed is a key ingredient in many **pickling blends** (e.g., dill pickle seasoning), contributing a unique flavor that enhances the preservation process and provides a distinctive tang to the brine.
3. **Processed Meat Products (e.g., sausage, hot dogs, deli meats):**
   * **Amount:** **0.05–0.2%** of the product weight.
   * **Purpose:** Celery seed is used for flavoring in meat products, particularly in cured meats, as it imparts a mildly bitter, aromatic flavor. It also complements other spices used in sausage blends.
4. **Salad Dressings and Sauces:**
   * **Amount:** **0.05–0.2%** of the total weight of the dressing or sauce.
   * **Purpose:** Often used in **vinaigrettes**, **mustard-based sauces**, and **marinades**, celery seed provides an aromatic, slightly peppery flavor that pairs well with acidic ingredients.
5. **Baked Goods:**
   * **Amount:** **0.1–0.3%** of the product weight.
   * **Purpose:** Celery seed can sometimes be included in **bread recipes**, especially for rye or whole grain varieties, to add an herbal note.
6. **Snack Foods (e.g., potato chips, crackers, seasoned nuts):**
   * **Amount:** **0.05–0.1%** of the seasoning blend.
   * **Purpose:** Celery seed is sometimes used in **seasoned snack mixes** for its unique flavor and slight bitterness, which complements other savory ingredients.

**Key Considerations for Using Celery Seed:**

1. **Flavor Intensity:** Celery seed has a **strong, earthy**, and slightly **bittersweet** flavor, so it is used sparingly in food formulations.
2. **Ground vs. Whole Seed:**
   * **Ground celery seed** is commonly used in spice blends and sauces, while **whole seed** is often found in pickles and certain meat products.
3. **Allergy Considerations:** Some individuals may be allergic to celery, so caution is needed when using celery seed in products that will be distributed to the public, particularly if labeling is required.

**Summary:**  
The typical amount of **celery seed** used in commercial food products ranges from **0.05% to 1%**, depending on the type of product. It is primarily used in **spice blends**, **pickles**, **meat products**, and **salad dressings** for its aromatic, slightly bitter flavor. The seed should be used sparingly due to its strong flavor, and its presence is usually noted in specialty or traditional recipes like pickles and cured meats.



BeeChoo LiangBeeChoo Liang  [3:12 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731827524528009)

**Rhizopus oligosporus** is a beneficial fungus primarily used as a starter culture in the production of **tempeh**, a traditional fermented soybean product. Its application is highly specialized and depends on the type of food product being produced. Here's a breakdown of its typical use in commercial food production:**Typical Amounts of Rhizopus oligosporus in Food Products**

1. **Tempeh Production**:
   * **Amount**: Approximately **0.1–0.5%** of the total weight of the soybeans (or other substrate) being fermented.
   * **Purpose**: This small amount is sufficient to inoculate the substrate and allow the fungus to propagate, binding the substrate into a firm cake during the fermentation process.
2. **Other Fermented Foods** (less common):
   * **Amount**: Generally less than **0.1–0.3%**, depending on the specific fermentation process.
   * **Purpose**: Occasionally used in the fermentation of legumes, grains, or alternative protein products as an experimental or artisanal practice.

**Key Factors Influencing Usage**:

* **Substrate Preparation**: The soybeans or other substrates must be properly dehulled, cooked, and cooled before inoculation to create the optimal environment for fungal growth.
* **Temperature and Humidity**: **Rhizopus oligosporus** grows best at **30–37°C (86–98.6°F)** with high humidity, so its inoculation rate is tailored to ensure the substrate is fully colonized without excessive fungal growth.
* **Commercial Starter Cultures**: Starter cultures containing **Rhizopus oligosporus** often include rice flour, tapioca starch, or other carriers to help evenly distribute the spores. This may slightly increase the application rate depending on the product formulation.

**Additional Applications**:

* While primarily associated with tempeh, **Rhizopus oligosporus** is being explored in the development of **alternative protein products** and **fermented plant-based foods** due to its ability to improve digestibility and enhance nutritional profiles.

**Summary**:

* The typical usage level of **Rhizopus oligosporus** in commercial food production is between **0.1–0.5%** of the substrate weight.
* Its application is precise and tailored to support controlled fermentation, ensuring the desired flavor, texture, and nutritional benefits.



BeeChoo LiangBeeChoo Liang  [4:17 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731831469909699)

**Saffron** is a highly prized spice used in commercial food products for its distinct flavor, aroma, and vibrant yellow-orange color. Due to its potency and high cost, it is typically used in small quantities. Here's an overview of its usage in different types of commercial products:**Typical Amounts of Saffron in Commercial Food Products**

1. **Rice Dishes (e.g., saffron rice, paella)**:
   * **Amount**: **0.1–0.3 grams per kilogram** of rice.
   * **Purpose**: Provides a characteristic yellow color and subtle flavor.
2. **Confectionery and Desserts** (e.g., ice cream, puddings, cakes):
   * **Amount**: **0.05–0.2 grams per kilogram** of the final product.
   * **Purpose**: Imparts a luxurious aroma and flavor, often combined with ingredients like pistachios or cardamom.
3. **Beverages** (e.g., saffron tea, liqueurs, health drinks):
   * **Amount**: **0.01–0.05 grams per liter** of liquid.
   * **Purpose**: Adds a mild flavor and enhances visual appeal.
4. **Dairy Products** (e.g., saffron-flavored milk, yogurt, cheese):
   * **Amount**: **0.02–0.1 grams per kilogram**.
   * **Purpose**: Enhances aroma, flavor, and visual presentation.
5. **Seasonings and Spice Blends**:
   * **Amount**: **0.1–0.5%** of the total weight of the spice blend.
   * **Purpose**: Used as a premium ingredient in high-quality spice mixes, particularly in Middle Eastern or Indian cuisines.
6. **Health and Nutritional Products**:
   * **Amount**: **0.01–0.1 grams per serving**.
   * **Purpose**: Marketed for its antioxidant properties and as a natural mood enhancer.
7. **Commercial Extracts and Colors**:
   * **Amount**: Saffron extracts (like crocin or safranal) may be standardized and used at **0.001–0.01%** concentrations in food products.
   * **Purpose**: Efficiently delivers color and aroma at lower costs.

**Key Factors Influencing Usage**:

* **Cost**: As one of the most expensive spices, saffron's usage is typically minimized while maintaining its sensory impact.
* **Flavor Intensity**: Saffron is highly potent, and excessive amounts can lead to a bitter taste.
* **Regional Preferences**: Its use is more prevalent in cuisines like Middle Eastern, Mediterranean, Indian, and Persian.

**Summary**:  
The amount of **saffron** used in commercial food products ranges from **0.01 grams to 0.5 grams per kilogram** of the product, depending on the type of food and desired intensity of flavor, color, and aroma. For extracts, concentrations are even lower, around **0.001–0.01%**. Its use is carefully controlled to balance cost with sensory impact.

[4:22](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731831740690699)

BeeChoo Liang

**Sassafras** is a plant that was historically used in food and beverages, particularly for its aromatic properties. However, due to health concerns over its primary compound **safrole**, which is potentially carcinogenic, the use of sassafras in commercial food products has been largely restricted or eliminated in many regions, including the United States.**Traditional Usage of Sassafras**

1. **Root Beer** (historically):
   * **Amount**: Sassafras root or bark was used in small quantities, typically steeped in water to make a tea or extract, with about **1–3 grams of root per liter** of beverage.
   * **Purpose**: Provided the distinct flavor and aroma associated with traditional root beer.
2. **Cajun and Creole Cuisine**:
   * **Amount**: Ground sassafras leaves (sold as **filé powder**) are still used in gumbo and soups, typically added in amounts of **1–3 teaspoons per pot** (about **1–2 grams per liter**).
   * **Purpose**: Acts as a thickener and imparts a mild, earthy flavor.
3. **Herbal Teas**:
   * **Amount**: Historically used at about **1–2 grams per serving** of tea.
   * **Purpose**: Provided a fragrant, spicy flavor.

**Modern Regulatory Status**

* **Safrole Ban**: Due to safrole’s carcinogenic potential, sassafras oil and safrole-containing products have been prohibited in foods and beverages in many regions. Modern root beer flavoring uses artificial or safrole-free natural flavorings instead.
* **Filé Powder**: Made from sassafras leaves, which contain no safrole, remains approved and widely used in culinary applications.

**Current Commercial Usage**

* **Sassafras Leaves (Filé Powder)**:
  + **Safe Alternative**: Used as a natural and safe thickener and flavoring agent in Cajun dishes.
  + **Amount**: Typical usage is **0.5–1% of the recipe's weight**.

**Summary**

* **Sassafras Root and Oil**: Rarely used in modern commercial food products due to health concerns.
* **Sassafras Leaves (Filé Powder)**: Commonly used in Cajun cooking, typically at **1–3 grams per liter or per dish**. It is safrole-free and considered safe for culinary use.



BeeChoo LiangBeeChoo Liang  [6:32 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731839544934529)

**Prickly ash** (often derived from the bark or berries of the *Zanthoxylum* species) is used in food products, typically in small amounts, for its distinctive flavor, which is spicy and peppery. It is most commonly found in specialty or regional food products, particularly in certain Asian, North American, and herbal cuisines.  
**Typical Amounts of Prickly Ash in Commercial Food Products**

1. **Spices and Seasonings**
   * **Amount**: **0.1–0.5% of the total product weight**
   * **Purpose**: Prickly ash is often used in seasoning blends, hot sauces, and spice mixes for its unique flavor. It is typically used in very small amounts due to its intense, peppery taste.
2. **Herbal Teas and Infusions**
   * **Amount**: **0.5–1% of the total product weight**
   * **Purpose**: The bark or fruit of the prickly ash tree may be included in herbal tea blends for its purported medicinal benefits, such as digestive support or to relieve pain.
3. **Flavored Spirits and Liqueurs**
   * **Amount**: **0.1–0.5% of the total product weight**
   * **Purpose**: Used as a flavoring agent in small quantities in spirits, bitters, or liqueurs, often as part of a complex botanical mix for craft beverages.
4. **Confectionery**
   * **Amount**: **0.1–0.3% of the total product weight**
   * **Purpose**: Prickly ash may be used in certain flavored candies or confections to add a spicy or numbing sensation (similar to Sichuan peppercorns) in specialty or regional treats.
5. **Processed Meat Products**
   * **Amount**: **0.05–0.2% of the total product weight**
   * **Purpose**: Sometimes included in sausages, marinades, or seasoning mixes for its numbing, peppery taste, often in combination with other spices.

**Summary**  
Prickly ash is typically used in small amounts (ranging from **0.1% to 1%** of the total product weight) in commercial food products. Its primary applications are in **spices, seasoning blends, herbal teas, spirits**, and **specialty confections**, where it adds a peppery, numbing flavor characteristic of some Asian and regional cuisines.



BeeChoo LiangBeeChoo Liang  [7:49 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731844171113809)

**Carrageenan** is a natural carbohydrate extracted from red seaweed and widely used as a **gelling, thickening, and stabilizing agent** in commercial food products. It is commonly found in dairy and non-dairy beverages, processed meats, desserts, and other packaged foods.  
**Typical Amounts of Carrageenan in Commercial Food Products**

1. **Dairy Products (e.g., Milk, Yogurt, Ice Cream)**
   * **Amount**: **0.1–0.5% of the total product weight**
   * **Purpose**: Carrageenan is frequently used in dairy products to improve texture and prevent separation of ingredients (such as in milk or yogurt). In ice cream, it helps achieve a smooth, creamy consistency and prevents ice crystal formation.
2. **Non-Dairy Alternatives (e.g., Plant-Based Milks, Creamers)**
   * **Amount**: **0.1–0.4% of the total product weight**
   * **Purpose**: Carrageenan is often used in plant-based milks (e.g., almond, soy, or coconut milk) and creamers to provide a stable, smooth texture. It helps to keep the ingredients mixed and prevents separation, which is common in non-dairy alternatives.
3. **Processed Meats (e.g., Sausages, Deli Meats, Hot Dogs)**
   * **Amount**: **0.1–0.5% of the total product weight**
   * **Purpose**: In processed meats, carrageenan is used as a binder, to retain moisture, and to improve the texture. It also helps enhance the product's mouthfeel and can prevent syneresis (the release of water).
4. **Jellies, Puddings, and Gels**
   * **Amount**: **0.5–1.5% of the total product weight**
   * **Purpose**: Carrageenan is commonly used in gelled products like jellies, puddings, and fruit gels. It provides the desired texture and helps the product hold its shape.
5. **Confectionery (e.g., Marshmallows, Gummies)**
   * **Amount**: **0.5–2% of the total product weight**
   * **Purpose**: In confectionery products, such as marshmallows and gummy candies, carrageenan is used to create a firm, chewy texture. It helps stabilize the foam in marshmallows and maintain the gel-like consistency of gummies.
6. **Beverages (e.g., Fruit Juices, Smoothies, and Sports Drinks)**
   * **Amount**: **0.05–0.2% of the total product weight**
   * **Purpose**: Carrageenan is sometimes used in beverages to maintain consistency and prevent ingredient separation. It can help improve mouthfeel and prevent the settling of particles, especially in juices or smoothies.
7. **Salad Dressings and Sauces**
   * **Amount**: **0.1–0.3% of the total product weight**
   * **Purpose**: In salad dressings and sauces, carrageenan helps to stabilize emulsions, improve texture, and prevent the separation of oil and water.

**Summary**  
The typical amount of **carrageenan** used in commercial food products generally ranges from **0.05% to 2%** of the total product weight, depending on the type of product. It is most commonly used in **dairy and non-dairy beverages** (0.1–0.5%), **processed meats** (0.1–0.5%), and **gels, jellies, and confectionery** (0.5–2%) to improve texture, stability, and moisture retention. It is generally used in small amounts to achieve the desired effect without overpowering the flavor or texture of the product.



BeeChoo LiangBeeChoo Liang  [8:07 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731845220574319)

**Cilantro essential oil**, extracted from the leaves of the coriander plant (Coriandrum sativum), is a highly concentrated aromatic oil used as a flavoring agent in commercial food products. Its flavor is fresh, citrusy, and slightly herbal, making it a popular addition to certain cuisines.  
**Typical Amounts of Cilantro Essential Oil in Commercial Food Products**  
Cilantro essential oil is extremely potent, so it is typically used in very small amounts, often measured in parts per million (ppm) or fractions of a percent.

1. **Flavored Beverages (e.g., Herbal Teas, Cocktails)**
   * **Amount**: **1–5 ppm** (0.0001–0.0005% of the total volume)
   * **Purpose**: Provides a subtle herbal and citrusy note in beverages without overpowering other flavors.
2. **Prepared Sauces and Condiments (e.g., Salsa, Salad Dressings)**
   * **Amount**: **10–50 ppm** (0.001–0.005% of the total weight)
   * **Purpose**: Enhances freshness and adds a distinctive cilantro flavor in dressings or spicy sauces.
3. **Snack Foods (e.g., Chips, Crackers)**
   * **Amount**: **5–20 ppm** (0.0005–0.002% of the total weight)
   * **Purpose**: Used in seasoning blends to provide a hint of cilantro flavor in savory snacks.
4. **Frozen or Ready-to-Eat Meals**
   * **Amount**: **10–30 ppm** (0.001–0.003% of the total weight)
   * **Purpose**: Adds an aromatic cilantro note to dishes like curries, stews, or ethnic cuisines.
5. **Flavoring Oils or Extracts**
   * **Amount**: **0.01–0.1%** in concentrated flavoring bases.
   * **Purpose**: Acts as a component in complex flavor blends for soups, sauces, and seasoning bases.
6. **Bakery Products (e.g., Savory Breads, Specialty Items)**
   * **Amount**: **1–10 ppm** (0.0001–0.001% of the total weight)
   * **Purpose**: Adds a unique herbal aroma in niche savory baked goods.

**Summary**  
Cilantro essential oil is used sparingly due to its strong flavor. Typical concentrations range from **1 to 50 ppm** (0.0001–0.005%) in most food products. It is generally diluted in carrier oils or used as part of a flavoring blend to achieve the desired taste without overpowering the product.

[8:08](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731845333264539)

BeeChoo Liang

**Cardamom essential oil**, derived from the seeds of cardamom pods (Elettaria cardamomum), is a concentrated aromatic oil with a warm, spicy, and slightly sweet flavor profile. It is used in various commercial food products, particularly in beverages, confections, and baked goods.  
**Typical Amounts of Cardamom Essential Oil in Commercial Food Products**  
Because of its potency, cardamom essential oil is used in very small amounts, often measured in parts per million (ppm) or fractions of a percent.

1. **Flavored Beverages (e.g., Teas, Coffees, Liqueurs)**
   * **Amount**: **1–10 ppm** (0.0001–0.001% of the total volume)
   * **Purpose**: Adds a subtle, spicy-sweet note to enhance the beverage's flavor profile.
2. **Confectionery (e.g., Chocolates, Candies, Chewing Gum)**
   * **Amount**: **5–20 ppm** (0.0005–0.002% of the total weight)
   * **Purpose**: Provides a warm and aromatic flavor to candies and other sweet treats.
3. **Baked Goods (e.g., Cakes, Cookies, Specialty Breads)**
   * **Amount**: **10–50 ppm** (0.001–0.005% of the total weight)
   * **Purpose**: Enhances the flavor of baked goods, particularly in spiced or exotic recipes.
4. **Ice Creams and Desserts**
   * **Amount**: **5–15 ppm** (0.0005–0.0015% of the total weight)
   * **Purpose**: Adds a unique and luxurious spiced note to frozen or creamy desserts.
5. **Seasoning Blends and Spice Mixes**
   * **Amount**: **20–50 ppm** (0.002–0.005% of the total weight)
   * **Purpose**: Used as part of complex spice blends to provide a characteristic cardamom aroma.
6. **Ready-to-Eat Meals and Savory Sauces**
   * **Amount**: **5–30 ppm** (0.0005–0.003% of the total weight)
   * **Purpose**: Contributes to aromatic profiles in Indian, Middle Eastern, or Southeast Asian cuisines.

**Summary**  
Cardamom essential oil is typically used in concentrations of **1 to 50 ppm** (0.0001–0.005%) depending on the food product and desired intensity. Its strong flavor necessitates careful dilution, and it is often blended with other ingredients to achieve balance.



BeeChoo LiangBeeChoo Liang  [9:27 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731850043284909)

The **typical amount of essential garlic oil** used in commercial food products is extremely small due to its high potency. It is generally used in **microgram to milligram quantities**, often measured in **parts per million (ppm)** or drops.  
Typical Usage Ranges:

* **Flavoring for sauces, dressings, and snacks**: **1-10 ppm** (approximately 0.001% to 0.01% by weight of the product).
* **Packaged foods like soups or ready meals**: **0.002% to 0.01%**.
* **Beverages or oils**: Sometimes as low as **1 ppm** for subtle flavor enhancement.

Why Is It Used Sparingly?

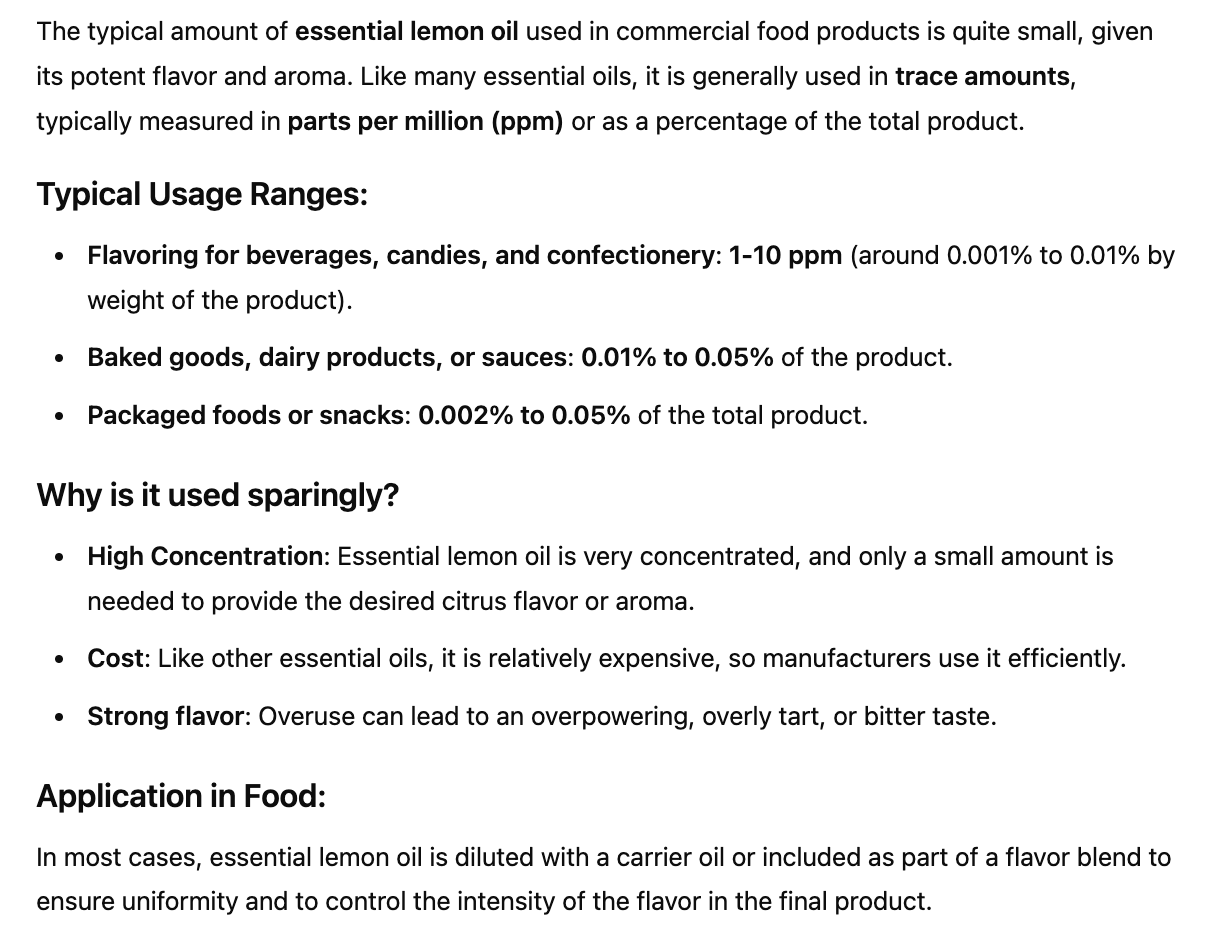
* **Concentration**: Essential garlic oil is extremely strong, and overuse can result in overpowering, bitter, or unpleasant flavors.
* **Cost**: It's a highly concentrated and expensive ingredient, so manufacturers use it efficiently.

Application in Food:  
To ensure even distribution and appropriate dilution, essential garlic oil is often pre-blended with a carrier or incorporated into flavoring systems.

[9:28](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731850113467379)

BeeChoo Liang

Essential Lemon Oil





BeeChoo LiangBeeChoo Liang  [10:23 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731853387638109)

The typical amount of **essential oil of basil** used in commercial food products is very small due to its concentrated nature. It is usually incorporated at very low concentrations, typically measured in **parts per million (ppm)** or **percentage**.  
Typical Usage Ranges:

* **Flavoring in sauces, dressings, beverages, and snacks**: **1-10 ppm** (around **0.001% to 0.01%** by weight of the total product).
* **Baked goods and confectionery**: **0.01% to 0.05%** of the total product.
* **Herbal or functional food products**: **0.001% to 0.005%**, depending on the desired flavor intensity.

Reasons for Low Use:

1. **High Potency**: Essential basil oil is highly concentrated and a little goes a long way in providing flavor and aroma.
2. **Flavor Profile**: Basil oil has a very strong, pungent flavor, so it needs to be used sparingly to avoid overpowering the product.
3. **Cost**: Essential oils are typically more expensive than other flavoring agents, leading to more efficient use in smaller amounts.

In most commercial food products, essential oil of basil is either diluted in a carrier oil or combined with other flavors to achieve a balanced taste profile.



BeeChoo LiangBeeChoo Liang  [11:17 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731856620786349)

Sodium Chloride is a TFI.  When you did salt amount assignment based on the sodium amount in the nutrient fact table, did you treat Sodium Chloride as "Salt"?

Today



BeeChoo LiangBeeChoo Liang  [12:45 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731861925833489)

The typical amount of **green tea extract** used in commercial food products depends on the desired effect (e.g., flavor, antioxidant content, or health benefits) and the type of product. It is commonly used in beverages, supplements, baked goods, and functional foods.  
Typical Usage Ranges:

1. **Beverages (e.g., iced tea, energy drinks, functional drinks)**:
   * **50-200 mg per serving** (approximately **0.1% - 1%** of the total volume).
   * Green tea extract is often standardized to contain specific levels of **catechins** (like EGCG), which are responsible for its health benefits.
2. **Dietary Supplements**:
   * For antioxidant or weight management benefits, **100-500 mg per serving** is common, though it can go higher depending on the formulation and serving size.
3. **Baked Goods, Snacks, and Confectionery**:
   * Typically used in the range of **0.1% to 1%** of the total weight of the product.
   * It is often included for its antioxidant properties and may also impart a mild flavor.
4. **Cosmetic or Functional Foods (e.g., protein bars, yogurt)**:
   * Typically **0.1% - 1%** of the product, depending on the functional purpose.

Key Considerations:

* **Flavor**: Green tea extract has a mild, slightly astringent flavor, so it is used in low amounts to avoid overpowering the taste.
* **Health Claims**: Green tea extract is popular for its antioxidant properties, including catechins that support metabolism, but claims are often regulated.
* **Standardization**: Many commercial products use standardized green tea extracts to ensure consistent levels of bioactive compounds like EGCG (epigallocatechin gallate).

[12:47](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731862049837809)

BeeChoo Liang

The typical amount of **green tea powder** used in commercial food products depends on the intended application and the flavor profile desired. Green tea powder is used for its flavor, color, and functional properties (such as antioxidants) in a variety of food products. The concentration is usually measured in **percentage of total product weight** or **grams per serving**.  
Typical Usage Ranges:

1. **Beverages (e.g., matcha lattes, iced tea, energy drinks)**:
   * **0.5% to 2%** of the total product weight, which typically translates to **1-3 grams per serving** (depending on the serving size).
   * **Matcha** powder, a highly concentrated form of green tea powder, is often used in these beverages, contributing to both flavor and health benefits.
2. **Baked Goods (e.g., cookies, cakes, muffins)**:
   * **0.5% to 2%** of the total product weight.
   * The amount may vary depending on how much green tea flavor is desired, as higher amounts can give a more distinct green tea flavor.
3. **Snacks (e.g., protein bars, granola)**:
   * Typically **0.5% to 1%** of the total weight.
   * Green tea powder can be added for flavor and to increase the antioxidant content.
4. **Dairy Products (e.g., yogurt, ice cream)**:
   * **0.1% to 0.5%** of the total product weight.
   * Green tea powder is often added in small quantities to impart a subtle flavor, especially in premium or functional dairy products.
5. **Supplements and Functional Foods**:
   * For antioxidant benefits, **200-500 mg per serving** is typical, which corresponds to about **0.1% to 1%** of the total product weight, depending on the formulation.

Key Considerations:

* **Flavor and Color**: Green tea powder, particularly matcha, imparts a distinct grassy, slightly bitter flavor and a green color, which affects the final product. Therefore, it is used cautiously to avoid overpowering the product.
* **Health Claims**: Green tea powder, particularly matcha, is valued for its high concentration of antioxidants (like EGCG), which may contribute to health benefits like metabolism support and improved focus.
* **Formulation**: The amount used will depend on whether the product aims for a strong green tea flavor or simply wants to provide health benefits without altering the taste too much.

[12:52](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731862337521789)

BeeChoo Liang

The typical amount of **guarana extract** used in commercial food products depends on its caffeine content and the desired functional effect, such as energy-boosting or flavor enhancement. Guarana extract is rich in natural caffeine and is commonly found in energy drinks, supplements, and functional foods.  
Typical Usage Ranges:

1. **Energy Drinks and Functional Beverages**:
   * **10-50 mg of guarana extract per serving**, depending on the caffeine concentration (guarana can contain up to **4-6% caffeine** by weight).
   * This typically translates to **2-10 mg of caffeine per serving**, though it can be higher in highly caffeinated beverages.
2. **Dietary Supplements**:
   * **50-200 mg per serving** of standardized guarana extract is common in capsules or tablets, used for energy and focus.
3. **Snacks and Confectionery (e.g., energy bars, chocolates)**:
   * **10-30 mg of guarana extract per serving** to add functional benefits without overpowering the flavor.
4. **Teas and Infusions**:
   * **5-20 mg per serving**, often blended with other herbs or teas to provide a mild caffeine boost.
5. **Soft Drinks**:
   * Typically **10-30 mg per serving**, often used as a natural caffeine source to complement other flavoring agents.

Key Considerations:

* **Caffeine Content**: Guarana is used cautiously to avoid exceeding regulatory limits for caffeine in food and beverages. For example, many countries set maximum caffeine levels for energy drinks at **200-400 mg per liter**.
* **Flavor Impact**: Guarana extract has a slightly bitter and astringent taste, so it is usually used in combination with other flavors.
* **Regulatory Compliance**: The caffeine content and labeling requirements vary by region, and formulations must adhere to local food safety regulations.

[12:56](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731862563897499)

BeeChoo Liang

The amount of **Guayusa extract** used in commercial food products varies based on its intended purpose, primarily as a natural caffeine source or for its antioxidant properties. Guayusa is popular in energy drinks, teas, and functional beverages.  
Typical Usage Ranges:

1. **Energy Drinks and Functional Beverages**:
   * **50-200 mg of guayusa extract per serving**, depending on the desired caffeine content.
   * Guayusa naturally contains **2-4% caffeine** by weight, so this translates to approximately **10-50 mg of caffeine per serving**.
2. **Ready-to-Drink Teas**:
   * **50-100 mg per serving**, providing a gentle energy boost and mild flavor.
3. **Dietary Supplements**:
   * **100-400 mg per serving** in capsules or powdered blends marketed for energy, focus, or antioxidant support.
4. **Snacks (e.g., bars, chocolates)**:
   * **10-50 mg per serving** to add functional benefits without a strong flavor impact.

Key Considerations:

* **Caffeine Levels**: When used as a caffeine source, Guayusa extract is often dosed to provide comparable levels to coffee or tea (e.g., 50-100 mg of caffeine per serving).
* **Flavor**: Guayusa has a mild, slightly earthy taste, which can complement a variety of beverage and snack formulations.
* **Regulatory Compliance**: Caffeine limits and labeling requirements vary by region. Ensure formulations meet local guidelines for caffeine in food and drinks.
* **Blends**: Guayusa extract is often combined with other natural caffeine sources (e.g., green tea, guarana) or botanicals for synergistic effects.

[12:59](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731862784024439)

BeeChoo Liang

The amount of **hibiscus extract** used in commercial food products depends on its purpose, such as adding flavor, color, or functional health benefits. Hibiscus is commonly used in teas, beverages, syrups, and confections.  
Typical Usage Ranges:

1. **Beverages (e.g., teas, flavored waters, or juices)**:
   * **0.2-1.0% of the total product weight or volume**, depending on the desired intensity of flavor and color.
   * For concentrated syrups or extracts, **10-50 mg per serving** may be typical.
2. **Functional Foods and Supplements**:
   * **50-250 mg per serving** in capsules, powders, or tablets when used for its antioxidant properties.
3. **Confectionery (e.g., gummies, candies)**:
   * **0.1-0.5%** of the formulation for a tart flavor and red hue.
4. **Desserts (e.g., jams, jellies, sorbets)**:
   * **0.2-1.0%**, balancing sweetness with its tart notes.
5. **Savory Applications (e.g., sauces, marinades)**:
   * **0.1-0.3%** for a subtle tangy flavor enhancement.

Key Considerations:

* **Flavor Profile**: Hibiscus has a tangy, tart taste that pairs well with fruity or sweet flavors.
* **Color Contribution**: Its vibrant red color can be a natural coloring agent, reducing or eliminating the need for artificial dyes.
* **Health Benefits**: High antioxidant content can add functional value to products marketed for wellness.
* **Formulation**: The extract's strength varies, so exact amounts depend on concentration. Always conduct sensory and stability tests.



BeeChoo LiangBeeChoo Liang  [1:04 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731863089023149)

The typical amount of **inositol** used in commercial food products varies based on its intended purpose, such as a nutritional supplement, functional ingredient, or stabilizer. Inositol is commonly added to energy drinks, infant formulas, and dietary supplements due to its role in cellular health and brain function.  
Typical Usage Ranges:

1. **Energy Drinks and Functional Beverages**:
   * **50-500 mg per serving**, with higher amounts often found in beverages targeting brain health, focus, or mood enhancement.
2. **Infant Formulas**:
   * **22-100 mg per 100 ml**, in line with regulatory standards to mimic the inositol content of human breast milk.
3. **Dietary Supplements**:
   * **250-2,000 mg per serving**, particularly in powdered mixes or capsules aimed at specific health benefits, such as supporting mental well-being or metabolic health.
4. **Fortified Foods (e.g., cereals, bars)**:
   * **50-300 mg per serving**, typically used for its health claims or to support energy metabolism.

Key Considerations:

* **Regulatory Standards**: The amount of inositol added to infant formula and other fortified products is regulated in many countries to ensure safety and efficacy.
* **Functional Role**: Inositol is often combined with other ingredients like caffeine, taurine, or vitamins in energy products.
* **Tolerability**: Higher doses are generally safe but can cause mild gastrointestinal discomfort in some individuals when consumed in very large amounts (e.g., >12 grams/day).

**UP TO DATE - ROOBHA**

BeeChoo LiangBeeChoo Liang  [12:08 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731902912642659)

Clam Extract - 3 files

A list of food products

Description automatically generated

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Description automatically generated

A close-up of a text

Description automatically generated

[12:09](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731902995990519)

BeeChoo Liang

Lemon Essential Oil - 3 files

A list of food items

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A screenshot of a computer

Description automatically generated



BeeChoo LiangBeeChoo Liang  [12:28 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731904102740569)

Lemon Oil Flavor - 3 files

A list of food items

Description automatically generated

[A list of ingredients

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A white and black text

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BeeChoo LiangBeeChoo Liang  [1:20 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731907245800219)

The typical amount of **instant coffee** used in commercial food and beverage products depends on the desired flavor strength, caffeine content, and the application (e.g., beverages, desserts, snacks). Instant coffee is a concentrated coffee product, so relatively small amounts are needed to achieve a noticeable coffee flavor.  
Typical Usage Ranges:

1. **Ready-to-Drink Coffee Beverages**:
   * **1-3 grams per 8 oz (240 ml)** serving for a mild to medium-strength coffee flavor.
   * Higher amounts (up to **4-5 grams**) are used for "bold" or "extra-strength" formulations.
2. **Instant Coffee Mixes (e.g., 3-in-1 Coffee Mixes)**:
   * **1-2 grams per serving**, combined with sugar, creamers, or milk powders.
3. **Desserts (e.g., coffee-flavored cakes, cookies, ice cream)**:
   * **0.5-2 grams per serving** or **0.2-0.5%** of the total recipe weight, depending on the intensity of coffee flavor desired.
4. **Savory Applications (e.g., coffee rubs for meats)**:
   * **0.1-0.5%** of the recipe, typically blended with spices for a subtle coffee note.
5. **Functional Foods and Supplements**:
   * **50-150 mg per serving**, primarily for caffeine content rather than flavor.

Key Considerations:

* **Caffeine Content**: Instant coffee typically contains **30-90 mg of caffeine per gram**, depending on the brand and type.
* **Flavor Profile**: It provides a quick, concentrated coffee flavor, often used to boost or complement other ingredients.
* **Quality**: High-quality freeze-dried instant coffee is preferred for premium products, while spray-dried variants are often used for cost-effectiveness in large-scale manufacturing.



BeeChoo LiangBeeChoo Liang  [2:28 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731911338029559)

The amount of **cumin** used in commercial food products depends on the type of product, its flavor profile, and the intended intensity of the cumin flavor. Cumin is typically added as ground powder, whole seeds, or in oil/extract form.  
Typical Usage Ranges:

1. **Seasoning Mixes (e.g., taco seasoning, curry blends)**:
   * **10-20% of the spice mix**: Cumin is often a key ingredient in spice blends and contributes a warm, earthy flavor.
2. **Soups and Sauces**:
   * **0.1-0.5% of the total product weight**: Used to enhance the flavor profile in stews, broths, and creamy sauces.
3. **Snack Foods (e.g., chips, nuts, crackers)**:
   * **0.2-0.5%**: Cumin powder or extract is used as a seasoning to add a distinctive aroma and taste.
4. **Meat Products (e.g., sausages, marinades)**:
   * **0.1-0.3%**: Cumin enhances the savory notes in processed meats and barbecue marinades.
5. **Rice and Grain-Based Dishes**:
   * **0.1-0.3%**: Typically included in flavored rice, pilafs, and grain side dishes for aromatic seasoning.
6. **Bakery Products (e.g., savory breads, crackers)**:
   * **0.05-0.2%**: Used sparingly to impart a subtle cumin flavor.
7. **Beverages (e.g., cumin-flavored buttermilk, spiced drinks)**:
   * **0.01-0.1%**: In small quantities, cumin adds a distinctive, aromatic note to beverages.
8. **Condiments (e.g., chutneys, dips, spreads)**:
   * **0.2-0.5%**: Provides depth and complexity to dips like hummus or yogurt-based spreads.

Considerations:

* **Form**: Ground cumin is more commonly used for even distribution, while whole seeds may be used for visual appeal or texture.
* **Flavor Strength**: Cumin has a strong, warm, and slightly bitter flavor, so it is used sparingly in delicate recipes.
* **Blends and Extracts**: Concentrated forms, like cumin oil or extracts, may require significantly lower amounts (e.g., 0.01-0.05%).

The specific amount varies widely depending on the product type and regional flavor preferences.

BeeChoo LiangBeeChoo Liang  [3:24 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731914663459829)

**Ajwain seed**, also known as carom seed, is a strong and aromatic spice often used in commercial food products for its pungent, thyme-like flavor. The typical amount varies depending on the application, as it has a bold flavor that can dominate a dish.  
Typical Usage Ranges:

1. **Baked Goods (e.g., breads, crackers, biscuits)**:
   * **0.2-0.5% of the flour weight**: Ajwain seeds are commonly added to savory baked products for a distinct flavor.
2. **Snack Foods (e.g., spiced nuts, chips, fried snacks)**:
   * **0.1-0.3% of the total product weight**: Provides a sharp, aromatic flavor to snack seasonings.
3. **Spice Blends (e.g., curry powders, masalas)**:
   * **1-5% of the spice blend**: Used in small quantities as a supporting spice in complex blends.
4. **Soups, Stews, and Lentil Dishes**:
   * **0.05-0.2% of the total product weight**: Often tempered in oil or butter to enhance flavor before being added to these dishes.
5. **Pickles and Chutneys**:
   * **0.1-0.3% of the total product weight**: Adds a distinct tangy and spicy flavor to preserved products.
6. **Rice and Grain-Based Products**:
   * **0.05-0.2% of the total product weight**: Used sparingly in flavored rice dishes like pulao or biryani for its aromatic notes.
7. **Beverages (e.g., spiced teas, buttermilk)**:
   * **0.01-0.05% of the total volume**: A small amount is enough to impart its characteristic flavor.
8. **Processed Meat or Fish Products**:
   * **0.05-0.1% of the total weight**: Occasionally used as part of spice mixes for cured or spiced meats.

Considerations:

* **Flavor Strength**: Ajwain seeds have a strong, bitter taste and should be used in moderation to avoid overpowering the dish.
* **Form**: Usually used whole or lightly crushed; in some cases, ajwain oil or extract may be used in micro-doses (e.g., **0.01-0.03%**).
* **Regional Preference**: Common in Indian, Middle Eastern, and North African cuisines, and the usage amount can vary based on cultural tastes.

Ajwain is a potent spice, and even small amounts can make a significant impact on flavor.



BeeChoo LiangBeeChoo Liang  [3:34 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731915287549409)

**Allspice**, derived from the dried berries of the Pimenta dioica tree, is a warm, aromatic spice with flavors reminiscent of cinnamon, cloves, and nutmeg. It is used in various commercial food products, often as part of spice blends or flavoring for baked goods, beverages, and savory dishes.  
Typical Usage Ranges:

1. **Baked Goods (e.g., cookies, cakes, muffins)**:
   * **0.1–0.5% of the total product weight**: Provides a warm, spicy flavor in recipes like gingerbread or spice cakes.
2. **Processed Meats (e.g., sausages, cured meats)**:
   * **0.1–0.3% of the total product weight**: Used as part of spice mixes for products like sausages, hams, or pâtés.
3. **Spice Blends (e.g., pumpkin spice, jerk seasoning, curry powders)**:
   * **5–15% of the spice blend**: Acts as a key ingredient in blends for both sweet and savory applications.
4. **Pickling and Preserved Foods**:
   * **0.05–0.2% of the total product weight**: Used to flavor brines for pickles, chutneys, or relishes.
5. **Beverages (e.g., spiced teas, mulled wine, liqueurs)**:
   * **0.01–0.1% of the total volume**: Adds complexity and warmth to beverages, often paired with other spices like cinnamon or cloves.
6. **Sauces and Marinades (e.g., barbecue sauces, stews)**:
   * **0.1–0.3% of the total product weight**: Common in Caribbean and Middle Eastern-inspired sauces and marinades.
7. **Desserts (e.g., puddings, ice creams)**:
   * **0.05–0.2% of the total product weight**: Adds depth to custards, ice creams, or fruit-based desserts.
8. **Savory Dishes (e.g., soups, stews, rice dishes)**:
   * **0.05–0.2% of the total product weight**: Provides a warm, aromatic touch to savory recipes.

Considerations:

* **Form**: Typically used ground or as whole berries, depending on the application.
* **Cultural Influence**: Usage levels may vary based on regional cuisine. For example, it is heavily used in Caribbean jerk seasoning and Middle Eastern spice blends.
* **Flavor Intensity**: Allspice has a strong flavor, so it should be used judiciously to avoid overpowering other ingredients.

This makes allspice a versatile ingredient in commercial food products, contributing to both sweet and savory profiles.



BeeChoo LiangBeeChoo Liang  [3:47 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731916048545979)

**Echinacea**, commonly used for its immune-boosting properties, is typically incorporated into commercial food products like teas, supplements, and functional foods in relatively small amounts due to its potent taste and concentrated nature.  
Typical Usage Ranges:

1. **Herbal Teas and Infusions**:
   * **0.5–1.5 g per serving** (dried echinacea or its blend): Used to create a mild herbal flavor and provide health benefits.
2. **Dietary Supplements (Capsules or Powders)**:
   * **200–400 mg per serving** (standardized extract or powder): Included in multivitamins or immune-boosting blends.
3. **Functional Beverages (e.g., immune drinks, flavored waters)**:
   * **50–150 mg per serving** (standardized extract): Provides health claims while keeping flavor subtle.
4. **Energy Bars or Snacks**:
   * **50–100 mg per serving** (powder or extract): Adds functional benefits without altering the taste significantly.
5. **Candy and Lozenges**:
   * **10–50 mg per piece**: Often used in combination with other herbal extracts and sweeteners for throat-soothing products.
6. **Powdered Drink Mixes**:
   * **100–300 mg per serving**: Often blended with other superfoods and flavoring agents.

Considerations:

* **Flavor Profile**: Echinacea has a slightly earthy and bitter taste, so its amount is carefully balanced to avoid overwhelming the flavor of the final product.
* **Regulatory Standards**: Dosages and claims regarding echinacea’s benefits must comply with food and supplement regulations in the intended market.
* **Blending**: Commonly combined with complementary ingredients like honey, citrus, or mint to enhance taste and boost appeal.

Echinacea is widely valued for its functional properties, and its amounts in commercial food products are designed to deliver perceived health benefits without compromising palatability.



BeeChoo LiangBeeChoo Liang  [4:15 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731917755607089)

**Coffee extract** is a concentrated form of coffee, commonly used in commercial food products to impart a strong coffee flavor and aroma without the need for brewing large quantities of coffee. Its use varies depending on the product type and the desired coffee intensity.  
Typical Usage Ranges:

1. **Beverages (e.g., coffees, energy drinks, iced teas)**:
   * **0.1–0.5% of the total volume** (liquid extract): Used to add a rich coffee flavor. In some energy drinks or flavored waters, coffee extract can be used to provide caffeine and flavor without the need for actual coffee.
2. **Baked Goods (e.g., cakes, muffins, cookies)**:
   * **0.5–2% of the total recipe weight**: Coffee extract is used to enhance flavor without adding the moisture that brewed coffee might.
3. **Confectionery (e.g., chocolates, candies, gummies)**:
   * **0.1–1% of the total recipe weight**: Coffee extract is commonly used in chocolate products, ice creams, and other candies for a coffee-flavored treat.
4. **Ice Cream and Frozen Desserts**:
   * **0.2–1% of the total recipe weight**: Coffee extract can add flavor and also serve as a natural colorant in desserts.
5. **Syrups and Sauces (e.g., coffee-flavored syrups, dessert sauces)**:
   * **0.5–2% of the total product weight**: Used to create a concentrated coffee flavor, especially in flavored syrups for toppings or mixed drinks.
6. **Snack Foods (e.g., granola bars, protein bars, trail mixes)**:
   * **0.2–0.5% of the total recipe weight**: Coffee extract is used for flavoring in snack items targeted toward coffee lovers or for those seeking an energy boost.
7. **Frozen Foods (e.g., coffee-flavored ice cream, frozen desserts)**:
   * **0.5–1.5% of the total product weight**: Coffee extract is often used to infuse a rich flavor profile in frozen dessert products.
8. **Cereal and Granola**:
   * **0.5–2% of the total recipe weight**: Coffee extract can be used to flavor granola, breakfast cereals, or protein shakes.

Considerations:

* **Caffeine Content**: The amount of coffee extract used will influence the caffeine content in the product. Manufacturers typically adjust this based on the intended market, with some products designed specifically for caffeine-sensitive consumers.
* **Concentration**: Coffee extracts vary in concentration, so the exact amount used depends on whether the extract is standardized (i.e., a specific caffeine level or flavor profile) or a more general form of coffee essence.
* **Flavor Balance**: Because coffee extract is quite concentrated, small amounts are used to avoid overpowering the other flavors in the product.

In summary, coffee extract is a versatile ingredient used in varying quantities to provide rich coffee flavor across a wide range of food and beverage products. The typical amount varies based on the desired flavor intensity and the type of product.



BeeChoo LiangBeeChoo Liang  [4:45 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731919532093029)

Rebaudioside A (Reb A), a purified component of stevia, is widely used as a high-intensity sweetener in commercial food products. Its typical usage varies depending on the desired sweetness level, the type of product, and its formulation. Reb A is **200–400 times sweeter than sucrose**, so very small quantities are required.  
Typical Usage Levels:

1. **Beverages (e.g., soft drinks, teas, juices):**
   * **0.02–0.1% (200–1,000 mg per liter):** Provides sweetness without calories, often blended with other sweeteners to enhance flavor balance.
2. **Baked Goods:**
   * **0.05–0.1% (0.5–1.0 g per kilogram of dough):** Used to replace sugar, sometimes with bulking agents to maintain texture.
3. **Dairy Products (e.g., yogurt, flavored milk):**
   * **0.03–0.1% (300–1,000 mg per kilogram):** Sweetens without affecting the natural flavors.
4. **Confectionery (e.g., sugar-free candy, gum):**
   * **0.05–0.2% (500–2,000 mg per kilogram):** Provides intense sweetness, often combined with sugar alcohols.
5. **Sauces and Dressings:**
   * **0.03–0.08% (300–800 mg per kilogram):** Sweetens products like ketchup and salad dressings.
6. **Processed Foods (e.g., cereals, snack bars):**
   * **0.03–0.1% (300–1,000 mg per kilogram):** Enhances sweetness while reducing sugar content.
7. **Dietary Supplements and Protein Shakes:**
   * **0.05–0.1% (500–1,000 mg per kilogram):** Sweetens without adding significant bulk.

Notes:

* **Blending:** Reb A is often used with erythritol, maltodextrin, or other carriers to mimic sugar’s bulk and flavor profile.
* **Aftertaste Management:** Using Reb A in combination with other sweeteners helps mitigate its potential bitter aftertaste.
* **Regulatory Approval:** Reb A is Generally Recognized as Safe (GRAS) in many countries, and usage levels must comply with local food regulations.

In summary, the typical amount of Reb A used in commercial food products ranges from **0.02% to 0.2%** by weight, depending on the product type and formulation.

[4:48](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731919727963569)

BeeChoo Liang

Stevia, typically used in commercial food products as an extract (e.g., rebaudioside A or steviol glycosides), is a high-intensity sweetener that is **200–400 times sweeter than sugar**. The amount used depends on the product type and sweetness desired. Since it is highly concentrated, small amounts are sufficient.  
Typical Usage Levels:

1. **Beverages (e.g., soft drinks, teas, energy drinks):**
   * **0.02–0.1% (200–1,000 mg per liter):** Provides sweetness while maintaining a low-calorie profile.
2. **Baked Goods:**
   * **0.05–0.1% (0.5–1.0 g per kilogram of dough):** Used as a sugar replacement, often with bulking agents like erythritol to maintain texture.
3. **Dairy Products (e.g., yogurt, flavored milk):**
   * **0.03–0.1% (300–1,000 mg per kilogram):** Sweetens without affecting texture or stability.
4. **Confectionery (e.g., sugar-free candies, gums, chocolates):**
   * **0.05–0.2% (500–2,000 mg per kilogram):** Sweetens intensely, typically combined with sugar alcohols to balance flavor.
5. **Processed Foods (e.g., cereals, snack bars):**
   * **0.03–0.1% (300–1,000 mg per kilogram):** Adds sweetness while reducing sugar content.
6. **Sauces and Dressings:**
   * **0.03–0.08% (300–800 mg per kilogram):** Sweetens products like ketchup and salad dressings.
7. **Dietary Supplements, Protein Powders, and Meal Replacements:**
   * **0.05–0.1% (500–1,000 mg per kilogram):** Used for sweetness without contributing bulk.
8. **Ice Cream and Frozen Desserts:**
   * **0.03–0.1% (300–1,000 mg per kilogram):** Ensures sweetness while maintaining smooth texture.

Key Considerations:

* **Form of Stevia:** The amount depends on whether pure stevia extract, blended stevia (with fillers like maltodextrin), or leaf powder is used.
* **Blending:** Stevia is often paired with other sweeteners (e.g., erythritol or sucralose) to improve taste and reduce aftertaste.
* **Aftertaste Mitigation:** Excessive use of stevia can result in a bitter or licorice-like aftertaste, so blending or using minimal quantities is common.

General Range:

* **Extracts:** **0.02–0.2%** of the product's weight.
* **Blends:** Can be higher due to added carriers or bulking agents.

Stevia's usage in commercial food products is carefully optimized to ensure sweetness, maintain texture, and avoid overpowering aftertastes.



BeeChoo LiangBeeChoo Liang  [5:01 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731920473359679)

Rebaudioside M (Reb M), a high-purity steviol glycoside derived from the Stevia plant, is a natural, zero-calorie sweetener often used in commercial food products for its clean, sugar-like taste and minimal aftertaste. Its sweetness is approximately **200–300 times** that of sucrose, so it is used in very small amounts.  
Typical Usage Levels:

1. **Beverages:**
   * **5–50 mg per liter (0.0005–0.005%)**: Used in sodas, juices, flavored waters, and energy drinks.
2. **Dairy Products:**
   * **10–80 mg per kilogram (0.001–0.008%)**: Applied in yogurt, flavored milk, and ice cream for sweetness without added calories.
3. **Confectionery:**
   * **10–50 mg per kilogram (0.001–0.005%)**: Used in sugar-free chocolates, candies, and gum.
4. **Baked Goods:**
   * **20–100 mg per kilogram (0.002–0.01%)**: Incorporated into cakes, cookies, and pastries as a sweetener replacement.
5. **Processed Foods:**
   * **10–50 mg per kilogram (0.001–0.005%)**: Included in sauces, dressings, and marinades for reduced-sugar formulations.
6. **Tabletop Sweeteners:**
   * **30–50 mg per serving**: Blended with bulking agents for portioned packets or loose sweeteners.
7. **Dietary Supplements and Functional Foods:**
   * **10–100 mg per serving**: Used to sweeten protein powders, energy bars, or nutraceuticals.

Key Factors in Usage:

* **Sweetness Intensity:** Due to its high sweetness, only minute amounts are required.
* **Blending:** Often combined with other sweeteners (e.g., erythritol, allulose) or bulking agents for balanced sweetness and texture.
* **Application-Specific Adjustments:** Adjustments are necessary based on pH, heat stability, and flavor compatibility of the product.

General Usage Range:

* **0.001–0.01%** of the product weight, depending on the application.

Reb M's clean taste profile makes it particularly desirable in products targeting calorie reduction while maintaining a sugar-like flavor experience.



BeeChoo LiangBeeChoo Liang  [5:18 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731921513672309)

**Nutmeg extract** is a concentrated flavoring derived from the seeds of the nutmeg tree (*Myristica fragrans*). It is used in small quantities in commercial food products due to its strong, warm, and spicy flavor. The typical amount of nutmeg extract used depends on the product type and desired flavor intensity.**Typical Usage Levels:**

1. **Baked Goods (e.g., cakes, cookies, muffins):**
   * **0.05–0.15% of the total product weight**
   * Provides a warm, spicy note in products like spice cakes, gingerbread, or holiday cookies.
2. **Beverages (e.g., spiced teas, lattes, eggnog):**
   * **0.01–0.05% of the total volume**
   * Adds a subtle flavor to spiced drinks, often in combination with cinnamon or clove.
3. **Confectionery (e.g., candies, chocolates):**
   * **0.02–0.1% of the total product weight**
   * Enhances flavor complexity in spiced or holiday-themed candies and chocolates.
4. **Dairy Products (e.g., flavored milk, ice cream, yogurt):**
   * **0.01–0.05% of the total product weight**
   * Used for spiced flavors in frozen desserts or creamy dairy products.
5. **Savory Foods (e.g., sauces, soups):**
   * **0.01–0.03% of the total product weight**
   * Adds warmth to cream-based sauces, mashed potatoes, or béchamel sauce.
6. **Processed Foods (e.g., sausages, spice blends):**
   * **0.01–0.05% of the total product weight**
   * Included in spice mixes for its aromatic contribution to savory dishes.

**Key Considerations:**

* **Concentration**: Nutmeg extract is highly concentrated, so only small amounts are required.
* **Blending**: Often combined with other spices like cinnamon, clove, and ginger to create complex flavor profiles.
* **Regulation**: The amount used must align with food safety guidelines to avoid overpowering flavors or potential adverse effects from excessive nutmeg consumption.

**General Usage Range**:

* **0.01–0.15% of the total product weight or volume**
* Nutmeg extract is typically used sparingly to impart its characteristic warm and aromatic notes without overwhelming the overall flavor of the product.

[5:21](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731921689207289)

BeeChoo Liang

**Pollack extract** is a concentrated flavor derived from pollack fish, often used in commercial food products to impart a savory, umami, and fish-forward taste. It is commonly found in seafood-flavored products, soups, sauces, and snacks. The typical usage varies based on the intensity of flavor desired and the type of product.**Typical Usage Levels:**

1. **Soups and Broths (e.g., seafood soups, chowders):**
   * **0.1–0.5% of the total product weight or volume**
   * Adds a rich, fishy flavor to seafood-based soups.
2. **Sauces and Marinades:**
   * **0.1–0.3% of the total product weight**
   * Used in seafood sauces, dipping sauces, or marinades for fish dishes.
3. **Snacks (e.g., crackers, chips):**
   * **0.05–0.2% of the total product weight**
   * Enhances flavor in fish-flavored snacks or crackers.
4. **Processed Foods (e.g., fish cakes, imitation seafood):**
   * **0.2–0.5% of the total product weight**
   * Contributes authentic fish flavor to processed or restructured seafood products.
5. **Seasonings and Spice Mixes:**
   * **0.05–0.1% of the total product weight**
   * Included in dry seasonings for soups, rice dishes, or snack foods.

**Key Considerations:**

* **Flavor Intensity**: Pollack extract is potent, so it is used in small amounts to achieve the desired flavor profile.
* **Pairing**: Commonly paired with umami enhancers like soy sauce, miso, or monosodium glutamate (MSG) for depth.
* **Processing Compatibility**: Heat-stable for use in cooked products, but the amount may need adjustment based on cooking times and temperatures.

**General Usage Range**:

* **0.05–0.5% of the total product weight or volume**
* Pollack extract is applied sparingly to balance its robust flavor while enhancing the overall taste profile of seafood-themed or umami-rich products.



BeeChoo LiangBeeChoo Liang  [5:51 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731923460194719)

Apple extract is a concentrated flavor or functional ingredient derived from apples, used in a variety of commercial food products for its natural sweetness, fruity flavor, or health benefits (e.g., antioxidants). The typical amount depends on the specific product and application.**Typical Usage Levels:**

1. **Beverages (e.g., juices, teas, flavored water):**
   * **0.1–0.5% of the total product weight or volume**
   * Provides a subtle apple flavor or enhances sweetness and aroma.
2. **Baked Goods (e.g., cakes, cookies, muffins):**
   * **0.2–0.5% of the total product weight**
   * Used for natural flavor enhancement or as part of a fruit-based filling.
3. **Confectionery (e.g., gummies, hard candies):**
   * **0.1–0.3% of the total product weight**
   * Imparts a fruity apple note to candies or fruit-flavored snacks.
4. **Sauces and Dressings (e.g., apple sauce, vinaigrettes):**
   * **0.2–1% of the total product weight**
   * Adds depth to apple-based or fruit-forward sauces and dressings.
5. **Dairy Products (e.g., yogurts, ice creams):**
   * **0.1–0.5% of the total product weight**
   * Enhances fruity flavors in dairy or non-dairy products.
6. **Nutritional and Functional Foods:**
   * **0.2–0.5% of the total product weight**
   * Incorporated for its antioxidant properties or mild sweetness in protein bars or powders.
7. **Snacks (e.g., chips, granola bars):**
   * **0.1–0.3% of the total product weight**
   * Used for flavoring or as part of a fruit blend.

**General Usage Range:**

* **0.1–1% of the total product weight or volume**
* Apple extract is versatile and used sparingly to achieve the desired flavor or functional effect. It works well with complementary spices like cinnamon or nutmeg in apple-flavored products.

**Key Considerations:**

* **Form**: Liquid extracts may require emulsification in some applications, while powdered forms are more suitable for dry mixes.
* **Flavor Intensity**: Adjust the amount based on the concentration of the apple extract and the desired flavor profile.

[5:52](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731923564248599)

BeeChoo Liang

Alfalfa extract, derived from the leaves of the alfalfa plant, is used in commercial food products primarily for its potential health benefits, such as its rich content of vitamins, minerals, and antioxidants. It is also used as a natural flavoring or to enhance the nutritional profile of products. The typical amount used can vary depending on the specific application.  
**Typical Usage Levels:**

1. **Beverages (e.g., health drinks, smoothies, juices):**
   * **0.1–0.5% of the total product weight or volume**
   * Used for its nutritional value or to provide mild, grassy flavors and a green color.
2. **Nutritional Supplements (e.g., powders, capsules):**
   * **500 mg to 1 gram per serving**
   * Typically used in concentrated amounts to provide health benefits like vitamins (especially vitamin K), minerals, and fiber.
3. **Baked Goods (e.g., bread, muffins):**
   * **0.1–0.2% of the total product weight**
   * Incorporated for its nutritional benefits, especially in whole grain or health-oriented baked products.
4. **Snacks (e.g., granola bars, protein bars):**
   * **0.1–0.5% of the total product weight**
   * Used for its high nutrient content, such as protein and fiber, which adds a health-focused component to snacks.
5. **Confectionery (e.g., energy or gummy supplements):**
   * **0.1–0.2% of the total product weight**
   * Incorporated for its health benefits in functional snacks and supplements.
6. **Dairy Products (e.g., yogurt, smoothies):**
   * **0.1–0.3% of the total product weight**
   * Used for its nutritional content, especially for products aimed at health-conscious consumers.
7. **Pet Foods:**
   * **0.2–1% of the total product weight**
   * Used in pet foods for its digestive benefits and nutritional value, especially for herbivorous pets.

[5:55](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731923709163049)

BeeChoo Liang

Ashwagandha extract, derived from the roots of the Withania somnifera plant, is commonly used in commercial food products for its adaptogenic properties, which help the body manage stress, anxiety, and improve overall vitality. It is increasingly popular in health supplements, beverages, and functional foods.  
**Typical Usage Levels of Ashwagandha Extract in Commercial Food Products:**

1. **Beverages (e.g., health drinks, smoothies, teas, energy drinks):**
   * **100 mg to 300 mg per serving**
   * Typically used in powdered form, ashwagandha extract is often incorporated into functional beverages for its stress-reducing and energy-boosting effects.
2. **Nutritional Supplements (e.g., capsules, tablets, powders):**
   * **300 mg to 1,000 mg per serving**
   * In supplements, ashwagandha extract is often used in higher concentrations to achieve the desired adaptogenic effects. Standard dosages are usually in the range of 300–600 mg of extract per serving, depending on the formulation.
3. **Snacks (e.g., protein bars, granola bars, energy bars):**
   * **100 mg to 200 mg per serving**
   * Used in functional snacks to provide an additional health benefit, especially for products marketed as stress-relief or mood-enhancing.
4. **Dairy Products (e.g., yogurt, milk-based drinks):**
   * **50 mg to 200 mg per serving**
   * Incorporated into dairy-based beverages or functional yogurts aimed at promoting relaxation and stress relief.
5. **Confectionery (e.g., gummies, lozenges):**
   * **100 mg to 300 mg per serving**
   * Gummies and lozenges with ashwagandha are popular in the functional food market, particularly for stress management, and they typically contain lower amounts of extract per piece.
6. **Smoothie Mixes and Powders:**
   * **100 mg to 500 mg per serving**
   * In powder form, ashwagandha extract is often added to protein powders, meal replacement shakes, or smoothie mixes for its adaptogenic and health-supporting benefits.

**General Usage Range:**

* **50 mg to 1,000 mg per serving**, depending on the product type and its intended health benefits.

**Key Considerations:**

* **Formulation**: Ashwagandha extract is most commonly available as a powder or concentrated liquid. The potency of the extract varies, so the dosage must be adjusted accordingly based on the concentration.
* **Health Benefits**: Ashwagandha is known for its stress-reducing, anti-anxiety, anti-inflammatory, and energy-boosting properties. It is typically used in products marketed for mood support, mental clarity, and overall vitality.
* **Standardized Extract**: Most commercial products use a standardized extract with a specific percentage of withanolides (the active compounds in ashwagandha). Common concentrations range from 1.5% to 5% withanolides, and the amount of extract used is adjusted based on this standardization.

**Regulatory Considerations:**

* The usage of ashwagandha extract in food products may be regulated depending on the region. In some countries, it may be considered a food supplement rather than a food ingredient, requiring certain labeling or approval for use in food products.



BeeChoo LiangBeeChoo Liang  [6:12 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731924723224889)

The typical amount of **beet extract** used in commercial food products varies depending on the product's intended use, the desired color, and the flavor profile. Beet extract is commonly used both for its **coloring** properties (especially in beverages, confections, and processed foods) and for its **nutritional value**, particularly for its potential health benefits (e.g., rich in antioxidants and nitrates).  
Here are some typical usage ranges for **beet extract** in different categories of commercial food products:  
**1. Beverages (e.g., Juices, Smoothies, Functional Drinks):**

* **Amount Used:** Typically **0.1% to 2%** of the total product weight.
* **Purpose:** Beet extract is often used to enhance the color (giving a rich red or pink hue) and to provide nutritional benefits like antioxidants. It's also sometimes used for its natural sweetness in certain drinks.

**2. Baked Goods (e.g., Cakes, Pastries, Bread):**

* **Amount Used:** Typically **0.5% to 2%** of the total flour weight.
* **Purpose:** Beet extract can be used for coloring purposes (e.g., to give a pink or reddish color to baked goods like cakes or frosting) and to enhance the nutritional profile. It's often found in naturally colored or healthier bakery items.

**3. Confectionery (e.g., Candies, Jellies, Gummies):**

* **Amount Used:** Typically **0.1% to 1%** of the total product weight.
* **Purpose:** Beet extract is used as a natural colorant in candies, gummies, and jellies. It provides a vibrant, natural red/pink color without artificial dyes. It's also used in combination with other plant extracts for natural color blending.

**4. Sauces and Dressings (e.g., Salad Dressings, Ketchup, Gravies):**

* **Amount Used:** Typically **0.2% to 1%** of the total product weight.
* **Purpose:** In sauces and dressings, beet extract is used to provide a natural color and slight sweetness. It can also help improve the texture and mouthfeel in certain applications.

**5. Meat Products (e.g., Sausages, Meat Patties, Plant-based Meats):**

* **Amount Used:** Typically **0.5% to 2%** of the total product weight.
* **Purpose:** Beet extract is commonly used in plant-based meat products (like veggie burgers or meat analogs) to provide color that mimics the look of real meat. It can also help with flavor enhancement, giving a slightly earthy, sweet note.

**6. Snacks (e.g., Chips, Crackers):**

* **Amount Used:** Typically **0.1% to 0.5%** of the total product weight.
* **Purpose:** In snacks, beet extract is used primarily for coloring, giving a pinkish or red tint to the product. It's especially popular in snacks that aim to offer more natural ingredients.

**7. Dietary Supplements and Functional Foods:**

* **Amount Used:** Typically **0.5% to 5%** of the total product weight.
* **Purpose:** Beet extract is often included in dietary supplements, energy drinks, and functional foods for its potential health benefits, such as improving blood flow and athletic performance due to its high nitrate content.

**Factors Influencing Amount Used:**

* **Purpose (Color vs. Flavor):** Beet extract can be used in varying amounts based on whether the primary goal is color enhancement, flavor, or nutritional supplementation.
* **Intensity of Color Needed:** Beet extract is highly concentrated, so smaller amounts are often sufficient for coloring. However, for health-related claims (e.g., antioxidant benefits), higher concentrations may be used.
* **Product Category:** Products like beverages and baked goods may require different amounts based on whether the extract is used primarily for color or nutritional benefits.

Conclusion:  
The typical amount of **beet extract** used in commercial food products ranges from **0.1% to 5%** depending on the type of product and the intended purpose. It is most commonly used for its vibrant natural color, but can also contribute to the nutritional profile, especially in juices, supplements, and plant-based food products.

New

[6:15](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731924948422339)

BeeChoo Liang

The typical amount of **bilberry extract** used in commercial food products varies based on its intended function, such as providing antioxidants, color, or flavor. Bilberry extract is known for its high content of anthocyanins (antioxidants), and it is often included in products marketed as supporting eye health, improving circulation, or enhancing skin health.  
Here are the typical usage ranges for **bilberry extract** in different categories of commercial food products:  
1. **Beverages (e.g., Juices, Smoothies, Functional Drinks):**

* **Amount Used:** Typically **0.1% to 2%** of the total product weight.
* **Purpose:** Bilberry extract is used to provide antioxidants (especially anthocyanins) and a mild, fruity flavor. It can also add a reddish or purple hue to beverages. The amount used depends on the desired flavor profile and color intensity, as well as the health claims associated with the product.

2. **Nutritional Supplements:**

* **Amount Used:** Typically **200 mg to 500 mg** per serving.
* **Purpose:** Bilberry extract is most commonly used in dietary supplements for its antioxidant properties and potential benefits for eye health, circulation, and anti-inflammatory effects. In supplements, the extract is typically concentrated and standardized to a certain amount of anthocyanins.

3. **Confectionery (e.g., Gummies, Chews, Hard Candies):**

* **Amount Used:** Typically **0.1% to 2%** of the total product weight.
* **Purpose:** Bilberry extract is used in confectionery for its color and health benefits. In gummies, the extract can provide both a fruity flavor and a natural color, as well as antioxidant benefits. The concentration depends on the flavor intensity and health claims made by the product.

4. **Baked Goods (e.g., Muffins, Cakes, Cookies):**

* **Amount Used:** Typically **0.2% to 2%** of the total weight of flour.
* **Purpose:** Bilberry extract in baked goods is mainly used for its antioxidant content and to add a mild berry flavor. It may also provide a slight purple or reddish color to the product. The amount used will depend on the intensity of the flavor and color required.

5. **Dairy Products (e.g., Yogurt, Ice Cream, Smoothie Bowls):**

* **Amount Used:** Typically **0.1% to 1%** of the total product weight.
* **Purpose:** In dairy products, bilberry extract is often used to enhance color and flavor. The extract provides a subtle berry flavor and natural coloring, which is especially popular in products with natural or organic claims.

6. **Snacks (e.g., Bars, Trail Mixes, Crackers):**

* **Amount Used:** Typically **0.1% to 1%** of the total product weight.
* **Purpose:** Bilberry extract is included in snack foods primarily for its antioxidant content. It can also provide a mild berry flavor. The extract is usually used in smaller quantities to enhance the health appeal of the product without overpowering the other flavors.

7. **Cosmetic and Skin Care Products:**

* **Amount Used:** Typically **0.5% to 5%** of the total product weight.
* **Purpose:** While not a food product, bilberry extract is sometimes used in cosmetic formulations for its antioxidant properties. It's often added to skin care products marketed for their anti-aging or protective benefits against environmental damage.

Factors Influencing Amount Used:

* **Purpose (Antioxidant vs. Flavor/Color):** If the main goal is to provide antioxidants, the amount used may be higher. However, if the extract is primarily for flavor or color, the amount used may be lower.
* **Product Type:** Liquid-based products (such as beverages) often require higher concentrations to achieve the desired flavor and color, while in solid products (like baked goods or snacks), the extract is typically used in smaller amounts.
* **Form of Bilberry Extract:** Concentrated extracts may be used in smaller amounts because they are more potent, while less concentrated forms may require higher quantities to achieve the same effect.

Conclusion:  
The typical amount of **bilberry extract** used in commercial food products ranges from **0.1% to 2%** for most products, although the concentration may be higher in specialized supplements or products focused on health benefits. For health-focused products like supplements, bilberry extract may be dosed in the range of **200 mg to 500 mg per serving** depending on the product.

[6:18](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731925128833969)

BeeChoo Liang

Black carrot, particularly its extract, is commonly used in commercial food products primarily for its natural color and antioxidant properties. It is rich in anthocyanins, which give it a deep purple to black color, and is also recognized for its potential health benefits, including antioxidant and anti-inflammatory effects.  
Here are typical amounts of **black carrot** used in various commercial food products:  
1. **Beverages (e.g., Juices, Soft Drinks, Functional Drinks):**

* **Amount Used:** Typically **0.1% to 1%** of the total product weight.
* **Purpose:** Black carrot extract is used to impart a natural purple or reddish hue to beverages. It also adds some antioxidant properties. The concentration used depends on the desired color intensity and the type of beverage (e.g., clear juices, smoothies, or colored drinks).

2. **Confectionery (e.g., Gummies, Candies, Chewing Gum):**

* **Amount Used:** Typically **0.2% to 2%** of the total product weight.
* **Purpose:** Black carrot extract is used in sweets primarily for its natural color and antioxidant content. It provides a vibrant purple or red color and is used in gummy candies, hard candies, and other confectioneries. The extract also helps meet the growing consumer demand for natural food colorants.

3. **Baked Goods (e.g., Cakes, Muffins, Cookies):**

* **Amount Used:** Typically **0.1% to 2%** of the total weight of flour.
* **Purpose:** In baked goods, black carrot extract can be used for both color and nutritional benefits. It provides a subtle purple hue and contributes antioxidants, especially in products that aim to be marketed as "superfoods" or "natural."

4. **Dairy Products (e.g., Yogurt, Ice Cream, Smoothie Bowls):**

* **Amount Used:** Typically **0.1% to 1%** of the total product weight.
* **Purpose:** In dairy products, black carrot extract is used to provide color and natural flavor enhancement. It is especially popular in ice cream, smoothies, and yogurt, where its vibrant purple color is visually appealing, and its antioxidants can be a selling point.

5. **Snacks (e.g., Bars, Crackers, Trail Mixes):**

* **Amount Used:** Typically **0.1% to 1%** of the total product weight.
* **Purpose:** Black carrot extract is used in snack products, especially those positioned as health-oriented. It adds color and antioxidant benefits while maintaining the overall flavor profile of the product.

6. **Processed Meat Products (e.g., Sausages, Meat Alternatives):**

* **Amount Used:** Typically **0.1% to 0.5%** of the total product weight.
* **Purpose:** In meat products (especially plant-based meat alternatives), black carrot extract is used to enhance color, making the product appear more visually appealing. It's particularly helpful in giving a "meaty" appearance to plant-based or vegetarian products.

7. **Cosmetics and Skincare Products (Non-food):**

* **Amount Used:** Typically **0.5% to 5%** of the total product weight.
* **Purpose:** Black carrot extract is sometimes used in cosmetics and skincare products for its antioxidant and skin-nourishing properties, although this is outside the food industry.

Factors Influencing Usage:

* **Product Type:** Liquid products such as beverages tend to require higher concentrations of black carrot extract for color, while solid foods like snacks or baked goods may need smaller quantities.
* **Health Claims:** Products that emphasize antioxidants or "natural" qualities may feature black carrot extract in higher concentrations to maximize health benefits or to appeal to the health-conscious consumer.
* **Desired Color Intensity:** The amount of black carrot extract used will also depend on the intensity of the color needed. Deeper hues typically require higher concentrations, while lighter colorants can be achieved with smaller amounts.

Conclusion:  
The typical amount of **black carrot extract** in commercial food products ranges from **0.1% to 2%** of the total product weight. The concentration can vary based on the specific product's color and antioxidant needs, with higher amounts used in beverages and confectionery, and smaller amounts used in baked goods and snacks.

[6:21](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731925311791609)

BeeChoo Liang

Blackcurrant extract is commonly used in commercial food products for its natural color, flavor, and antioxidant properties. It is rich in anthocyanins, which contribute to its deep purple color, as well as vitamins and minerals that offer health benefits, such as immune support and improved circulation.  
Typical Amounts of **Blackcurrant Extract** Used in Commercial Food Products:

1. **Beverages (e.g., Juices, Smoothies, Soft Drinks):**
   * **Amount Used:** Typically **0.1% to 1%** of the total product weight.
   * **Purpose:** Blackcurrant extract is used primarily for its flavor, color, and health benefits. The extract imparts a rich purple hue to drinks, and its tart, berry-like flavor is popular in fruit juices, smoothies, and functional beverages. In some cases, blackcurrant extract is used in combination with other berry or fruit extracts.
2. **Confectionery (e.g., Candies, Gummy Bears, Chocolates):**
   * **Amount Used:** Typically **0.2% to 2%** of the total product weight.
   * **Purpose:** In confectionery, blackcurrant extract is used for flavor and color. The extract can enhance the taste of sweets, and its antioxidant properties are a desirable selling point for health-conscious consumers. It also adds a natural, vibrant purple color to candies and gummies.
3. **Dairy Products (e.g., Yogurt, Ice Cream, Smoothies, Flavored Milk):**
   * **Amount Used:** Typically **0.1% to 0.5%** of the total product weight.
   * **Purpose:** Blackcurrant extract is used in dairy products for its color, flavor, and nutritional benefits. It can be found in fruit-flavored yogurts, smoothies, and ice creams, where its vibrant color and distinct tart taste are appealing.
4. **Baked Goods (e.g., Muffins, Cakes, Cookies):**
   * **Amount Used:** Typically **0.1% to 1%** of the total weight of flour.
   * **Purpose:** In baked goods, blackcurrant extract provides both flavor and color. It is often used in products like muffins and cakes, especially those that aim to highlight fruit flavors or have a health-focused marketing angle. It can also be added to fillings or frostings for added flavor.
5. **Snacks (e.g., Bars, Trail Mixes, Granola):**
   * **Amount Used:** Typically **0.1% to 1%** of the total product weight.
   * **Purpose:** Blackcurrant extract is sometimes used in health-focused snack products to enhance flavor, color, and antioxidant content. It’s found in energy bars, granola, or snack mixes, especially those marketed as being nutrient-dense.
6. **Functional Foods and Supplements:**
   * **Amount Used:** Typically **0.5% to 2%** of the total product weight.
   * **Purpose:** Due to its high antioxidant content, blackcurrant extract is often included in functional foods and dietary supplements. It's commonly used in capsules, powders, or fortified foods aimed at promoting immune health, improving circulation, or providing anti-inflammatory benefits.
7. **Cosmetics and Skincare Products (Non-food use):**
   * **Amount Used:** Typically **0.5% to 3%** of the total product weight.
   * **Purpose:** While this is outside the food industry, blackcurrant extract is also used in cosmetics for its antioxidant and anti-aging properties. It may be included in skincare products to help protect the skin from environmental damage and promote a youthful appearance.

Factors Influencing Usage:

* **Product Type:** Liquid products like beverages tend to use higher concentrations for color and flavor, while solid products such as baked goods or snacks might require lower concentrations.
* **Health Claims:** Food products that emphasize functional benefits like antioxidant properties or immunity may use higher concentrations of blackcurrant extract to highlight these benefits.
* **Desired Color and Flavor Intensity:** The amount of blackcurrant extract used is influenced by how strong a color and flavor profile are desired. More intense colors or flavors may require higher concentrations, while more subtle uses will require lower amounts.

Conclusion:  
The typical amount of **blackcurrant extract** used in commercial food products generally ranges from **0.1% to 2%** of the total product weight, depending on the type of food. Beverages, confectionery, and functional foods often use higher concentrations for both flavor and color, while baked goods and snacks tend to use smaller amounts.

[6:23](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731925436337599)

BeeChoo Liang

Blueberry extract is commonly used in commercial food products for its rich flavor, vibrant color, and health benefits, especially due to its high content of antioxidants like anthocyanins. The typical amount of blueberry extract used in food products varies depending on the type of product and its intended purpose.  
Typical Amounts of **Blueberry Extract** Used in Commercial Food Products:

1. **Beverages (e.g., Juices, Smoothies, Soft Drinks, Functional Beverages):**
   * **Amount Used:** Typically **0.1% to 1%** of the total product weight.
   * **Purpose:** Blueberry extract is often added to beverages for its natural fruit flavor, vibrant color, and antioxidant content. In juices and smoothies, it can enhance the blueberry flavor and give a deep blue/purple hue. In functional beverages, it may be included for its purported health benefits like supporting brain function and immune health.
2. **Confectionery (e.g., Gummies, Candies, Chewing Gum, Chocolates):**
   * **Amount Used:** Typically **0.2% to 2%** of the total product weight.
   * **Purpose:** In confectionery, blueberry extract adds a natural fruit flavor and color to candies, chocolates, and gummies. It's often used in health-oriented or natural candy products to provide a fruity taste while also offering the antioxidants found in blueberries.
3. **Dairy Products (e.g., Yogurt, Ice Cream, Cottage Cheese, Flavored Milk):**
   * **Amount Used:** Typically **0.1% to 0.5%** of the total product weight.
   * **Purpose:** Blueberry extract is used in dairy products for flavoring and coloring. It’s popular in fruit-flavored yogurts, ice creams, and smoothies. The extract can impart the signature blueberry taste, and its color is attractive in dairy-based products.
4. **Baked Goods (e.g., Muffins, Cakes, Cookies):**
   * **Amount Used:** Typically **0.1% to 1%** of the total weight of flour or dry ingredients.
   * **Purpose:** In baked goods, blueberry extract enhances the fruit flavor without needing the addition of whole fruit, which can affect texture or shelf life. It’s often used in items like muffins, cakes, cookies, or pies. It can also be added to fillings, glazes, or frostings for extra flavor.
5. **Snacks (e.g., Bars, Trail Mixes, Granola):**
   * **Amount Used:** Typically **0.1% to 1%** of the total product weight.
   * **Purpose:** In snack products, blueberry extract may be included to enhance the flavor profile and add nutritional benefits like antioxidants. It is often found in health-focused bars, granola, or trail mixes.
6. **Functional Foods and Supplements:**
   * **Amount Used:** Typically **0.5% to 2%** of the total product weight.
   * **Purpose:** Due to its high levels of anthocyanins and antioxidants, blueberry extract is a popular addition to functional foods and dietary supplements, often marketed for cognitive health, antioxidant properties, and general wellness. It's commonly found in capsules, powders, and fortified foods.
7. **Cosmetics (Non-food use):**
   * **Amount Used:** Typically **0.5% to 3%** of the total product weight.
   * **Purpose:** While not a food product, blueberry extract is sometimes used in skincare products for its antioxidant properties, often to protect against skin aging. It’s used in products like lotions, serums, and creams, although the percentage in cosmetics can be higher than in food.

Factors Influencing Usage:

* **Product Type:** In liquid products like beverages, a higher percentage may be used to ensure strong flavor and color. In dry or baked products, smaller amounts are typically required.
* **Health Claims:** Products marketed for health benefits, such as antioxidant-rich or anti-aging foods, may use higher concentrations of blueberry extract.
* **Color and Flavor Profile:** The desired intensity of the blueberry flavor or color may also determine how much extract is used.

Conclusion:  
The typical amount of **blueberry extract** used in commercial food products usually ranges from **0.1% to 2%** of the total product weight, depending on the type of product. Beverages, confectionery, and functional foods tend to use higher amounts, while baked goods and snacks use lower amounts. The extract is valued for its flavor, color, and antioxidant content.

[6:26](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731925572244179)

BeeChoo Liang

Bonito extract, which is derived from bonito fish (a type of tuna), is commonly used in Japanese cuisine and other food products for its umami flavor. It is typically used in soups, sauces, and seasonings to enhance the savory, rich taste of a dish. The amount of bonito extract used in commercial food products varies based on the type of product and its flavor profile.  
Typical Amounts of **Bonito Extract** Used in Commercial Food Products:

1. **Soups and Broths (e.g., Dashi, Ramen Broth, Soup Bases):**
   * **Amount Used:** Typically **0.5% to 2%** of the total weight of the broth or soup base.
   * **Purpose:** Bonito extract is a key ingredient in Japanese dashi (a basic broth) and is used to provide a deep umami flavor. It is often used in concentrated forms (powder, liquid, or paste) in ready-to-use soup bases or broth mixes. In homemade or commercial broths, it can be used in varying amounts to adjust the strength of the flavor.
2. **Sauces and Condiments (e.g., Soy Sauce, Teriyaki Sauce, Salad Dressings, Marinades):**
   * **Amount Used:** Typically **0.1% to 1%** of the total product weight.
   * **Purpose:** Bonito extract is often used in sauces to give them a savory, umami depth. It is commonly found in Japanese-style soy sauce, teriyaki sauce, and other Asian condiments. The amount used is generally small, as the extract is concentrated and has a strong flavor.
3. **Seasonings and Flavor Enhancers (e.g., Umami Powder, MSG-Free Seasoning Blends):**
   * **Amount Used:** Typically **0.2% to 2%** of the total product weight.
   * **Purpose:** Bonito extract is a popular addition to seasoning blends that are marketed as providing natural umami flavor. It is used as a substitute for MSG or in combination with other natural flavor enhancers to deepen the savory taste in various seasoning mixes and spices.
4. **Instant Noodles and Ready Meals:**
   * **Amount Used:** Typically **0.1% to 1%** of the total weight of the product.
   * **Purpose:** Bonito extract is sometimes used in the seasoning packets for instant noodles or in ready meals that require a savory flavor boost. It can be used to flavor soups, rice, or noodle-based meals.
5. **Snacks (e.g., Chips, Crackers, Seasoned Nuts):**
   * **Amount Used:** Typically **0.1% to 0.5%** of the total product weight.
   * **Purpose:** In snack products, bonito extract is used for flavoring, especially in savory snacks. It adds a fish-based umami flavor to items like chips, crackers, and seasoned nuts.
6. **Pet Food (e.g., Cat and Dog Food, Treats):**
   * **Amount Used:** Typically **0.5% to 3%** of the total product weight.
   * **Purpose:** Bonito extract is often used in pet food products, especially for cats, due to its natural fish flavor. It enhances the appeal of the product to pets and provides a protein boost in the food.

Conclusion:  
The typical amount of **bonito extract** used in commercial food products is usually **0.1% to 2%** of the total product weight, depending on the type of product and its intended flavor profile. Bonito extract is prized for its strong umami taste and is most commonly used in soups, sauces, seasonings, and ready meals. The amount used is usually small due to its concentrated nature, but it plays a significant role in boosting the savory flavor of the product.



BeeChoo LiangBeeChoo Liang  [6:35 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731926147850289)

Celery seed extract is used in commercial food products in relatively small amounts due to its strong, concentrated flavor. The typical amount of celery seed extract used in food products usually ranges from **0.1% to 1%** of the total formulation. In some cases, especially in flavoring or seasoning products, the concentration may be higher, but it's generally kept low due to its potent flavor profile.  
For instance:

* In **seasonings, spice mixes, and condiments**, celery seed extract might be used at around **0.1% to 0.5%**.
* In **beverages or functional food products** (like juices or health supplements), it might be found in the **0.1% to 0.2%** range.
* In **canned foods, pickles, or brines**, the percentage could be slightly higher but is still typically under **1%**.

The specific concentration depends on the product type and the desired intensity of flavor or health benefit.



BeeChoo LiangBeeChoo Liang  [6:44 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731926687397449)

Chinese cabbage extract is used in a variety of commercial food products, but its typical usage amount can vary depending on the product type and the intended function. Generally, the amount of Chinese cabbage extract used in food products is **low** due to its strong flavor and potential use as a functional ingredient for its nutritional or health benefits, rather than as a primary flavor.

* In **beverages**, Chinese cabbage extract might be used at **0.1% to 1%**, depending on whether it’s being used for flavor, color, or nutritional purposes (such as for its antioxidants or vitamins).
* In **sauces, soups, or broths**, the extract could be used at **0.5% to 2%** to provide subtle flavor or as a health-enhancing ingredient.
* In **snack foods** or **seasoning blends**, the usage is typically **0.1% to 1%**, often for its nutritional benefits or as a flavoring agent in combination with other ingredients.

The extract's concentration can vary based on the product’s formulation, whether it is being used for its health benefits (such as anti-inflammatory properties) or its flavor.



BeeChoo LiangBeeChoo Liang  [7:08 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731928120431359)

Dill extract is commonly used in commercial food products to impart a distinct herbal, slightly tangy flavor. It is especially popular in pickled products, salad dressings, sauces, and seasonings. The typical amount of dill extract used in food products depends on the product type and desired flavor intensity. Here are some general guidelines:

1. **Pickled Products**: Dill extract is often used in pickles, pickled vegetables, and relishes. It enhances the tangy, herbaceous flavor. The typical usage is **0.1% to 0.5%** of the total product weight.
2. **Salad Dressings and Sauces**: Dill extract is used in salad dressings (such as ranch or dill dressings) and sauces (such as tartar sauce). The amount used is typically **0.1% to 0.5%**, depending on the intended flavor profile.
3. **Seasoning Mixes**: In seasoning blends for snacks, chips, and ready-to-eat meals, dill extract might be included to provide a more concentrated dill flavor. Usage typically ranges from **0.1% to 0.3%**.
4. **Prepared Foods**: For pre-packaged foods like dips, ready meals, or soups, dill extract may be used to enhance the overall flavor profile. The amount typically used is **0.1% to 0.3%**.
5. **Baked Goods**: Dill extract may occasionally be used in baked goods like bread or crackers, particularly those with a savory or herbed profile. The typical amount is around **0.05% to 0.1%**, as dill is usually a supporting flavor in these products.

In general, dill extract is used in small quantities because of its potent flavor. The exact amount will depend on the product’s specific formulation and the desired strength of the dill flavor.

[7:11](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731928314958729)

BeeChoo Liang

Elderberry extract is commonly used in commercial food products for its distinct fruity flavor and potential health benefits, particularly for immune support. The amount of elderberry extract used in food products can vary depending on the type of product and its intended use, but here are typical ranges:

1. **Beverages**: Elderberry extract is often used in fruit juices, functional beverages, and energy drinks. The typical amount is **0.5% to 2%** of the total product, depending on the desired flavor and health claims.
2. **Dietary Supplements**: In gummies, capsules, or syrups, elderberry extract is typically concentrated for its health benefits. The amount can range from **1% to 10%**, depending on the strength of the extract and the intended dosage for health purposes.
3. **Jams, Jellies, and Spreads**: Elderberry extract is sometimes used in fruit spreads or jams to enhance the fruit flavor. The typical usage is around **0.5% to 2%**, though it can vary based on the desired flavor intensity.
4. **Baked Goods**: In products like cakes, muffins, or cookies, elderberry extract is used to provide a fruity note. The typical amount used is **0.1% to 0.5%** of the total recipe weight, depending on the product.
5. **Confections and Candies**: Elderberry extract is used in certain candies and sweets for flavoring. The typical usage is **0.5% to 2%**, depending on the concentration of the extract and the desired taste.
6. **Sauces and Dressings**: In sauces and salad dressings, elderberry extract is used to impart a fruity and slightly tart flavor. The typical amount is usually around **0.1% to 0.5%**.

Elderberry extract is potent, so it’s usually used in smaller quantities to achieve the desired flavor or health benefits without overpowering the product. The exact amount will depend on the product's intended use, flavor profile, and health-related claims.

[7:15](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731928524999439)

BeeChoo Liang

The typical amount of **garlic extract** used in commercial food products varies based on the type of product and the desired intensity of garlic flavor or health benefits. Here are general guidelines for its use in different types of products:

1. **Beverages (e.g., health drinks or tonics)**: In functional beverages or health drinks, garlic extract is often used in small quantities due to its strong flavor and potential health benefits. The typical amount is **0.1% to 0.5%** of the total product.
2. **Sauces and Dressings**: Garlic extract is frequently used in sauces, salad dressings, and marinades to impart a garlic flavor. The amount typically ranges from **0.2% to 1%**, depending on the desired strength of the garlic flavor.
3. **Processed Meats**: In products like sausages, deli meats, or jerky, garlic extract is used as a seasoning component. The typical amount is **0.1% to 0.5%** of the total product.
4. **Baked Goods**: In savory baked goods like garlic bread or seasoned rolls, garlic extract can be used for flavor enhancement. The amount typically ranges from **0.1% to 0.5%**.
5. **Spreads and Dips**: Garlic extract is commonly used in products like hummus, dips, and spreads for flavor. The typical amount is **0.1% to 0.5%**, though it can vary based on the specific product and flavor profile.
6. **Supplements**: Garlic extract in capsules or tablets for health benefits (e.g., cardiovascular support) is typically concentrated. The amount can range from **1% to 10%**, depending on the potency of the extract and the intended dosage.
7. **Snack Foods**: Garlic extract can also be used in snacks like chips, crackers, or flavored nuts. The typical range is **0.1% to 0.5%**, though it can vary based on flavor intensity.

The concentration of garlic extract in food products is generally kept low due to its strong and pungent flavor, and its usage is balanced to avoid overwhelming the other flavors in the product.



BeeChoo LiangBeeChoo Liang  [7:20 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731928843421659)

The typical amount of **lemon extract** used in commercial food products varies based on the specific product and its intended flavor profile. Here are general guidelines for its use:

1. **Beverages**: In drinks like lemon-flavored sodas, teas, or lemonades, lemon extract is often used to enhance the citrus flavor. The typical amount is around **0.1% to 0.5%** of the total product.
2. **Baked Goods**: Lemon extract is commonly used in baked goods like cakes, cookies, muffins, and pastries for its bright, citrusy flavor. The typical amount is **0.5% to 2%** of the total ingredients, depending on the strength of flavor desired.
3. **Confectionery**: In lemon-flavored candies, gummies, or sweets, lemon extract is used to provide a zesty citrus note. The amount typically ranges from **0.2% to 1%** of the total product, depending on the desired intensity.
4. **Dairy Products**: In products like lemon yogurt, lemon-flavored ice cream, or cream cheese, lemon extract is used to enhance the tangy, fresh lemon flavor. The typical amount is **0.1% to 0.5%**.
5. **Dressings and Sauces**: Lemon extract is often used in salad dressings, marinades, and sauces for a citrus boost. The typical amount is **0.1% to 0.3%** of the total product, though this may vary depending on the recipe.
6. **Snack Foods**: In lemon-flavored chips, crackers, or seasoning mixes, lemon extract is often used in smaller amounts to provide a refreshing citrus note. The typical amount is **0.1% to 0.5%**.
7. **Supplements**: In dietary supplements or health products that contain lemon for its vitamin C or detoxifying properties, lemon extract can be used in higher concentrations, typically ranging from **1% to 5%**, depending on the formulation.

Lemon extract is potent, so manufacturers typically use it in small quantities to achieve the desired flavor without overwhelming the product.



BeeChoo LiangBeeChoo Liang  [7:26 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731929170507389)

The typical amount of **mushroom extract** used in commercial food products depends on the type of product and the desired flavor profile, as mushroom extract is often used to enhance umami flavors. Here are general guidelines for its use in various food products:

1. **Soup and Broth**: Mushroom extract is commonly used in soups, broths, and gravies to add depth and savory richness. The typical amount is **0.5% to 2%** of the total product, depending on the intensity of flavor desired.
2. **Sauces and Seasonings**: In sauces (such as soy sauce or mushroom-based sauces) and seasoning blends, mushroom extract is often used to provide a savory umami kick. The typical amount is **0.1% to 1%** of the total formulation, depending on the type of sauce and desired flavor strength.
3. **Snack Foods**: Mushroom extract can be used in snack foods like chips, crackers, and seasonings for a savory taste. The typical amount is **0.2% to 1%**, with higher concentrations used in more intense flavor profiles.
4. **Prepared Meals and Ready-to-Eat Products**: Mushroom extract may be added to prepared meals, like frozen meals, for an enhanced savory profile. The amount is typically **0.5% to 1%** of the total product.
5. **Health Supplements**: Mushroom extract, particularly from medicinal mushrooms like reishi, shiitake, or maitake, is used in dietary supplements. These products may contain higher concentrations, often ranging from **1% to 10%**, depending on the extract's purpose (such as immune-boosting or stress-reducing benefits).
6. **Vegetarian and Vegan Products**: Mushroom extract is often used in plant-based or vegetarian meat alternatives (such as plant-based burgers) to replicate the meaty umami flavor. The amount is generally **0.5% to 2%**, though this can vary based on the specific formulation.

The concentration of mushroom extract in food products is generally low, as it is a highly concentrated ingredient and can overpower other flavors if used in excess. It’s typically used to enhance existing flavors or add umami depth to savory dishes.



BeeChoo LiangBeeChoo Liang  [7:36 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731929816381529)

The typical amount of **orange extract** used in commercial food products can vary based on the type of product and the desired flavor intensity. Orange extract is commonly used to impart a citrus flavor to a variety of foods and beverages, such as baked goods, candies, beverages, sauces, and ice creams. Here are some general usage guidelines:

1. **Beverages (Juices, Sodas, and Alcoholic Drinks)**: In beverages, orange extract is often used in small amounts to enhance the natural citrus flavor. Typical usage is around **0.1% to 1%** of the total volume, depending on the product.
2. **Baked Goods (Cakes, Cookies, Pastries)**: For baked goods, orange extract is usually incorporated at a rate of **0.25% to 1%** of the total recipe weight. This provides a subtle orange flavor without overpowering the other ingredients.
3. **Candies and Confectionery**: In candy, chocolates, and other confections, orange extract is often used in amounts ranging from **0.1% to 0.5%**, depending on how pronounced the orange flavor needs to be.
4. **Ice Cream and Yogurts**: Orange extract in frozen desserts or dairy products is typically used at around **0.2% to 0.5%** of the total mixture.

The specific concentration of orange extract will depend on the strength of the extract and the flavor profile desired in the final product.



BeeChoo LiangBeeChoo Liang  [7:42 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731930177482339)

The typical amount of **spice extract** used in commercial food products can vary depending on the type of spice, the product, and the desired flavor intensity. Spice extracts are commonly used to enhance or replicate the flavor of whole spices in a concentrated form. Below are general guidelines for various types of spice extracts:

1. **Cinnamon Extract**: Commonly used in baked goods, beverages, and candies. The typical usage is around **0.1% to 1%** of the total product weight, depending on the intensity of flavor desired.
2. **Ginger Extract**: Frequently used in beverages, baked goods, candies, and savory products. Typical usage levels are around **0.1% to 0.5%** of the total product weight. For stronger flavors, up to **1%** might be used.
3. **Clove Extract**: Typically used in very small amounts due to its strong flavor. Typical usage is around **0.05% to 0.2%** in most products.
4. **Nutmeg Extract**: Common in beverages, baked goods, and sauces. Usage is typically around **0.1% to 0.5%** of the total product weight, but it can vary based on flavor strength.
5. **Pepper Extract**: Used in savory foods, sauces, and snacks. Typical amounts are around **0.1% to 0.3%**, as pepper extract can have a strong impact on flavor.
6. **Vanilla Extract (a spice extract)**: In baked goods, ice creams, and confections, vanilla extract is commonly used at **0.1% to 2%** of the total product weight, depending on the desired intensity of vanilla flavor.
7. **Allspice Extract**: Commonly used in baked goods, beverages, and sauces. Typical usage ranges from **0.1% to 0.5%** of the product weight.
8. **Cardamom Extract**: Often used in sweet foods, beverages, and some savory dishes. Typical usage is around **0.1% to 0.3%**.

These amounts are based on the strength of the extract and the desired flavor profile. Spice extracts are more concentrated than ground spices, so only small amounts are typically needed to achieve the desired flavor impact.



BeeChoo LiangBeeChoo Liang  [7:52 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731930745673959)

The typical amount of **ginseng extract** used in commercial food products depends on the product type, purpose, and desired potency of the ginseng effect (e.g., energy-boosting or health benefits). Ginseng extract is commonly used in dietary supplements, energy drinks, teas, and functional foods.  
Typical usage levels include:

* **In beverages (energy drinks, teas, etc.)**: Ginseng extract is often used in concentrations ranging from **0.5% to 2%** of the total product weight, although some energy drinks may use up to **5%** depending on the desired effect.
* **In dietary supplements (capsules, tablets, powders)**: Ginseng extract is usually standardized for ginsenosides, its active compounds. Common dosages range from **100 mg to 500 mg** per serving, with some products offering higher amounts depending on the formulation.
* **In functional foods (bars, snacks, etc.)**: The concentration of ginseng extract is typically between **0.1% to 1%**, as it's meant to provide an added health benefit without overpowering the other flavors.

The exact amount can vary depending on the specific type of ginseng (e.g., American ginseng vs. Asian ginseng), the extraction method, and the intended health benefits.



BeeChoo LiangBeeChoo Liang  [7:57 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731931058868309)

Grape seed extract is widely used in commercial food products for its antioxidant properties, particularly due to its high content of polyphenols, especially **proanthocyanidins**. The typical amount of grape seed extract used in food products varies depending on the product type and intended health benefits. Here are some general guidelines:

1. **In functional beverages (juices, smoothies, or antioxidant drinks)**:
   * Grape seed extract is commonly used in concentrations ranging from **0.1% to 1.0%** of the total product. The amount depends on the desired potency and flavor balance.
2. **In dietary supplements (capsules, tablets, or powders)**:
   * For supplements, typical dosages range from **50 mg to 500 mg** of grape seed extract per serving. The amount can vary depending on the standardization of the extract (e.g., percentage of proanthocyanidins, usually 95% for high-potency extracts).
3. **In functional foods (energy bars, snacks, cereals, etc.)**:
   * Grape seed extract is often included at concentrations between **0.1% to 2%**, which allows for a balance of antioxidant benefits without overpowering the flavor profile of the food product.
4. **In cosmetics or nutraceutical food products**:
   * Grape seed extract can also be found in beauty or skin care products marketed as nutraceuticals, where concentrations may range from **0.1% to 0.5%**.

As the specific concentration depends on the formulation goals (antioxidant content, health benefits, or flavor enhancement), manufacturers typically balance these factors for optimal product performance.



BeeChoo LiangBeeChoo Liang  [8:05 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731931525241749)

The typical amount of **kelp extract** used in commercial food products varies depending on the type of product and its intended function, especially regarding its nutritional benefits (such as iodine and trace minerals). Here are some common concentrations used in various product categories:

1. **Functional Beverages and Health Drinks**:
   * Kelp extract is used at **low concentrations**, usually ranging from **0.1% to 0.5%** of the total volume. This allows for the inclusion of its nutritional benefits without impacting the flavor significantly.
2. **Nutritional Supplements (e.g., tablets, capsules, powders)**:
   * The amount of kelp extract in dietary supplements can vary widely, but a typical serving may contain between **100 mg and 1,000 mg** of kelp extract. This varies based on the iodine content, with many supplements standardized to around **0.1% to 0.5% iodine**.
3. **Processed Foods (e.g., snacks, soups, seasonings)**:
   * In processed foods, kelp extract is often used for its mineral content and umami flavor. Typical concentrations range from **0.1% to 1%** of the total product, depending on the desired taste and functional benefits.
4. **Fortified Foods (e.g., cereals, energy bars)**:
   * For fortified products, kelp extract is usually added in **small amounts**, typically around **0.1% to 0.5%** to provide a source of iodine and other micronutrients.

Overall, kelp extract is typically used in **small amounts**, with common ranges between **0.1% and 1%** of the total product weight or volume, depending on its purpose (flavor enhancement or nutritional fortification).



BeeChoo LiangBeeChoo Liang  [8:14 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731932050301809)

The amount of liquid pepper extract used in commercial food products varies depending on the desired level of heat, the type of product, and the specific formulation. However, in general:

1. **Hot Sauces and Spicy Condiments**: These products often use pepper extracts in the range of **0.1% to 1%** of the total volume, depending on the intensity of the heat desired. For example, a hot sauce with an intense heat might use higher concentrations of pepper extract.
2. **Seasoning Blends**: Liquid pepper extract can be used in seasoning blends for chips, snacks, or ready-to-eat meals. These products typically use **0.01% to 0.5%** pepper extract, which contributes heat without overpowering the flavor.
3. **Spicy Snacks (like chips or popcorn)**: For these types of products, the extract concentration might be closer to **0.05% to 0.2%**.
4. **Prepared Foods**: In sauces, marinades, or pre-seasoned dishes, the extract might range from **0.01% to 0.1%** to provide a noticeable heat without overwhelming other flavors.
5. **Functional Foods**: In products where the extract is used for its functional benefits (like promoting metabolism or as a preservative), concentrations can vary significantly but are often lower, around **0.01% to 0.1%**.

The specific concentration can also depend on the **Scoville Heat Unit (SHU)** of the extract, as more concentrated extracts (e.g., extracts from super-hot peppers like Carolina Reapers) require much smaller amounts to achieve the desired heat level.  
For regulatory and consumer safety reasons, manufacturers also carefully balance the intensity of the extract to prevent excessive heat that might make the product inedible.

[8:16](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731932163046829)

BeeChoo Liang

Onion extract is used in various commercial food products to provide flavor and aroma without the need for fresh onions. The amount of onion extract used typically depends on the desired intensity of the flavor and the type of product. Here are some general guidelines for onion extract concentrations in different food categories:

1. **Soups and Sauces**: Onion extract is commonly used in liquid form in soups, sauces, and gravies. The typical concentration ranges from **0.1% to 1%** of the total weight, depending on the intensity of the onion flavor desired. For more subtle flavor, the concentration is on the lower end of this range.
2. **Seasoning Blends and Spices**: In seasoning blends for products like chips, snacks, or seasoning packets, onion extract is often used at concentrations of around **0.05% to 0.5%**. This allows the extract to contribute to the flavor profile without overpowering the other ingredients.
3. **Prepared Foods (e.g., frozen meals, ready-to-eat meals)**: For prepared foods, onion extract can be used at **0.05% to 0.2%**. The extract enhances the overall flavor without the need for large amounts of fresh onions, which might not be suitable for the manufacturing process or shelf life.
4. **Dressings and Dips**: Onion extract is often used in salad dressings, mayonnaise, and dips, with concentrations typically ranging from **0.05% to 0.3%**. In these products, the onion extract provides a mild, savory flavor.
5. **Beverages**: In savory beverages like broths, vegetable juices, or cocktail mixers, onion extract might be used at very low levels, often **0.01% to 0.05%**, since the flavor needs to be subtle and balanced with other ingredients.
6. **Snacks and Chips**: For potato chips or snack foods that are flavored with onion, the concentration might be as low as **0.01% to 0.1%** in powdered form, as it is usually part of a seasoning mix along with other flavorings.

The precise amount of onion extract used can vary depending on the extract's potency, which depends on its concentration and the type of onion used (e.g., white, yellow, or red onions). Manufacturers often use onion extract because it provides a consistent flavor profile while extending shelf life and simplifying production.

[8:20](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731932409858809)

BeeChoo Liang

Peanut extract is typically used in commercial food products to enhance the peanut flavor, especially in products where a strong, nutty taste is desired but the use of whole peanuts is not practical. The amount of peanut extract used depends on the type of product and the intended flavor profile. Here are some general guidelines for the concentration of peanut extract in different food categories:

1. **Peanut Butters**: Peanut extract is generally used in small quantities in peanut butter, especially in products designed to intensify the peanut flavor. Typical concentrations range from **0.1% to 1%** of the total weight, depending on the desired intensity of peanut flavor.
2. **Confectionery Products (e.g., candy, chocolates)**: In peanut-flavored confections like peanut brittle, peanut candies, or chocolate bars with peanut flavor, the extract might be used at concentrations of **0.1% to 0.5%**, contributing a nutty flavor without the bulk and texture of whole peanuts.
3. **Snacks (e.g., flavored nuts, chips, crackers)**: Peanut extract is often used in flavored snack products such as peanut-flavored chips, crackers, or popcorn. The concentration might be between **0.05% and 0.2%**, often as part of a seasoning blend to enhance the overall nutty profile.
4. **Beverages (e.g., peanut milk, smoothies)**: In peanut-flavored beverages, such as peanut milk or smoothies, the concentration of peanut extract tends to be **0.1% to 0.5%**. This is to achieve a subtle but noticeable peanut flavor.
5. **Baking Products (e.g., cookies, cakes, pastries)**: Peanut extract is used in baked goods to impart a nutty flavor without adding large amounts of peanut solids, which can affect texture and moisture content. The concentration is typically around **0.1% to 0.3%**, depending on the desired intensity of the flavor.
6. **Sauces and Dressings**: In sauces, dressings, or marinades that feature peanut or a peanut-based flavor (like satay sauce), the concentration of peanut extract is typically between **0.05% to 0.2%**. This ensures a rich flavor without overwhelming the other ingredients.
7. **Health and Functional Foods**: In health bars or protein supplements, peanut extract might be used at lower concentrations, around **0.05% to 0.1%**, to provide a peanut flavor alongside other protein sources or functional ingredients.

The concentration of peanut extract is influenced by the strength of the extract itself, as well as the desired flavor profile and the overall formulation of the product. Extracts with a higher concentration of peanut flavor can be used in smaller amounts, while those with a milder flavor might require higher amounts to achieve the desired taste.

[8:23](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731932621309169)

BeeChoo Liang

Peppermint extract is commonly used in commercial food products to impart a refreshing minty flavor. The concentration of peppermint extract varies depending on the product type and the desired intensity of the flavor. Here are some typical amounts used in various food categories:

1. **Confectionery Products (e.g., candies, mints, chocolates)**: Peppermint extract is often used in candies, hard candies, mint chocolates, and gum. The typical concentration ranges from **0.1% to 1%** of the total weight, depending on the strength of the mint flavor desired. In strong peppermint-flavored products (like mint chocolates or peppermint patties), the concentration might be closer to 1%.
2. **Baked Goods (e.g., cookies, cakes, pastries)**: In baked goods such as mint-flavored cookies, cakes, and brownies, peppermint extract is typically used at concentrations of **0.1% to 0.5%**. This ensures a minty flavor without overpowering the other ingredients.
3. **Beverages (e.g., tea, flavored waters, soft drinks)**: For beverages, peppermint extract is usually used at very low concentrations, ranging from **0.01% to 0.1%**. In peppermint tea or mint-flavored water, the extract provides a subtle, refreshing mint flavor.
4. **Ice Cream and Frozen Desserts**: In mint-flavored ice creams, sorbets, and frozen desserts, peppermint extract is typically used at **0.05% to 0.2%**. This is enough to impart a minty flavor without overwhelming the sweetness or creaminess of the dessert.
5. **Chewing Gum**: In chewing gum, where the peppermint flavor is often a central characteristic, the extract can be used at **0.1% to 0.5%** of the gum base, depending on the desired mint strength.
6. **Dairy Products (e.g., yogurt, flavored milk)**: Peppermint extract is used in dairy products like mint-flavored yogurt or flavored milk at concentrations of **0.05% to 0.2%**. This ensures the mint flavor is noticeable but balanced with the creamy texture of the product.
7. **Sauces and Dressings**: Peppermint extract is occasionally used in savory or dessert sauces (like mint sauce or chutneys) at concentrations of **0.05% to 0.1%**, contributing a mild mint note to the sauce or dressing.
8. **Health and Functional Foods**: In health bars or functional food products that include mint for flavor or digestion-related benefits, peppermint extract might be used at **0.05% to 0.2%**.

The amount of peppermint extract used depends on the strength of the extract (which can vary by manufacturer) and the specific product's flavor requirements. In general, less extract is needed when the mint flavor is complemented by other ingredients (like chocolate or cream), and more is used when a strong peppermint profile is desired.

[8:27](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731932837334489)

BeeChoo Liang

Pomegranate extract is used in commercial food products primarily for its health benefits and its distinct, tart flavor. The amount of pomegranate extract used in food products depends on the desired effect, whether it's flavor enhancement or to capitalize on the antioxidant properties associated with pomegranate. Here are typical concentrations for different types of food products:

1. **Beverages (e.g., juices, smoothies, soft drinks)**: Pomegranate extract is commonly used in fruit juices, flavored waters, and smoothies. Typical concentrations range from **0.1% to 1%**. In pomegranate-flavored drinks, the extract provides a concentrated burst of flavor and color. The concentration may be lower (closer to 0.1%) in combination with other fruit flavors or higher (closer to 1%) in products that focus on pomegranate as the primary flavor.
2. **Confectionery Products (e.g., candies, gummies, chocolates)**: In candies and chocolates, pomegranate extract is typically used at concentrations of **0.1% to 0.5%**. In gummy candies, for example, the extract is used for both flavor and coloring purposes.
3. **Baked Goods (e.g., cakes, cookies, pastries)**: Pomegranate extract is sometimes used in baked goods, especially those with a fruity or exotic flavor profile. Typical concentrations range from **0.05% to 0.3%** of the total weight, as the extract provides a subtle fruitiness without dominating the other flavors.
4. **Health and Functional Foods (e.g., protein bars, supplements)**: Pomegranate extract is popular in health-focused products, including dietary supplements and functional foods marketed for their antioxidant properties. The concentration can range from **0.05% to 0.2%**, depending on the specific formulation and health claims. The extract is often used in combination with other fruit or plant extracts to provide added benefits.
5. **Sauces and Dressings**: In sauces, glazes, or dressings (such as pomegranate molasses or vinaigrettes), pomegranate extract is typically used in concentrations of **0.05% to 0.3%**. The extract enhances the tartness and fruity flavor profile without overpowering the dish.
6. **Yogurts and Dairy Products**: For yogurt, flavored milks, or other dairy products, pomegranate extract is often used at **0.05% to 0.2%**. It provides a mild tart flavor and color, complementing the creamy texture of the dairy.
7. **Ice Cream and Frozen Desserts**: In pomegranate-flavored ice creams, sorbets, or frozen desserts, pomegranate extract is typically used at **0.05% to 0.3%**, as it helps deliver a distinct fruity flavor while ensuring the extract doesn't overpower the sweetness of the dessert.
8. **Snacks (e.g., granola, trail mix)**: Pomegranate extract is sometimes added to snack products for both flavor and health benefits. Typical concentrations in snacks range from **0.05% to 0.1%**.

The concentration of pomegranate extract varies based on the potency of the extract, the specific product formulation, and the balance of other flavors. In general, it is used at lower concentrations in products where pomegranate is a secondary flavor, and at higher concentrations in products where pomegranate is the primary flavor focus.



BeeChoo LiangBeeChoo Liang  [8:45 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731933932299779)

Rice bran extract is commonly used in commercial food products for its nutritional benefits, including its rich content of antioxidants, fiber, and healthy fats, as well as for flavor and texture. The amount of rice bran extract used in food products typically depends on the desired health benefits, functional properties, and the specific product being formulated. Here are some typical concentrations for different types of food products:

1. **Beverages (e.g., juices, smoothies, functional drinks)**: Rice bran extract is sometimes used in beverages to provide fiber, antioxidants, and other nutrients. The typical concentration ranges from **0.1% to 1%**, depending on the product's intended health benefits. In functional drinks or health-focused beverages, the concentration might be higher to enhance the nutritional profile, while in flavored waters or smoothies, it might be at the lower end.
2. **Baked Goods (e.g., bread, muffins, cookies)**: In baked goods, rice bran extract is often used to boost fiber content and enhance the nutritional value. Typical concentrations are **0.1% to 0.5%** of the total weight, depending on the formulation. This concentration helps improve the fiber content without significantly altering the texture or taste of the product.
3. **Snacks (e.g., granola bars, chips, crackers)**: For snacks like granola bars or fiber-enriched products, rice bran extract is commonly used at **0.5% to 1%** to provide a mild nutty flavor and a boost of fiber. It can also be used in baked or extruded snack products to improve texture and shelf stability.
4. **Cereals and Breakfast Products**: In breakfast cereals, rice bran extract is typically used at concentrations of **0.5% to 1%**, as it enhances the nutritional profile with added fiber, vitamins, and antioxidants.
5. **Dairy Products (e.g., yogurt, milk substitutes)**: In dairy or dairy alternatives, rice bran extract is used to provide functional benefits such as increased fiber content or antioxidant properties. The typical concentration ranges from **0.05% to 0.2%**, as it is often used in combination with other ingredients to enhance the overall health profile.
6. **Meat Products (e.g., sausages, processed meats)**: In some meat products, rice bran extract is used for its ability to improve moisture retention and shelf life. The typical amount is **0.1% to 0.3%**, contributing to both the texture and nutritional value of the product.
7. **Sauces and Dressings**: In sauces and dressings, rice bran extract is sometimes added for its health benefits and mild flavor. Concentrations are typically **0.05% to 0.2%**, as it provides a subtle boost of fiber and antioxidants without significantly altering the flavor.
8. **Health and Functional Foods**: In health-focused or functional food products like protein bars, dietary supplements, and functional snacks, rice bran extract is used at higher concentrations, often **0.5% to 1%**. This allows manufacturers to take advantage of the extract's fiber, antioxidants, and other bioactive compounds.

The concentration of rice bran extract varies depending on the extract's potency and the desired health or functional properties of the product. It is typically used at lower levels in products where its flavor is not the primary focus and at higher levels in products designed to highlight its nutritional benefits.

[8:47](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731934034690719)

BeeChoo Liang

Rice extract is used in commercial food products for its mild flavor, potential health benefits, and functional properties, such as its ability to provide nutrients like amino acids, vitamins, and minerals. The amount of rice extract used in food products varies depending on the product type and its intended function. Here are some typical concentrations for rice extract in different food categories:

1. **Beverages (e.g., rice milk, rice-based drinks, smoothies)**: Rice extract is often used in beverages like rice milk or rice-based smoothies to enhance flavor, texture, and nutritional value. The typical concentration ranges from **0.1% to 2%**, depending on the formulation and the specific type of beverage. For rice milk or plant-based milk alternatives, rice extract is used to provide a mild, neutral flavor and to enrich the drink with additional nutrients.
2. **Baked Goods (e.g., bread, cakes, cookies)**: In baked goods, rice extract can be used for flavor enhancement or to improve the texture, particularly in gluten-free products. The concentration typically ranges from **0.1% to 0.5%** of the total weight, as it provides a subtle rice flavor and can aid in moisture retention.
3. **Snacks (e.g., rice-based chips, crackers, puffed rice snacks)**: In rice-based snacks, rice extract is sometimes used to enhance the flavor or nutritional profile, especially in functional snacks. Typical concentrations range from **0.1% to 0.5%**, contributing to a subtle rice taste or offering additional nutrients such as antioxidants or fiber.
4. **Health and Functional Foods (e.g., protein bars, functional snacks)**: In health-focused foods, such as protein bars, dietary supplements, or functional snacks, rice extract may be included for its nutritional benefits. The typical concentration is **0.5% to 2%**, depending on the formulation, to provide amino acids, vitamins, or other bioactive compounds.
5. **Dairy Products (e.g., rice-based yogurt, rice pudding)**: In dairy alternatives like rice-based yogurt or rice pudding, rice extract can be used to provide flavor, texture, and nutritional benefits. The concentration typically ranges from **0.1% to 0.5%**, contributing a subtle flavor while enhancing the product's texture and consistency.
6. **Sauces and Dressings**: Rice extract may be used in sauces or dressings to improve texture, thicken the sauce, or provide mild flavor enhancement. Concentrations typically range from **0.05% to 0.2%**, depending on the product and the desired impact on flavor and viscosity.
7. **Soups and Ready-to-Eat Meals**: In soups or ready-to-eat meals, rice extract can be used to enhance flavor, add nutrients, or improve the mouthfeel of the product. The concentration typically ranges from **0.1% to 0.3%** of the total weight.
8. **Rice-based Foods**: In products like rice cakes, rice noodles, or rice-based meal kits, rice extract can sometimes be used to provide additional flavor or nutritional properties. The concentration is typically **0.1% to 0.5%**.

The concentration of rice extract used in commercial food products depends on the extract's potency, its intended function (whether for flavor, texture, or nutrition), and the other ingredients in the formulation. In most cases, rice extract is used in relatively low concentrations, as it is a mild flavoring ingredient, unless the product is marketed specifically for its health benefits or rice-based content.

[8:50](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731934201519399)

BeeChoo Liang

Sage extract is used in commercial food products for its distinctive, savory flavor and potential health benefits. The amount of sage extract used in food products varies based on the product type and the intensity of flavor desired. Here are typical concentrations for sage extract in various food categories:

1. **Seasoning Blends (e.g., spice mixes, rubs, dry seasonings)**: In seasoning blends and spice mixes, sage extract is typically used in small quantities to provide a subtle herbal flavor. The typical concentration is **0.1% to 1%** of the total weight, depending on the intended flavor profile. In blends for poultry, stuffing, or meat, higher concentrations may be used, closer to 1%, to emphasize the sage flavor.
2. **Prepared Foods (e.g., ready-to-eat meals, frozen meals)**: In prepared or frozen meals, sage extract can be used to enhance the flavor of sauces, gravies, and other savory components. The concentration is generally **0.05% to 0.2%**, as the extract provides a mild background flavor without overpowering the dish.
3. **Baked Goods (e.g., bread, biscuits, crackers)**: For baked goods, especially those that are herb-flavored or feature sage as a key component, sage extract is typically used at **0.1% to 0.5%**. This allows the extract to provide flavor without affecting the texture or overall taste of the product.
4. **Sauces, Dressings, and Marinades**: In savory sauces, dressings, or marinades (such as those for meats or salads), sage extract is typically used at **0.05% to 0.2%**. The concentration can be adjusted based on how pronounced the sage flavor needs to be within the overall sauce.
5. **Herbal and Functional Foods (e.g., health supplements, teas)**: Sage extract is sometimes included in functional foods, such as herbal supplements, teas, or beverages marketed for their health benefits (e.g., digestive or anti-inflammatory properties). The concentration can range from **0.1% to 0.5%**, depending on the intended health benefits and the other ingredients involved.
6. **Soups and Broths**: In soups, broths, and stock-based products, sage extract may be used in amounts ranging from **0.05% to 0.2%**, as it helps to enhance the depth of the savory flavor profile without overpowering the other ingredients.
7. **Cheese and Dairy Products**: In cheese or dairy products that feature herbs or savory flavors, sage extract might be used in concentrations of **0.05% to 0.2%** to provide a gentle, herbal note.
8. **Meat and Processed Meat Products**: In sausages, deli meats, or processed meat products, sage extract is used to complement the seasoning. The typical concentration ranges from **0.05% to 0.2%** depending on the flavor profile of the product.

The concentration of sage extract used in commercial food products depends on the strength of the extract and the desired flavor impact. It is typically used in relatively low concentrations because sage is a strong herb, and small amounts can significantly influence the flavor profile of a product. For products where sage is a primary flavor, the concentration may be higher (closer to 1%), while in products where sage is a secondary flavor, the concentration will be lower.

[8:53](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731934393333189)

BeeChoo Liang

Fenugreek extract is commonly used in commercial food products for its unique flavor, which is slightly bitter and nutty, as well as its potential health benefits, particularly its use as a digestive aid and its high content of protein and fiber. The amount of fenugreek extract used in food products varies depending on the product type and the intended flavor profile. Here are typical concentrations for fenugreek extract in various food products:

1. **Seasoning Blends (e.g., spice mixes, curry powders)**: Fenugreek extract is often included in seasoning blends, especially those for curries, soups, and savory dishes, due to its aromatic, slightly bitter flavor. Typical concentrations range from **0.1% to 1%**, depending on the intensity of the flavor desired. Fenugreek extract is often used in combination with other spices to create a balanced flavor profile.
2. **Prepared and Ready-to-Eat Meals**: In prepared meals, such as frozen meals, soups, or gravies, fenugreek extract is used in small amounts to enhance the flavor and provide a mild, slightly bitter note. The concentration typically ranges from **0.05% to 0.2%** of the total weight, ensuring the extract complements other ingredients without dominating the flavor.
3. **Beverages (e.g., health drinks, herbal teas)**: Fenugreek extract is used in health-focused beverages, such as herbal teas or functional drinks marketed for digestive health or other wellness benefits. In these products, the typical concentration is **0.1% to 0.5%**. This allows the extract to provide its beneficial properties, such as fiber and antioxidants, without overpowering the flavor of the beverage.
4. **Snacks (e.g., flavored chips, energy bars)**: Fenugreek extract can be used in snacks, particularly those marketed as functional or health-conscious (such as energy or protein bars), for its nutritional benefits. The concentration typically ranges from **0.05% to 0.2%** to enhance the nutritional profile without significantly affecting the taste.
5. **Health and Functional Foods (e.g., dietary supplements, protein powders)**: Fenugreek extract is often used in functional foods such as dietary supplements, protein powders, or health bars due to its high nutrient content (such as protein and fiber) and potential health benefits (e.g., promoting lactation, lowering cholesterol). The concentration typically ranges from **0.5% to 2%**, depending on the intended health claim and the extract’s potency.
6. **Baked Goods (e.g., bread, cookies, pastries)**: In baked goods, fenugreek extract is sometimes used to enhance flavor or add nutritional value, especially in products aimed at health-conscious consumers. The concentration is typically **0.1% to 0.3%** to impart a subtle, nutty flavor without affecting the texture of the product.
7. **Meat Products (e.g., sausages, processed meats)**: Fenugreek extract can be used in meat products to enhance the flavor, especially in spiced or ethnic meat dishes. The typical concentration ranges from **0.05% to 0.2%**, depending on the product and the flavor intensity desired.
8. **Dairy Products (e.g., yogurt, cheese, dairy-based drinks)**: In dairy products, fenugreek extract can be used to provide a subtle, aromatic flavor or to enhance the health benefits of the product. The concentration typically ranges from **0.05% to 0.2%**.

The concentration of fenugreek extract used depends on the strength of the extract, the specific formulation of the product, and the desired flavor impact. Fenugreek is often used in relatively low concentrations because its flavor can be quite strong and bitter, and small amounts can effectively provide its unique taste and nutritional benefits. For products where fenugreek is a key flavor, higher concentrations may be used (up to 1% or more).

[8:56](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731934561467909)

BeeChoo Liang

Carrot extract is used in commercial food products for its mild, sweet, and slightly earthy flavor, as well as its color and nutritional benefits (including beta-carotene and antioxidants). The concentration of carrot extract in food products typically depends on its intended function, whether it is used for flavor, color, or health benefits. Here are typical concentrations for carrot extract in various food products:

1. **Beverages (e.g., juices, smoothies, functional drinks)**: Carrot extract is commonly used in juices and smoothies, especially those marketed as health drinks or containing vegetable blends. The typical concentration ranges from **0.1% to 1%**. In carrot juices or functional beverages, the concentration may be higher (closer to 1%) to emphasize the carrot flavor and its associated nutrients, while in multi-ingredient beverages, it is usually at the lower end of the range (around 0.1%).
2. **Baked Goods (e.g., cakes, muffins, cookies)**: In baked goods, particularly in carrot-flavored cakes, muffins, or cookies, carrot extract is used to provide flavor and enhance color. The typical concentration ranges from **0.1% to 0.5%**, depending on the strength of flavor required and the overall formulation of the product. For example, in carrot cake, the extract can contribute to both the flavor and a more vibrant color.
3. **Snacks (e.g., vegetable chips, granola bars)**: In snacks such as vegetable chips or health bars, carrot extract may be used to provide flavor or nutritional benefits (e.g., beta-carotene). The typical concentration is **0.05% to 0.2%** to enhance flavor without affecting the texture or appearance too much.
4. **Soups, Sauces, and Dressings**: Carrot extract is sometimes used in soups, sauces, or salad dressings to enhance flavor and provide a natural orange color. The concentration typically ranges from **0.05% to 0.2%**, adding a subtle sweetness and depth of flavor.
5. **Frozen Desserts (e.g., ice cream, sorbet)**: In frozen desserts, carrot extract can be used to provide a mild, natural flavor and an orange hue. The typical concentration ranges from **0.1% to 0.3%**, contributing to flavor and color without overpowering the sweetness or creaminess of the dessert.
6. **Dairy Products (e.g., yogurt, dairy-based beverages)**: In dairy products like yogurt or dairy-based drinks, carrot extract is used to provide flavor, color, and added nutritional value. The concentration typically ranges from **0.05% to 0.2%**.
7. **Health and Functional Foods (e.g., dietary supplements, protein bars)**: Carrot extract is sometimes used in functional foods marketed for their health benefits, such as providing a natural source of antioxidants or vitamin A. The concentration can range from **0.1% to 1%**, depending on the product's health claims and the strength of the extract.
8. **Meat Products (e.g., sausages, meat substitutes)**: Carrot extract can be used in processed meats or meat substitutes for both flavor and color enhancement. The concentration typically ranges from **0.05% to 0.2%**, where it provides a natural orange color and subtle vegetable flavor.

The amount of carrot extract used in food products depends on the extract's potency (which varies by manufacturer), the desired intensity of flavor, and the product's intended purpose. Carrot extract is typically used in lower concentrations when it's used for color or subtle flavor enhancement, while higher concentrations may be used in products where the carrot flavor is more prominent (such as carrot-flavored cakes or juices).



BeeChoo LiangBeeChoo Liang  [9:03 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731934981968419)

Clove extract is used in commercial food products for its strong, warm, and aromatic flavor, as well as its potential health benefits. Due to its potent flavor, clove extract is typically used in very small quantities in food formulations. Here are typical concentrations of clove extract in various food products:

1. **Beverages (e.g., soft drinks, herbal teas, juices)**: In beverages, clove extract is used sparingly to impart its distinctive flavor. The typical concentration ranges from **0.05% to 0.2%**. In herbal teas or spiced drinks (like chai or mulled wine), the concentration may be slightly higher, up to 0.2%, but it is still used in very small amounts to avoid overwhelming the drink’s overall flavor.
2. **Baked Goods (e.g., cakes, cookies, pastries)**: Clove extract is used in baked goods, especially in spiced products, to provide a warm, aromatic flavor. The typical concentration is **0.05% to 0.2%**, depending on the strength of the flavor desired. In spiced cakes or gingerbread, for example, clove extract might be used at the higher end of the range.
3. **Seasoning Blends and Spice Mixes**: Clove extract is sometimes used in seasoning blends, curry powders, and spice mixes for its aromatic properties. The concentration typically ranges from **0.05% to 0.1%**, as it is usually just one component of a larger blend, and its flavor is quite potent.
4. **Confectionery Products (e.g., candies, chewing gum)**: In confectionery, clove extract can be used to provide flavor, especially in products like hard candies, chewing gum, or spiced sweets. The typical concentration is **0.05% to 0.1%**, as clove is a strong flavor that is used sparingly in these products.
5. **Sauces, Dressings, and Marinades**: In sauces or dressings, clove extract is used to add a touch of warmth and complexity. The concentration is typically **0.05% to 0.1%**, as the extract provides a background note without overpowering the other flavors.
6. **Meat Products (e.g., sausages, marinades, processed meats)**: Clove extract can be used in small amounts in meats, especially in spice rubs, marinades, or processed meat products (such as sausages). The typical concentration is **0.05% to 0.1%**, depending on the intensity of flavor required.
7. **Health and Functional Foods (e.g., dietary supplements, herbal preparations)**: Clove extract is sometimes used in health and functional foods for its potential antioxidant and anti-inflammatory properties. The concentration in these products can range from **0.1% to 1%**, depending on the formulation and the intended health benefit.
8. **Ice Cream and Frozen Desserts**: Clove extract is sometimes used in spiced ice creams or frozen desserts. The concentration typically ranges from **0.05% to 0.2%** to provide a subtle spiced flavor.

Due to the potency of clove extract, it is typically used in very low concentrations, often less than 0.1% in many food products. The amount used is generally tailored to complement the other flavors in the product, as clove extract can easily dominate the flavor profile if overused.

[9:07](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731935246373989)

BeeChoo Liang

Cranberry extract is commonly used in commercial food products for its tart, slightly sweet flavor and its associated health benefits, particularly its high content of antioxidants and vitamin C. The amount of cranberry extract used depends on the type of product, the intended flavor profile, and the health claims associated with it. Here are typical concentrations of cranberry extract used in various food products:

1. **Beverages (e.g., juices, smoothies, functional drinks)**: Cranberry extract is widely used in beverages, particularly in cranberry juice blends, health drinks, and smoothies, where it imparts its tart, refreshing flavor. The typical concentration ranges from **0.1% to 1%**, depending on the intended flavor strength. For cranberry-focused juices, the concentration might be closer to 1%, while in multi-fruit blends or functional drinks, it tends to be lower (0.1%-0.3%).
2. **Snacks (e.g., granola bars, fruit bars, dried fruit)**: In snack products like granola bars or fruit snacks, cranberry extract is often added to enhance flavor, color, and nutritional benefits. The typical concentration ranges from **0.1% to 0.5%**, depending on the product's formulation and the balance of flavors.
3. **Baked Goods (e.g., muffins, cookies, cakes)**: Cranberry extract is used in baked goods to add a subtle fruit flavor and nutritional benefits, such as antioxidants. The concentration typically ranges from **0.1% to 0.5%**. This allows the extract to enhance flavor without affecting the texture or sweetness of the baked product.
4. **Confectionery (e.g., candies, gummies, chocolates)**: In confectionery products like candies, fruit-flavored gummies, or chocolates, cranberry extract is used to provide a tangy flavor and health benefits. The typical concentration is **0.1% to 0.5%**, depending on the desired tartness and the product’s overall sweetness.
5. **Dairy Products (e.g., yogurt, smoothies, dairy beverages)**: In dairy products, cranberry extract can be used to provide a fruit flavor, color, and additional antioxidants. The typical concentration ranges from **0.05% to 0.2%** to enhance flavor without overpowering the dairy base.
6. **Health and Functional Foods (e.g., dietary supplements, protein bars, functional snacks)**: Cranberry extract is often included in health-oriented foods, such as dietary supplements or protein bars, for its potential health benefits (e.g., urinary tract health, antioxidants). The concentration can range from **0.5% to 2%**, depending on the product’s intended health claims and the potency of the extract.
7. **Sauces, Dressings, and Marinades**: In savory products like sauces, salad dressings, and marinades, cranberry extract is sometimes used to provide a touch of tartness and color. The typical concentration is **0.1% to 0.3%**, as the extract is often a minor component of a complex flavor profile.
8. **Frozen Desserts (e.g., ice cream, sorbet)**: Cranberry extract can be used in frozen desserts for both flavor and color. The typical concentration ranges from **0.1% to 0.5%**, as it provides a subtle tart flavor and vibrant color to the dessert.
9. **Meat and Processed Meat Products**: In some processed meats or meat products, cranberry extract is used to add a touch of sweetness and tartness. The concentration typically ranges from **0.05% to 0.2%**, as it provides a flavor contrast and enhances the overall taste of the product.

The concentration of cranberry extract in commercial food products typically depends on the strength of the extract and the specific flavor, health, or color benefits desired. It is often used at lower concentrations (0.1% to 0.5%) in many products, as cranberry extract has a strong flavor that can dominate if overused. In products designed to highlight cranberry flavor or health benefits (like cranberry-focused juices or supplements), the concentration may be higher (up to 2%).

[9:10](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731935429603959)

BeeChoo Liang

Cultured celery extract is often used in commercial food products as a natural preservative, especially for its nitrate content, which helps prevent the growth of harmful bacteria and extend shelf life. It is also used for flavor, typically imparting a mild, slightly bitter, and savory taste, similar to celery. The amount of cultured celery extract used in food products can vary depending on the purpose (preservative vs. flavoring) and the type of product. Below are typical concentrations of cultured celery extract in various food products:

1. **Processed Meats (e.g., sausages, deli meats, hot dogs)**: Cultured celery extract is most commonly used in processed meats as a natural preservative, specifically to replace synthetic nitrates and nitrites. The typical concentration ranges from **0.2% to 1%**, depending on the desired effect. The extract's nitrate content helps inhibit bacterial growth, particularly *Clostridium botulinum*, and preserves the meat's color and flavor.
2. **Ready-to-Eat Meals (e.g., refrigerated or frozen meals)**: In ready-to-eat meals, especially those containing meats, cultured celery extract can be used as a preservative or flavor enhancer. The concentration typically ranges from **0.1% to 0.3%**, adding a subtle celery-like flavor and contributing to preservation.
3. **Salads and Dressings (e.g., salad kits, pre-made dressings)**: In salads or salad dressings, celery extract may be added for flavor enhancement and mild preservation. The typical concentration is **0.05% to 0.2%**. It provides a mild, savory note without overpowering the other ingredients in the dressing or salad.
4. **Snacks (e.g., flavored nuts, chips, or vegetable-based snacks)**: Cultured celery extract is sometimes included in snack foods for its flavor or preservative qualities. The typical concentration is **0.05% to 0.2%**, as it adds a subtle savory taste or extends shelf life without altering the flavor too much.
5. **Beverages (e.g., vegetable juices, smoothies)**: Celery extract can be added to beverages, particularly vegetable juices or smoothies, for flavor and color enhancement. The typical concentration is **0.05% to 0.2%**, as the celery flavor is relatively mild but can add complexity to the overall taste.
6. **Cheese and Dairy Products**: In dairy products, particularly those that are fermented (such as cheeses or dairy-based dips), cultured celery extract might be used to add flavor and aid in preservation. The concentration typically ranges from **0.05% to 0.2%**, enhancing flavor without overwhelming the product.
7. **Health and Functional Foods (e.g., dietary supplements, functional snacks)**: Cultured celery extract is sometimes included in health foods or supplements, especially those targeting natural preservation or detoxifying properties. The typical concentration ranges from **0.1% to 0.5%**, depending on the formulation.
8. **Sauces, Marinades, and Condiments**: In sauces or marinades, especially those used with meats, cultured celery extract might be included for both its preservative effects and flavor. The concentration is typically **0.05% to 0.2%**, depending on the product’s flavor profile and intended use.

In general, cultured celery extract is used in low concentrations (often below 1%) because its primary role is to act as a preservative rather than a dominant flavoring agent. The nitrate content is effective even in small amounts, and its flavor impact is usually subtle, making it suitable for use in a wide range of foods. For meat products, the concentration is generally on the higher end (0.5% to 1%) due to its preservative function, while in other products, the concentration tends to be lower (0.05% to 0.3%).

[9:14](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731935641775159)

BeeChoo Liang

Capsicum extract, commonly derived from chili peppers, is used in commercial food products primarily for its heat (spiciness), as well as its distinct flavor. It is also valued for its health benefits, such as boosting metabolism and acting as an antioxidant. The concentration of capsicum extract in food products varies depending on the desired level of heat and the purpose of its inclusion (flavoring, heat, or health benefits). Here are typical concentrations of capsicum extract used in various food products:

1. **Hot Sauces and Spicy Condiments**: Capsicum extract is a key ingredient in hot sauces, salsas, and other spicy condiments, where it provides the primary heat source. The typical concentration of capsicum extract in these products ranges from **0.1% to 1%**. In very hot sauces, the concentration may be higher, up to 5% or more, depending on the intensity of heat desired.
2. **Spicy Snacks (e.g., chips, popcorn, and pretzels)**: In spicy snack foods, capsicum extract is used to provide heat and flavor. The typical concentration is **0.05% to 0.2%**, though it can go higher in snacks marketed as "extra hot" or "extremely spicy." The amount used is typically low, as the heat can be quite intense.
3. **Prepared and Ready-to-Eat Meals**: In prepared meals, such as frozen dinners or packaged entrees, capsicum extract can be used to enhance flavor and provide a moderate level of heat. The typical concentration ranges from **0.05% to 0.2%**, depending on the spiciness level intended for the dish.
4. **Beverages (e.g., spicy cocktails, energy drinks)**: Capsicum extract can be added to beverages, particularly spicy cocktails (such as a Bloody Mary) or functional energy drinks. The concentration typically ranges from **0.01% to 0.05%**. In these products, the extract is usually used for a mild heat or unique flavor rather than for intense spiciness.
5. **Meat Products (e.g., sausages, hot dogs, jerky)**: In meat products like sausages, jerky, or hot dogs, capsicum extract can be used to provide spiciness and flavor. The typical concentration is **0.05% to 0.2%**, though higher concentrations may be used for products marketed as spicy or hot varieties.
6. **Sauces, Marinades, and Dressings**: Capsicum extract can be used in sauces, marinades, and dressings to provide heat and depth of flavor. The concentration typically ranges from **0.05% to 0.3%**, depending on the desired level of heat and flavor. For example, in barbecue sauces or spicy marinades, the extract adds flavor complexity and mild to medium heat.
7. **Spicy Seasoning Blends**: Capsicum extract is a common ingredient in spicy seasoning mixes (e.g., taco seasoning, chili powder). The concentration is typically **0.1% to 0.5%**, depending on the desired spiciness. It is often combined with other spices to create a balanced heat.
8. **Dairy Products (e.g., spicy cheese, spicy yogurt)**: Capsicum extract is sometimes used in dairy products, such as spicy cheese or spicy-flavored yogurt. The typical concentration ranges from **0.05% to 0.2%**, where it adds a subtle spiciness without overwhelming the creamy flavor of the product.
9. **Health and Functional Foods (e.g., dietary supplements, weight loss products)**: Capsicum extract is used in dietary supplements or functional foods aimed at boosting metabolism or promoting fat burning. The concentration of capsicum extract can range from **0.5% to 5%** in these products, depending on the potency of the extract and the product's intended purpose.

Capsicum extract is potent, so it is typically used in relatively low concentrations in most food products, particularly in products where the heat level needs to be carefully controlled. In products specifically designed to be very spicy (e.g., extra-hot sauces, snacks), the concentration may be higher (up to 5% or more). For most general use, concentrations of **0.05% to 1%** are typical.



BeeChoo LiangBeeChoo Liang  [9:19 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731935954771719)

Butter extract is commonly used in commercial food products to replicate the flavor of butter without using actual butter, often in applications where cost, shelf stability, or dietary restrictions are factors. The amount of butter extract used in food products varies depending on the type of product and the desired intensity of butter flavor. Here are typical concentrations of butter extract used in various food products:

1. **Baked Goods (e.g., cakes, cookies, muffins)**: In baked goods, butter extract is often used to enhance flavor and mimic the richness of butter. The typical concentration ranges from **0.1% to 1%**, depending on the desired flavor strength. For example, cookies or cakes with a buttery flavor may use butter extract at the lower end (0.1% to 0.3%), while more intense butter-flavored products may use higher amounts (up to 1%).
2. **Confectionery (e.g., candies, chocolates, toffees)**: Butter extract is commonly used in confectionery products to add a rich, creamy butter flavor. The typical concentration is **0.05% to 0.3%**. In products like toffees or caramel-flavored chocolates, the amount of butter extract may be on the higher end to mimic the buttery taste.
3. **Frozen Desserts (e.g., ice cream, butter pecan ice cream, puddings)**: In frozen desserts, butter extract can be used to replicate the buttery flavor, especially in varieties like butter pecan ice cream or puddings. The typical concentration ranges from **0.1% to 0.3%**, depending on the flavor profile desired.
4. **Snacks (e.g., popcorn, crackers)**: Butter extract is often used in snacks like flavored popcorn or crackers to provide a buttery flavor without the need for actual butter. The typical concentration is **0.05% to 0.2%**, as it is typically used in combination with other flavorings to create a buttery taste.
5. **Margarine and Spreads**: Butter extract is sometimes used in margarine and other spreads to enhance the flavor, making them taste more like butter. The concentration typically ranges from **0.05% to 0.2%** in these products, as it contributes to flavor without significantly altering texture or cost.
6. **Dairy Products (e.g., yogurt, butter-flavored cheese)**: In dairy-based products like flavored yogurt or butter-flavored cheeses, butter extract is used to provide a buttery taste. The concentration typically ranges from **0.05% to 0.2%**, giving a mild butter flavor without overpowering the other ingredients.
7. **Sauces and Dressings**: In sauces or dressings (such as salad dressings or creamy sauces), butter extract can be used to impart a rich flavor. The typical concentration is **0.05% to 0.2%**, contributing a subtle buttery note to the product.
8. **Health and Functional Foods**: Butter extract may be used in functional foods like meal replacement bars or snacks that aim to provide a creamy, buttery taste. The concentration typically ranges from **0.05% to 0.2%**, depending on the overall flavor formulation.
9. **Meat Products (e.g., buttered or flavored meats, meat substitutes)**: Butter extract is sometimes included in processed meats or meat substitutes to add a buttery flavor. The concentration is typically **0.05% to 0.1%** in these products, as it is used in conjunction with other seasonings and flavorings.

Butter extract is generally used in low concentrations due to its potent flavor. In most food products, the typical usage is between **0.05% and 1%**, with the higher end used in products designed to have a stronger butter flavor, such as butter-flavored cakes or specific confectionery items. For more subtle uses, such as in snacks or dairy products, the concentration tends to be on the lower end of the scale.



BeeChoo LiangBeeChoo Liang  [9:28 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731936537838659)

Dill seed is commonly used in commercial food products for its distinctive, slightly bitter, and aromatic flavor, which is reminiscent of caraway or anise. The amount of dill seed used depends on the type of food product and the desired intensity of flavor. Here are typical concentrations and applications:  
1. **Pickled Products (e.g., pickles, relishes, brined vegetables):**  
Dill seed is a primary flavoring agent in pickled products. The typical usage rate is around **0.1% to 0.3% by weight** of the brine or product. In highly aromatic pickles, such as dill pickles, the concentration may reach the higher end.2. **Breads and Baked Goods (e.g., rye bread, savory crackers):**  
In breads or baked goods, particularly rye bread, dill seed is used to impart a subtle earthy flavor. The typical amount ranges from **0.05% to 0.1%** of the total dough weight.3. **Meat Products (e.g., sausages, cured meats):**  
Dill seed is occasionally included in spice blends for sausages or cured meats, especially in European-style recipes. The concentration is typically **0.05% to 0.15%**, as it complements other spices without overwhelming the flavor.4. **Soups and Stews:**  
Dill seed is used in soups, particularly in recipes like borscht or vegetable soups. The typical concentration is **0.05% to 0.1%** of the total soup volume, added to enhance the overall aroma.5. **Sauces and Salad Dressings:**  
In sauces, creamy dressings, or dips (e.g., ranch or yogurt-based dressings), dill seed is often used as a minor flavoring agent. The typical usage ranges from **0.02% to 0.05%**, as a small amount is enough to provide the desired hint of flavor.6. **Snacks (e.g., flavored chips, nuts):**  
Dill seed is sometimes incorporated into spice blends for chips, pretzels, or nuts to add a savory note. The typical concentration ranges from **0.02% to 0.05%**, ensuring the flavor is noticeable but not overpowering.7. **Herbal Teas and Infusions:**  
Dill seed is occasionally used in herbal teas or spice blends for its digestive and aromatic properties. The typical concentration is **0.1% to 0.2%**, depending on the formulation and the desired intensity of flavor.8. **Vegetable Dishes:**  
In commercial frozen or pre-cooked vegetable products, dill seed can be used to enhance flavor, particularly in cabbage, potato, or carrot dishes. The concentration typically ranges from **0.05% to 0.1%**.General Guidelines:

* Dill seed has a strong and distinct flavor, so it is often used sparingly in most applications.
* The typical concentration in food products is between **0.02% and 0.3%**, with higher amounts used in products where its flavor is a key component (e.g., pickles) and lower amounts in blends or background flavoring.

Its potency and unique taste mean that careful balancing with other spices and flavors is crucial in commercial formulations.



BeeChoo LiangBeeChoo Liang  [11:48 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731944915667999)

Mono- and diglycerides are commonly used as emulsifiers and stabilizers in a wide range of commercial food products. They help improve texture, extend shelf life, and prevent separation in emulsions. The amount used varies depending on the type of product and its specific formulation. Here are typical usage levels for various applications:1. **Bakery Products (e.g., bread, cakes, pastries):**

* **Function:** Improve dough strength, increase loaf volume, prevent staling, and maintain softness.
* **Typical usage:**
  + **0.3% to 0.5%** of flour weight in bread and rolls.
  + **0.5% to 1%** in richer baked goods, such as cakes and pastries.

2. **Ice Cream and Frozen Desserts:**

* **Function:** Stabilize fat emulsion, improve creaminess, and reduce ice crystal formation.
* **Typical usage:** **0.2% to 0.5%** of the total weight.

3. **Margarine and Spreads:**

* **Function:** Emulsify oil and water phases, enhance spreadability, and stabilize the product.
* **Typical usage:** **0.2% to 1%** of the total product weight.

4. **Processed Meat Products (e.g., sausages, deli meats):**

* **Function:** Improve water and fat binding, enhance texture, and reduce fat separation.
* **Typical usage:** **0.1% to 0.3%** of the product weight.

5. **Confectionery (e.g., chocolates, caramels):**

* **Function:** Control sugar crystallization, improve smoothness, and stabilize emulsions.
* **Typical usage:** **0.2% to 0.5%** of the product weight.

6. **Dairy Products (e.g., whipped toppings, cheese spreads):**

* **Function:** Stabilize emulsions, improve texture, and prevent separation.
* **Typical usage:** **0.1% to 0.3%** of the total product weight.

7. **Beverages (e.g., protein shakes, coffee creamers):**

* **Function:** Stabilize emulsions and improve mouthfeel in fat- or protein-based beverages.
* **Typical usage:** **0.1% to 0.3%** of the total weight.

8. **Sauces, Dressings, and Gravies:**

* **Function:** Stabilize oil-water emulsions and prevent separation.
* **Typical usage:** **0.1% to 0.2%** of the product weight.

9. **Snack Foods (e.g., chips, extruded snacks):**

* **Function:** Improve texture, aid in fat dispersion, and extend shelf life.
* **Typical usage:** **0.2% to 0.4%** of the product weight.

10. **Non-Dairy Creamers and Powdered Products:**

* **Function:** Improve reconstitution properties, stabilize the emulsion, and enhance creaminess.
* **Typical usage:** **0.5% to 1%** of the total product weight.

11. **Frozen and Refrigerated Doughs:**

* **Function:** Prevent fat separation and improve handling characteristics.
* **Typical usage:** **0.3% to 0.6%** of the total dough weight.

General Guidelines:

* Mono- and diglycerides are effective even at low concentrations.
* Typical usage rates range from **0.1% to 1%** in most food products, with higher levels (up to 2%) in specific applications such as non-dairy creamers or rich baked goods.
* In combination with other emulsifiers or stabilizers, they provide synergistic effects, reducing the overall quantity needed.

Regulatory limits may apply, so usage levels are carefully monitored in food formulations.

[11:49](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731944948965239)

BeeChoo Liang

Monoglycerides are commonly used in commercial food products as emulsifiers, stabilizers, or texturizers. They help improve texture, extend shelf life, and enhance product stability by preventing oil and water separation. The amount of monoglycerides used in food products depends on the type of product and its formulation. Here are typical usage levels across various applications:1. **Bakery Products (e.g., bread, cakes, pastries):**  
Monoglycerides are widely used in bakery products to improve dough strength, extend shelf life, and maintain softness by acting as crumb softeners.

* **Typical usage:** **0.2% to 0.5%** of the flour weight in bread and rolls.
* In cakes and pastries, the range is slightly higher, around **0.3% to 1%**, depending on the richness of the recipe.

2. **Ice Cream and Frozen Desserts:**  
In ice cream, monoglycerides help stabilize the fat emulsion and improve texture by reducing ice crystal formation.

* **Typical usage:** **0.2% to 0.4%** of the total weight of the product.

3. **Margarine and Spreads:**  
Monoglycerides are used in margarine and spreads to emulsify the oil and water phases and enhance spreadability.

* **Typical usage:** **0.2% to 1%** of the total product weight.

4. **Processed Meat Products (e.g., sausages, deli meats):**  
In processed meats, monoglycerides are used to improve water and fat binding, resulting in better texture and stability.

* **Typical usage:** **0.1% to 0.3%** of the total weight of the product.

5. **Confectionery (e.g., chocolates, caramels):**  
Monoglycerides are used in confectionery to control sugar crystallization and improve the smoothness of the texture.

* **Typical usage:** **0.2% to 0.5%** of the total product weight.

6. **Dairy Products (e.g., whipped toppings, cheese spreads):**  
Monoglycerides stabilize emulsions and help maintain the creamy texture of dairy products.

* **Typical usage:** **0.1% to 0.3%** of the product weight, depending on the formulation.

7. **Snack Foods (e.g., extruded snacks, crackers, chips):**  
Monoglycerides improve texture, reduce staling, and aid in fat dispersion in snacks.

* **Typical usage:** **0.2% to 0.4%** of the product weight.

8. **Beverages (e.g., protein shakes, coffee creamers):**  
In beverages, monoglycerides are used to stabilize emulsions and improve mouthfeel, especially in products with fat or protein content.

* **Typical usage:** **0.1% to 0.3%** of the total weight.

9. **Sauces, Dressings, and Gravies:**  
Monoglycerides stabilize emulsions and prevent separation in oil-based or creamy sauces.

* **Typical usage:** **0.1% to 0.2%** of the product weight.

10. **Non-Dairy Creamers and Powdered Products:**  
Monoglycerides are used to help reconstitute powders smoothly and improve creaminess.

* **Typical usage:** **0.5% to 1%** of the total weight.

General Guidelines:  
Monoglycerides are potent and are generally used in small quantities, with concentrations ranging from **0.1% to 1%** in most food applications. In some cases, regulatory limits and the product’s functionality requirements will determine the exact amount. These additives are often combined with other emulsifiers or stabilizers to achieve the desired effect.

[11:50](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731945054744619)

BeeChoo Liang

Fennel seed is valued in commercial food products for its sweet, anise-like flavor. The amount used depends on the type of product and the desired intensity of flavor. Below are typical usage levels for fennel seed in various applications:1. **Baked Goods (e.g., bread, biscuits, cookies):**

* **Function:** Adds a warm, aromatic flavor, especially in traditional or spiced baked goods.
* **Typical usage:** **0.2% to 0.5%** of the total flour weight.

2. **Confectionery (e.g., candies, chewing gum, licorice):**

* **Function:** Provides a sweet, aromatic flavor that complements sugary or herbal profiles.
* **Typical usage:** **0.05% to 0.2%** of the product weight.

3. **Meat Products (e.g., sausages, cured meats):**

* **Function:** Enhances flavor, particularly in Mediterranean or Indian-style meats.
* **Typical usage:** **0.1% to 0.3%** of the total product weight.

4. **Pickles and Chutneys:**

* **Function:** Adds a subtle, aromatic sweetness to balance the acidity of pickled products.
* **Typical usage:** **0.1% to 0.2%** of the brine or chutney weight.

5. **Soups, Stews, and Curries:**

* **Function:** Adds depth and complexity to savory dishes.
* **Typical usage:** **0.05% to 0.1%** of the total dish weight, often as part of a spice blend.

6. **Snacks (e.g., spiced nuts, flavored crackers):**

* **Function:** Adds a distinct sweet-spicy note.
* **Typical usage:** **0.05% to 0.2%** of the product weight.

7. **Tea and Herbal Infusions:**

* **Function:** Used for its sweet, aromatic properties and digestive benefits.
* **Typical usage:** **0.1% to 0.3%** of the total blend weight.

8. **Alcoholic Beverages (e.g., liqueurs, spirits):**

* **Function:** Contributes to the flavor profile of traditional liqueurs like absinthe or aquavit.
* **Typical usage:** **0.05% to 0.1%** of the total formulation.

9. **Vegetable Dishes and Sauces:**

* **Function:** Enhances flavor in tomato-based sauces or roasted vegetable dishes.
* **Typical usage:** **0.05% to 0.1%** of the total product weight.

General Guidelines:

* **Concentration Range:** Fennel seed is potent and typically used in concentrations ranging from **0.05% to 0.5%** depending on the product.
* Higher amounts are used in baked goods or teas where fennel is a dominant flavor.
* For subtle flavoring, such as in soups or meats, lower concentrations are typical.

Fennel seeds are often used whole, crushed, or as part of spice blends, and the specific amount depends on the formulation and regional flavor preferences.

[11:53](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731945217780439)

BeeChoo Liang

Fenugreek seeds are valued for their distinctively sweet, nutty, and slightly bitter flavor. They are used in various commercial food products, particularly in Indian, Middle Eastern, and Mediterranean cuisines. The amount used depends on the product and desired flavor intensity. Below are typical usage levels for fenugreek seed in different applications:1. **Spice Blends (e.g., curry powder, garam masala):**

* **Function:** Provides a complex flavor with sweet and bitter notes.
* **Typical usage:** **1% to 5%** of the total spice blend weight, depending on the recipe.

2. **Baked Goods (e.g., breads, crackers):**

* **Function:** Adds a subtle nuttiness and warmth to breads or savory baked goods.
* **Typical usage:** **0.1% to 0.3%** of the flour weight.

3. **Pickles and Condiments:**

* **Function:** Enhances flavor in pickles, chutneys, and sauces with a tangy, aromatic note.
* **Typical usage:** **0.1% to 0.5%** of the total product weight.

4. **Processed Meats (e.g., sausages, cured meats):**

* **Function:** Adds a unique flavor profile, especially in spiced or ethnic-style meat products.
* **Typical usage:** **0.05% to 0.2%** of the product weight.

5. **Soups, Stews, and Curries:**

* **Function:** Provides depth and complexity to savory dishes.
* **Typical usage:** **0.05% to 0.2%** of the total dish weight.

6. **Snacks (e.g., spiced nuts, crackers):**

* **Function:** Adds a subtle, nutty flavor and aroma.
* **Typical usage:** **0.05% to 0.2%** of the product weight.

7. **Dairy Products (e.g., flavored cheeses, yogurt):**

* **Function:** Enhances flavor, particularly in ethnic or fusion-style dairy products.
* **Typical usage:** **0.05% to 0.1%** of the total product weight.

8. **Functional Foods and Health Products:**

* **Function:** Used for its health benefits (e.g., improving digestion, managing blood sugar).
* **Typical usage:** **0.5% to 1%** of the total formulation.

9. **Tea and Beverages:**

* **Function:** Adds a warm, slightly sweet flavor with healthful properties.
* **Typical usage:** **0.1% to 0.3%** of the total blend weight.

10. **Sauces and Gravies:**

* **Function:** Contributes to a balanced, earthy flavor.
* **Typical usage:** **0.05% to 0.2%** of the product weight.

General Guidelines:

* **Concentration Range:** Fenugreek seeds are potent, so small quantities are sufficient. Typical usage ranges from **0.05% to 1%** of the product weight.
* Higher amounts are common in spice blends or pickles where fenugreek is a prominent flavor.
* For subtle flavoring, such as in soups, meats, or snacks, lower concentrations are used.

Fenugreek seeds are used whole, ground, or as an extract, depending on the application and texture requirements of the product. Their distinct flavor profile requires careful balancing with other ingredients.

Today



BeeChoo LiangBeeChoo Liang  [12:16 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731946583940319)

Glycerol lacto esters of fatty acids (commonly abbreviated as **GLEFA**) are emulsifiers used in commercial food products to stabilize mixtures of oil and water, improve texture, and enhance shelf life. The amount used depends on the specific application and product type. Below are typical usage levels:1. **Baked Goods (e.g., breads, cakes, muffins):**

* **Function:** Improves dough strength, increases volume, and enhances crumb structure.
* **Typical usage:** **0.2% to 0.5%** of the flour weight.

2. **Confectionery (e.g., chocolates, caramels, candies):**

* **Function:** Stabilizes emulsions, prevents fat bloom, and improves texture.
* **Typical usage:** **0.2% to 0.4%** of the product weight.

3. **Dairy Products (e.g., ice cream, whipped toppings):**

* **Function:** Stabilizes emulsions, improves mouthfeel, and prevents ice crystal formation.
* **Typical usage:** **0.1% to 0.4%** of the product weight.

4. **Margarines and Spreads:**

* **Function:** Improves emulsion stability and enhances spreadability.
* **Typical usage:** **0.3% to 0.6%** of the product weight.

5. **Beverages (e.g., protein shakes, nutritional drinks):**

* **Function:** Enhances emulsion stability, particularly in oil-containing drinks.
* **Typical usage:** **0.05% to 0.2%** of the product weight.

6. **Processed Meats (e.g., sausages, deli meats):**

* **Function:** Improves fat distribution, texture, and water retention.
* **Typical usage:** **0.2% to 0.4%** of the product weight.

7. **Fried Snack Foods (e.g., chips, extruded snacks):**

* **Function:** Reduces oil absorption and improves texture.
* **Typical usage:** **0.1% to 0.3%** of the product weight.

8. **Sauces, Dressings, and Spreads:**

* **Function:** Stabilizes emulsions, prevents separation, and enhances creaminess.
* **Typical usage:** **0.2% to 0.5%** of the product weight.

9. **Chewing Gum:**

* **Function:** Acts as a plasticizer to improve texture and elasticity.
* **Typical usage:** **0.2% to 0.5%** of the product weight.

General Guidelines:

* **Concentration Range:** **0.05% to 0.6%** of the total product weight, depending on the application.
* Lower concentrations are used in beverages and dairy products for light stabilization.
* Higher concentrations are used in baked goods, spreads, and confections where stronger emulsification or textural enhancement is needed.

GLEFA is regulated as a food additive and is generally recognized as safe (GRAS) in most countries, but its usage is subject to specific limitations depending on regional food safety authorities. Always ensure compliance with relevant guidelines.

[12:20](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731946806421609)

BeeChoo Liang

Glycerol monostearate (**GMS**) is a common emulsifier and stabilizer used in commercial food products to improve texture, shelf life, and processing characteristics. The typical amount of GMS used varies by application and desired functional properties. Here are the typical usage levels across different food categories:1. **Baked Goods (e.g., breads, cakes, rolls):**

* **Function:** Improves dough stability, crumb softness, and extends shelf life.
* **Typical usage:** **0.2% to 0.5%** of the flour weight.

2. **Confectionery (e.g., chocolates, caramels, toffees):**

* **Function:** Acts as an emulsifier, prevents sugar recrystallization, and enhances texture.
* **Typical usage:** **0.3% to 0.6%** of the product weight.

3. **Dairy Products (e.g., ice cream, whipped cream, non-dairy creamers):**

* **Function:** Stabilizes emulsions, improves creaminess, and prevents ice crystal formation.
* **Typical usage:** **0.1% to 0.4%** of the product weight.

4. **Beverages (e.g., protein shakes, powdered drinks):**

* **Function:** Prevents separation, stabilizes emulsions, and improves solubility in powder mixes.
* **Typical usage:** **0.1% to 0.3%** of the product weight.

5. **Fried and Snack Foods (e.g., chips, extruded snacks):**

* **Function:** Reduces oil absorption during frying and improves texture.
* **Typical usage:** **0.2% to 0.5%** of the product weight.

6. **Processed Meats (e.g., sausages, patties):**

* **Function:** Improves water retention, enhances fat dispersion, and stabilizes texture.
* **Typical usage:** **0.2% to 0.4%** of the product weight.

7. **Margarines and Spreads:**

* **Function:** Enhances emulsification, improves texture, and prevents oil separation.
* **Typical usage:** **0.3% to 0.5%** of the product weight.

8. **Instant and Convenience Foods (e.g., noodles, soup bases):**

* **Function:** Stabilizes fats, improves product texture, and enhances mouthfeel.
* **Typical usage:** **0.2% to 0.5%** of the product weight.

9. **Desserts (e.g., puddings, custards, mousses):**

* **Function:** Stabilizes emulsions, enhances creaminess, and prevents syneresis (water separation).
* **Typical usage:** **0.1% to 0.3%** of the product weight.

General Guidelines:

* **Concentration Range:** **0.1% to 0.6%** of the total product weight, depending on the application.
  + Lower concentrations are used in beverages and dairy products for light stabilization.
  + Higher concentrations are used in baked goods, spreads, and confections for stronger emulsification and structural benefits.

Regulatory Considerations:  
Glycerol monostearate is **Generally Recognized as Safe (GRAS)** and is permitted for use under food additive regulations. However, usage levels must comply with local regulatory standards. Always verify regional guidelines for maximum allowable limits.



BeeChoo LiangBeeChoo Liang  [12:25 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731947127885189)

Glyceryl lacto esters of fatty acids (**GLEFA**) are emulsifiers used in various commercial food products to stabilize emulsions, improve texture, and enhance shelf life. The amount used depends on the product and its intended functionality. Below are the typical usage levels of GLEFA across different applications:1. **Baked Goods (e.g., breads, cakes, pastries):**

* **Function:** Improves dough handling, enhances volume, and softens crumb texture.
* **Typical usage:** **0.2% to 0.5%** of the flour weight.

2. **Confectionery (e.g., chocolates, caramels, toffees):**

* **Function:** Stabilizes emulsions, prevents sugar crystallization, and enhances texture.
* **Typical usage:** **0.2% to 0.4%** of the product weight.

3. **Dairy and Non-Dairy Products (e.g., ice cream, whipped toppings):**

* **Function:** Stabilizes emulsions, improves creaminess, and prevents phase separation.
* **Typical usage:** **0.1% to 0.4%** of the product weight.

4. **Beverages (e.g., protein shakes, oil-based drinks):**

* **Function:** Enhances emulsion stability and prevents separation in oil-based drinks.
* **Typical usage:** **0.05% to 0.2%** of the product weight.

5. **Processed Meats (e.g., sausages, deli products):**

* **Function:** Stabilizes fat emulsions, improves water retention, and enhances texture.
* **Typical usage:** **0.2% to 0.4%** of the product weight.

6. **Snack Foods (e.g., chips, extruded snacks):**

* **Function:** Reduces oil absorption during frying and improves texture.
* **Typical usage:** **0.1% to 0.3%** of the product weight.

7. **Margarines and Spreads:**

* **Function:** Prevents oil separation, improves spreadability, and stabilizes texture.
* **Typical usage:** **0.3% to 0.6%** of the product weight.

8. **Sauces, Dressings, and Spreads:**

* **Function:** Stabilizes emulsions, prevents separation, and improves consistency.
* **Typical usage:** **0.2% to 0.5%** of the product weight.

General Guidelines:

* **Concentration Range:** Typically **0.05% to 0.6%** of the total product weight, depending on the application.
  + **Lower concentrations** are common in beverages and light emulsions.
  + **Higher concentrations** are used in baked goods, confections, and spreads where stronger emulsification is required.

Regulatory Notes:  
GLEFA is regulated as a food additive and is generally recognized as safe (**GRAS**) in most countries. However, its use must adhere to local food safety regulations, which may specify maximum allowable limits depending on the application. Always confirm compliance with regional guidelines.



BeeChoo LiangBeeChoo Liang  [12:32 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731947571257699)

Glyceryl monostearate (**GMS**) is a versatile emulsifier and stabilizer used in various commercial food products to improve texture, shelf life, and processing efficiency. The typical usage levels of GMS vary depending on the product and application. Here are the typical ranges for GMS across different food categories:1. **Baked Goods (e.g., breads, cakes, muffins):**

* **Function:** Improves dough stability, increases volume, and enhances crumb softness.
* **Typical usage:** **0.2% to 0.5%** of the flour weight.

2. **Confectionery (e.g., chocolates, caramels, toffees):**

* **Function:** Prevents sugar recrystallization, stabilizes emulsions, and improves texture.
* **Typical usage:** **0.3% to 0.6%** of the product weight.

3. **Dairy Products (e.g., ice cream, whipped cream, non-dairy creamers):**

* **Function:** Stabilizes emulsions, improves creaminess, and prevents ice crystal formation.
* **Typical usage:** **0.1% to 0.4%** of the product weight.

4. **Beverages (e.g., protein shakes, powdered drink mixes):**

* **Function:** Prevents separation and enhances solubility in oil-containing or rehydrated products.
* **Typical usage:** **0.1% to 0.3%** of the product weight.

5. **Snack Foods (e.g., chips, extruded snacks):**

* **Function:** Reduces oil absorption during frying and improves texture.
* **Typical usage:** **0.1% to 0.3%** of the product weight.

6. **Processed Meats (e.g., sausages, patties, deli products):**

* **Function:** Enhances fat dispersion, improves water retention, and stabilizes texture.
* **Typical usage:** **0.2% to 0.4%** of the product weight.

7. **Margarines and Spreads:**

* **Function:** Prevents oil separation, improves spreadability, and stabilizes emulsions.
* **Typical usage:** **0.3% to 0.5%** of the product weight.

8. **Desserts (e.g., puddings, custards, mousses):**

* **Function:** Stabilizes emulsions and enhances creaminess while preventing syneresis (water separation).
* **Typical usage:** **0.1% to 0.3%** of the product weight.

General Guidelines:

* **Concentration Range:** **0.1% to 0.6%** of the total product weight.
  + Lower concentrations are used in light applications like beverages and dairy products.
  + Higher concentrations are applied in baked goods, confections, and emulsified spreads for stronger stabilization and textural effects.

Regulatory Considerations:  
GMS is **Generally Recognized as Safe (GRAS)** for use in food and is permitted as an additive under most food safety standards. Ensure compliance with local regulatory guidelines for maximum allowable limits and labeling requirements.



BeeChoo LiangBeeChoo Liang  [12:41 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731948079944589)

Lactic acid esters of mono- and diglycerides (**LAEMG**) are emulsifiers commonly used in commercial food products to stabilize emulsions, improve texture, and enhance shelf life. These esters help to improve the mixing of oils and water-based ingredients. The amount of LAEMG used in food products typically varies depending on the application. Here are typical usage levels across various food categories:1. **Baked Goods (e.g., breads, cakes, muffins):**

* **Function:** Improves dough stability, enhances volume, and softens crumb texture.
* **Typical usage:** **0.1% to 0.5%** of the flour weight.

2. **Confectionery (e.g., chocolates, caramels, toffees):**

* **Function:** Stabilizes emulsions, enhances texture, and prevents crystallization of sugars.
* **Typical usage:** **0.2% to 0.5%** of the product weight.

3. **Dairy Products (e.g., ice cream, whipped toppings, non-dairy creamers):**

* **Function:** Stabilizes emulsions, improves mouthfeel, and prevents ice crystal formation.
* **Typical usage:** **0.1% to 0.4%** of the product weight.

4. **Processed Meats (e.g., sausages, patties, deli meats):**

* **Function:** Enhances fat emulsification, water retention, and texture stabilization.
* **Typical usage:** **0.2% to 0.4%** of the product weight.

5. **Beverages (e.g., protein shakes, nutritional drinks):**

* **Function:** Stabilizes emulsions in oil-based beverages, preventing separation.
* **Typical usage:** **0.1% to 0.3%** of the product weight.

6. **Margarines and Spreads:**

* **Function:** Prevents oil separation, improves spreadability, and stabilizes texture.
* **Typical usage:** **0.3% to 0.6%** of the product weight.

7. **Snack Foods (e.g., chips, extruded snacks):**

* **Function:** Reduces oil absorption during frying and improves texture.
* **Typical usage:** **0.1% to 0.3%** of the product weight.

8. **Salad Dressings and Sauces:**

* **Function:** Stabilizes emulsions, prevents separation, and enhances smoothness.
* **Typical usage:** **0.2% to 0.5%** of the product weight.

9. **Instant Foods (e.g., instant noodles, soup bases):**

* **Function:** Stabilizes fat emulsions and improves product texture and mouthfeel.
* **Typical usage:** **0.1% to 0.3%** of the product weight.

General Guidelines:

* **Concentration Range:** **0.05% to 0.6%** of the total product weight.
  + **Lower concentrations** are often used in beverages, sauces, and dairy products for light emulsification.
  + **Higher concentrations** are used in products like margarine, baked goods, and confectionery to achieve stronger emulsification and improved texture.

Regulatory Considerations:  
Lactic acid esters of mono- and diglycerides are generally recognized as safe (**GRAS**) by regulatory bodies in many countries and are used as food additives within specified limits. As always, it’s important to adhere to local food safety regulations regarding the allowable usage levels and labeling of emulsifiers.



BeeChoo LiangBeeChoo Liang  [12:46 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731948387739949)

Mace, the spice derived from the outer covering of nutmeg seeds, is used in commercial food products primarily for its warm, aromatic flavor, which is similar to nutmeg but slightly more delicate. The typical usage levels of mace in food products vary depending on the product type and desired flavor intensity.  
Typical Usage Levels of Mace in Commercial Food Products:1. **Baked Goods (e.g., cakes, cookies, pies):**

* **Function:** Adds a warm, spicy flavor and complements sweet and savory ingredients.
* **Typical usage:** **0.05% to 0.15%** of the total product weight.

2. **Confectionery (e.g., chocolates, candies, marzipan):**

* **Function:** Enhances flavor with a subtle spice note, often in combination with other warm spices like cinnamon or nutmeg.
* **Typical usage:** **0.05% to 0.2%** of the product weight.

3. **Dairy Products (e.g., flavored milk, ice cream, yogurts):**

* **Function:** Imparts a mild, aromatic flavor to dairy-based products.
* **Typical usage:** **0.05% to 0.1%** of the product weight.

4. **Sauces and Gravies (e.g., curry sauces, béchamel):**

* **Function:** Adds depth and warmth to savory sauces, often in combination with other spices.
* **Typical usage:** **0.05% to 0.1%** of the product weight.

5. **Spiced Beverages (e.g., mulled wine, chai, hot chocolate):**

* **Function:** Provides a spicy, aromatic kick to warm beverages.
* **Typical usage:** **0.05% to 0.1%** of the beverage weight.

6. **Savory Products (e.g., sausages, meat dishes, seasonings):**

* **Function:** Adds a subtle warmth to meat dishes and spice blends.
* **Typical usage:** **0.05% to 0.1%** of the total product weight.

7. **Instant Foods (e.g., soups, gravies, spice mixes):**

* **Function:** Adds a flavorful aromatic note to spice blends for ready-to-eat meals.
* **Typical usage:** **0.05% to 0.1%** of the product weight.

General Guidelines:

* **Concentration Range:** **0.05% to 0.2%** of the total product weight, depending on the intensity of flavor required.
  + Mace is typically used in **smaller quantities** than other spices like cinnamon or nutmeg, as it has a more delicate flavor.
  + **Lower concentrations** are used in beverages, dairy, and confectionery, while **higher concentrations** are used in baked goods and savory products.

Regulatory Considerations:  
Mace is generally recognized as safe (GRAS) when used appropriately in food. However, as with all spices, its usage is subject to local food safety regulations, and maximum usage levels may be specified by regulatory authorities depending on the region.

[12:48](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731948525416109)

BeeChoo Liang

Madagascar vanilla, known for its rich, aromatic flavor, is a popular ingredient in a wide range of commercial food products. The amount used typically depends on the type of product and the desired intensity of flavor. Vanilla extract and vanilla beans are the most common forms of Madagascar vanilla used in food manufacturing. Here's an overview of typical usage levels:  
Typical Usage Levels of Madagascar Vanilla in Commercial Food Products:1. **Baked Goods (e.g., cakes, cookies, muffins):**

* **Function:** Provides a sweet, aromatic flavor that complements other ingredients.
* **Typical usage:** **0.1% to 0.3%** of the total product weight for vanilla extract.
  + **Vanilla beans** (in the form of seeds or paste) may be used in higher concentrations for more intense flavor, typically around **0.2% to 0.5%**.

2. **Confectionery (e.g., chocolates, candies, ice cream):**

* **Function:** Adds a smooth, creamy flavor that balances sweetness and enhances richness.
* **Typical usage:** **0.1% to 0.3%** of the product weight for vanilla extract.
  + **Vanilla paste** or **vanilla beans** may be used at **0.2% to 0.5%** for more pronounced flavor.

3. **Dairy Products (e.g., ice cream, yogurt, flavored milk):**

* **Function:** Imparts a creamy, sweet vanilla flavor, especially in dairy-based products.
* **Typical usage:** **0.1% to 0.3%** of the product weight for vanilla extract.
  + **Vanilla paste** or **vanilla beans** may be used at **0.2% to 0.5%** depending on the product and flavor profile.

4. **Beverages (e.g., flavored coffees, smoothies, soft drinks):**

* **Function:** Provides a smooth, aromatic note to beverages, often in combination with other flavorings.
* **Typical usage:** **0.05% to 0.1%** of the product weight for vanilla extract.

5. **Sauces and Dressings (e.g., custards, vanilla sauce, salad dressings):**

* **Function:** Adds a delicate vanilla flavor to enhance sweetness in sauces or dressings.
* **Typical usage:** **0.1% to 0.3%** of the product weight for vanilla extract or **0.2% to 0.5%** for vanilla beans or paste.

6. **Spreads and Jams (e.g., vanilla-flavored spreads, fruit preserves):**

* **Function:** Enhances sweetness and imparts a soft, rich flavor profile.
* **Typical usage:** **0.1% to 0.3%** of the product weight for vanilla extract.

7. **Frozen Desserts (e.g., vanilla ice cream, sorbets, gelato):**

* **Function:** Delivers a rich, complex vanilla flavor that is characteristic of high-quality vanilla ice creams.
* **Typical usage:** **0.2% to 0.5%** of the product weight for vanilla extract.
  + **Vanilla beans or paste** may be used at **0.5% to 1.0%** for a more intense vanilla flavor.

8. **Flavored Snacks (e.g., vanilla-flavored granola, protein bars):**

* **Function:** Imparts a pleasant sweetness and enhances the overall flavor.
* **Typical usage:** **0.05% to 0.1%** of the product weight for vanilla extract.

General Guidelines:

* **Vanilla extract** (the most common form used in food products) is typically used at **0.05% to 0.5%** of the product weight, depending on the strength of the extract and the flavor intensity required.
* **Vanilla beans or vanilla paste** are used at higher levels (around **0.2% to 1.0%**) for products where a more pronounced or premium vanilla flavor is desired.

Regulatory Considerations:  
Madagascar vanilla is regulated as a food ingredient and is **Generally Recognized as Safe (GRAS)** when used appropriately in food. As vanilla is a premium ingredient, manufacturers often ensure the highest quality by sourcing genuine Madagascar vanilla to meet customer expectations. Always verify usage levels in accordance with local food safety regulations.

[12:51](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731948694872659)

BeeChoo Liang

Magnesium citrate is a form of magnesium commonly used as a food additive and supplement in commercial food products due to its bioavailability and potential health benefits, particularly for digestive health. It is often used in functional foods, beverages, and dietary supplements. The typical amount of magnesium citrate used in food products depends on the intended function, whether it's for a dietary supplement or for fortification of a product.  
Typical Usage Levels of Magnesium Citrate in Commercial Food Products:1. **Dietary Supplements (e.g., magnesium supplements, multivitamins):**

* **Function:** Provides magnesium, a mineral that supports muscle function, nerve function, and bone health.
* **Typical usage:**
  + For **magnesium supplements**, the typical dosage of **magnesium citrate** ranges from **200 mg to 400 mg** of magnesium per serving (with magnesium citrate providing around 16% elemental magnesium by weight). This translates to **1.25 g to 2.5 g** of magnesium citrate per dose.

2. **Fortified Beverages (e.g., magnesium-enhanced waters, energy drinks):**

* **Function:** Fortifies beverages with magnesium to support hydration and provide functional health benefits.
* **Typical usage:**
  + For **beverages**, the amount of magnesium citrate typically ranges from **50 mg to 200 mg** of magnesium per serving (this would require about **0.3 g to 1.25 g** of magnesium citrate per serving).

3. **Fortified Food Products (e.g., cereals, snack bars, meal replacements):**

* **Function:** Adds magnesium to the food for health benefits, such as supporting muscle function and bone health.
* **Typical usage:**
  + For **fortified foods**, the amount of magnesium citrate used is typically around **50 mg to 150 mg** of magnesium per serving, which corresponds to **0.3 g to 1.0 g** of magnesium citrate per serving.

4. **Digestive Health Products (e.g., laxatives, digestive aids):**

* **Function:** Acts as a mild laxative or digestive aid, often included in formulations for individuals seeking relief from constipation.
* **Typical usage:**
  + For **laxatives**, magnesium citrate is often used at **5 to 10 g** of magnesium citrate per dose, corresponding to **800 mg to 1600 mg** of elemental magnesium.

5. **Functional Snacks (e.g., magnesium-infused chocolate, protein bars):**

* **Function:** Adds magnesium for health-conscious consumers looking for functional snacks.
* **Typical usage:**
  + For **functional snacks**, the magnesium citrate used would typically provide **50 mg to 150 mg** of magnesium per serving, corresponding to **0.3 g to 1.0 g** of magnesium citrate.

General Guidelines:

* **Typical concentration ranges** for **magnesium citrate** in food products are usually around **0.1% to 2%** of the total product weight.
  + **Higher concentrations** are typically used in supplements and therapeutic products (such as digestive aids), while **lower concentrations** are used in fortified beverages and foods.

Regulatory Considerations:  
Magnesium citrate is **Generally Recognized as Safe (GRAS)** for use as a food ingredient, but it is important to follow regulatory guidelines, especially regarding the maximum allowable limits of magnesium fortification in different food categories. Always ensure that products containing magnesium citrate are labeled properly with accurate nutritional information to meet local food safety standards.



BeeChoo LiangBeeChoo Liang  [1:20 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731950416464659)

**Torula yeast extract** is a natural flavor enhancer commonly used in commercial food products for its savory, umami taste, similar to that of MSG (monosodium glutamate). It is made by cultivating **Torula yeast** (Candida utilis), which is then processed to extract its flavor compounds. Torula yeast extract is particularly used in products like soups, sauces, snacks, and seasonings.  
The typical amount of **Torula yeast extract** used in commercial food products depends on the type of product and the desired flavor intensity. Here are typical usage ranges for different food categories:  
1. **Soups and Sauces:**

* **Function:** Provides depth of flavor and enhances the savory, umami notes of the product.
* **Typical usage:**
  + In **soups** and **sauces**, Torula yeast extract is commonly used at **0.5% to 2%** of the total product weight.
  + In **instant soups** and broth bases, it may be used at slightly higher levels, around **1% to 3%**.

2. **Snack Foods (e.g., chips, crackers, popcorn):**

* **Function:** Adds a savory or cheesy flavor, often used in combination with other seasonings.
* **Typical usage:**
  + In **snack foods**, Torula yeast extract is typically used at **0.5% to 2%** of the total product weight.
  + It is especially common in **cheese-flavored** or **umami-rich** snacks.

3. **Seasonings and Flavoring Blends:**

* **Function:** Enhances overall flavor profile and adds umami, often used in dry seasoning blends for various products.
* **Typical usage:**
  + In **seasoning mixes** and **flavoring blends**, Torula yeast extract is often used at **0.5% to 3%** of the total weight, depending on the intensity of flavor required.

4. **Processed Meats (e.g., sausages, hot dogs, lunch meats):**

* **Function:** Improves savory flavor and enhances meatiness in processed meat products.
* **Typical usage:**
  + In **processed meats**, Torula yeast extract is typically added at **0.5% to 2%** of the total product weight.

5. **Vegetarian and Plant-Based Products:**

* **Function:** Adds a meaty, savory flavor to plant-based products like veggie burgers, meat analogs, and vegan cheeses.
* **Typical usage:**
  + In **vegetarian or vegan products**, Torula yeast extract may be used at **0.5% to 2%** of the total product weight.

6. **Prepared and Frozen Foods:**

* **Function:** Used to enhance flavor in prepared meals, frozen entrees, or frozen pizza.
* **Typical usage:**
  + In **prepared or frozen foods**, Torula yeast extract is commonly used at **0.5% to 1.5%** of the total product weight, depending on the product's flavor profile.

7. **Beverages (e.g., broth, savory drinks):**

* **Function:** Adds a savory flavor to broth-based or umami-flavored drinks.
* **Typical usage:**
  + In **savory beverages**, Torula yeast extract is typically used at **0.1% to 1%** of the total volume, depending on the desired taste strength.

Summary of Typical Amounts in Commercial Food Products:

* **Soups and Sauces:** **0.5% to 3%** of total product weight.
* **Snack Foods:** **0.5% to 2%** of total product weight.
* **Seasonings and Flavoring Blends:** **0.5% to 3%** of total product weight.
* **Processed Meats:** **0.5% to 2%** of total product weight.
* **Vegetarian and Plant-Based Products:** **0.5% to 2%** of total product weight.
* **Prepared and Frozen Foods:** **0.5% to 1.5%** of total product weight.
* **Beverages:** **0.1% to 1%** of total volume.

Conclusion:  
Torula yeast extract is typically used at **0.5% to 3%** of the total product weight in most commercial food applications. The exact amount depends on the product type and the desired level of flavor enhancement, with higher concentrations often used in savory applications like soups, sauces, and snack foods.



BeeChoo LiangBeeChoo Liang  [1:25 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731950755451049)

**Mono and diglycerides of fatty acids** are emulsifiers commonly used in commercial food products to help mix oil and water components, improve texture, and extend shelf life. They are derived from natural fats or oils and consist of a molecule of glycerol bonded with one (monoglyceride) or two (diglyceride) fatty acid molecules.  
The typical amount of **mono and diglycerides of fatty acids** used in commercial food products can vary depending on the type of product and its specific functional requirements. Below are general usage guidelines for these emulsifiers:  
1. **Baked Goods (e.g., cakes, cookies, bread):**

* **Function:** Used to improve texture, increase shelf life, and prevent staleness by keeping the fat evenly dispersed in the dough or batter.
* **Typical usage:**
  + In **baked goods**, the amount of mono and diglycerides typically ranges from **0.1% to 0.5%** of the total product weight, though some formulations may go up to **1%** for specific purposes like improving dough handling or texture.

2. **Margarine and Butters:**

* **Function:** Helps with emulsification, ensuring a smooth and stable blend of oils and water in margarine and butter products.
* **Typical usage:**
  + In **margarine**, **0.5% to 2%** of mono and diglycerides are commonly used to maintain the proper consistency and emulsification.
  + In **butter blends** (such as spreads), the amount of emulsifiers is typically around **0.5% to 1%**.

3. **Ice Cream and Frozen Desserts:**

* **Function:** Enhances texture by stabilizing the fat in ice cream and frozen desserts, preventing ice crystals from forming and ensuring a smooth mouthfeel.
* **Typical usage:**
  + In **ice cream**, **0.1% to 0.5%** of mono and diglycerides are typically used, with some premium products possibly containing up to **1%** for improved texture and stability.

4. **Dressings and Sauces:**

* **Function:** Stabilizes emulsions, helping to keep the oil and water phases mixed, which is especially important in salad dressings and creamy sauces.
* **Typical usage:**
  + In **salad dressings** and **mayonnaise**, the amount of mono and diglycerides is usually in the range of **0.1% to 0.5%** of the total product weight, depending on the desired consistency and stability.

5. **Confectionery Products (e.g., chocolates, coatings):**

* **Function:** Improves the texture and consistency of candies, chocolates, and coatings, helping to prevent crystallization and providing a smooth texture.
* **Typical usage:**
  + In **chocolates** and **coatings**, the typical amount is **0.1% to 0.5%**, although it can go higher (up to **1%**) depending on the product type and consistency requirements.

6. **Processed Meats (e.g., sausages, deli meats):**

* **Function:** Used to improve texture, emulsification, and fat distribution in processed meat products.
* **Typical usage:**
  + In **processed meats**, the typical amount of mono and diglycerides is **0.1% to 0.3%** of the total product weight.

7. **Dairy Products (e.g., creamers, yogurt):**

* **Function:** Stabilizes emulsions, improves texture, and helps prevent separation of fat in liquid dairy products.
* **Typical usage:**
  + In **non-dairy creamers** and **yogurts**, the amount of mono and diglycerides typically ranges from **0.1% to 0.5%**.

8. **Snack Foods (e.g., chips, crackers, popcorn):**

* **Function:** Used to improve texture and provide a smoother mouthfeel, often used in combination with other emulsifiers to enhance the consistency of coatings or seasoning.
* **Typical usage:**
  + In **snack foods**, the typical usage is **0.1% to 0.5%** of the total product weight, depending on the specific application (e.g., coatings for chips or crackers).

Summary of Typical Amounts in Commercial Food Products:

* **Baked Goods:** **0.1% to 0.5%** of total product weight.
* **Margarine and Butters:** **0.5% to 2%** of total product weight.
* **Ice Cream and Frozen Desserts:** **0.1% to 0.5%** of total product weight.
* **Dressings and Sauces:** **0.1% to 0.5%** of total product weight.
* **Confectionery Products:** **0.1% to 0.5%** of total product weight.
* **Processed Meats:** **0.1% to 0.3%** of total product weight.
* **Dairy Products:** **0.1% to 0.5%** of total product weight.
* **Snack Foods:** **0.1% to 0.5%** of total product weight.

Conclusion:  
The typical amount of **mono and diglycerides of fatty acids** used in commercial food products generally ranges from **0.1% to 2%** of the total product weight, depending on the type of food and its specific formulation. These emulsifiers are primarily used to stabilize emulsions, improve texture, and enhance shelf life in a wide variety of processed food products.



BeeChoo LiangBeeChoo Liang  [1:39 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731951559806349)

**Bamboo extract** is derived from the bamboo plant and is typically used in commercial food products for its potential health benefits, including antioxidant properties, and for flavor enhancement. It is often used in both food and beverage products, including teas, health supplements, snacks, and even certain processed foods.  
The amount of **bamboo extract** used in commercial food products depends on the intended purpose, the form of extract (liquid, powder, or concentrate), and the type of product. Below are typical usage ranges for bamboo extract in various food applications:  
1. **Beverages (e.g., bamboo tea, health drinks, smoothies):**

* **Function:** Adds health benefits, such as antioxidants, and may provide a subtle flavor.
* **Typical usage:**
  + In **beverages**, such as **bamboo tea** or **health drinks**, bamboo extract is typically used at **0.1% to 1%** of the total product volume, depending on the desired health effects and flavor intensity.
  + For **smoothies** and **functional beverages**, it may range from **0.5% to 2%**, particularly in health-focused drinks or supplements.

2. **Snacks and Granola Bars:**

* **Function:** Often used for its health benefits and to provide a mild, natural flavor, or added fiber.
* **Typical usage:**
  + In **snacks** such as **granola bars**, **energy bars**, or **health-focused snacks**, bamboo extract can be used in amounts ranging from **0.5% to 2%** of the total product weight.
  + It may also be used as part of a blend in products marketed for high fiber content or antioxidant benefits.

3. **Supplements (e.g., capsules, tablets):**

* **Function:** Bamboo extract is sometimes marketed as a dietary supplement due to its high silica content, which is believed to support skin, hair, and bone health.
* **Typical usage:**
  + In **dietary supplements**, bamboo extract is typically used in **high concentrations**, often ranging from **10% to 20%** of the total product weight in powdered forms, depending on the dosage required for the supplement’s effectiveness.

4. **Cosmetic or Skin-Related Food Products (e.g., edible skincare products):**

* **Function:** Bamboo extract is sometimes incorporated into edible products that also serve as skincare treatments, taking advantage of its silica content for skin health.
* **Typical usage:**
  + In **edible skincare products** or **beauty drinks**, bamboo extract might be included at levels of **0.5% to 1.5%** of the total product weight, typically as part of a blend with other vitamins, minerals, and antioxidants.

5. **Processed Foods (e.g., soups, sauces, and prepared meals):**

* **Function:** Bamboo extract can be used to add a subtle, fresh taste and potentially offer some nutritional benefits, such as antioxidants and fiber.
* **Typical usage:**
  + In **processed foods** like **soups**, **sauces**, or **prepared meals**, bamboo extract is typically used at **0.1% to 0.5%** of the total product weight, depending on its functional and flavor role in the product.

6. **Frozen Foods (e.g., bamboo shoots, stir-fry mixes):**

* **Function:** Often used as a key ingredient in frozen vegetable or stir-fry mixes, bamboo extract may contribute to flavor and texture.
* **Typical usage:**
  + In **frozen foods**, such as **vegetable mixes** or **stir-fries**, bamboo extract might be included at **0.1% to 1%** of the total product weight.

Summary of Typical Amounts in Commercial Food Products:

* **Beverages (Health Drinks, Teas):** **0.1% to 2%** of total product volume.
* **Snacks and Granola Bars:** **0.5% to 2%** of total product weight.
* **Supplements (Capsules, Tablets):** **10% to 20%** of total product weight (in powdered form).
* **Cosmetic or Skin-Related Food Products:** **0.5% to 1.5%** of total product weight.
* **Processed Foods (Soups, Sauces):** **0.1% to 0.5%** of total product weight.
* **Frozen Foods (Stir-Fry Mixes):** **0.1% to 1%** of total product weight.

Conclusion:  
Bamboo extract is typically used at **0.1% to 2%** of the total product weight or volume in most commercial food products. The exact amount depends on the product type and its intended health benefits or flavor profile. Higher concentrations are found in **dietary supplements**, while lower levels are common in **beverages**, **snacks**, and **processed foods**.

[1:40](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731951644101719)

BeeChoo Liang

**Banana extract** is typically used in commercial food products to provide a banana flavor or enhance the flavor profile of a product, particularly in products that do not use fresh bananas. It is a concentrated form of the fruit's natural flavor, and its use can range depending on the intended strength of flavor and the type of product.  
The typical amount of **banana extract** used in commercial food products depends on the concentration of the extract (such as liquid, powder, or concentrated form) and the type of product being produced. Below are the typical usage ranges for banana extract in various food categories:  
1. **Baked Goods (e.g., cakes, cookies, muffins):**

* **Function:** Adds banana flavor without the need for fresh bananas.
* **Typical usage:**
  + In **baked goods** like **banana bread**, **cakes**, or **muffins**, banana extract is typically used at **0.1% to 1%** of the total product weight, depending on the intensity of banana flavor desired.
  + For stronger flavor, the percentage may reach **2%** for very banana-forward products.

2. **Confectionery Products (e.g., candies, gummies, chocolates):**

* **Function:** Provides a banana flavor for candies and chocolates without the need for real bananas.
* **Typical usage:**
  + In **confectionery products**, such as **banana-flavored candies**, **gummies**, or **banana chocolate bars**, banana extract typically makes up **0.1% to 0.5%** of the total product weight.
  + For **banana-flavored hard candies**, the concentration may be higher, around **0.5% to 1%**, to achieve a more pronounced flavor.

3. **Beverages (e.g., smoothies, banana-flavored drinks, milkshakes):**

* **Function:** Adds a banana taste to beverages.
* **Typical usage:**
  + In **banana-flavored drinks**, **milkshakes**, or **smoothies**, the amount of banana extract generally ranges from **0.1% to 1%** of the total product volume, depending on the intensity of flavor required.
  + For **banana-flavored shakes**, it may be used in slightly higher concentrations, typically **0.5% to 2%**.

4. **Dairy Products (e.g., yogurts, ice creams, milk-based beverages):**

* **Function:** Used to flavor dairy products without adding real banana.
* **Typical usage:**
  + In **banana-flavored yogurts**, **ice cream**, or **milk-based beverages**, banana extract is typically used at **0.1% to 0.5%** of the total product weight or volume.
  + For **banana ice cream**, where the flavor needs to be more prominent, banana extract can be used at **1% to 2%**.

5. **Snacks (e.g., banana chips, banana-flavored crackers):**

* **Function:** Provides banana flavoring to snacks like **banana chips** and **banana-flavored crackers**.
* **Typical usage:**
  + In **banana-flavored snacks**, such as **banana chips** or **banana-flavored granola bars**, banana extract is typically used at **0.1% to 1%** of the total product weight.

6. **Frozen Foods (e.g., frozen desserts, banana-flavored frozen snacks):**

* **Function:** Used to flavor frozen treats.
* **Typical usage:**
  + In **frozen desserts** such as **banana-flavored ice cream** or **frozen yogurt**, banana extract can be used at **0.5% to 2%** of the total product weight, depending on how pronounced the banana flavor should be.

7. **Cereal and Granola Products:**

* **Function:** Adds banana flavor to breakfast products like cereals or granola.
* **Typical usage:**
  + In **cereal** or **granola** products, banana extract is typically used at **0.1% to 0.5%** of the total product weight.

8. **Health and Nutritional Products (e.g., energy bars, protein shakes):**

* **Function:** Provides flavor and a natural banana taste in health-focused foods.
* **Typical usage:**
  + In **energy bars**, **protein shakes**, or **meal replacements**, banana extract is typically used at **0.5% to 1%** of the total product weight, depending on the desired banana flavor profile and the type of product.

Summary of Typical Amounts in Commercial Food Products:

* **Baked Goods (cakes, cookies, muffins):** **0.1% to 1%** of total product weight.
* **Confectionery Products (candies, gummies, chocolates):** **0.1% to 1%** of total product weight.
* **Beverages (smoothies, milkshakes, drinks):** **0.1% to 2%** of total product volume.
* **Dairy Products (yogurts, ice creams):** **0.1% to 2%** of total product weight or volume.
* **Snacks (banana chips, crackers):** **0.1% to 1%** of total product weight.
* **Frozen Foods (frozen desserts):** **0.5% to 2%** of total product weight.
* **Cereal and Granola Products:** **0.1% to 0.5%** of total product weight.
* **Health Products (energy bars, protein shakes):** **0.5% to 1%** of total product weight.

Conclusion:  
**Banana extract** is typically used at **0.1% to 2%** of the total product weight or volume, depending on the type of food and the desired banana flavor intensity. For more flavor-forward products like **banana-flavored ice cream**, the concentration may be on the higher end of the spectrum, while in more subtly flavored products like **baked goods** or **snacks**, the extract is generally used in smaller quantities.



BeeChoo LiangBeeChoo Liang  [1:56 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731952597367319)

**Black tea extract** is commonly used in commercial food products for its distinct flavor, antioxidant properties, and health benefits. The amount of black tea extract used depends on the specific product and the desired strength of the flavor, as well as whether it's intended to provide health benefits such as antioxidants (particularly polyphenols and catechins).  
Here are typical usage ranges of **black tea extract** in various commercial food products:  
1. **Beverages (e.g., iced tea, energy drinks, health drinks):**

* **Function:** Black tea extract is often used to impart flavor, provide antioxidants, or offer an energizing effect.
* **Typical usage:**
  + In **iced tea** or **ready-to-drink tea beverages**, the amount of black tea extract typically ranges from **0.1% to 1%** of the total product volume, depending on the desired tea flavor intensity.
  + In **energy drinks** or **health beverages** that use black tea extract for its caffeine content and health benefits, the extract can be used at levels of **0.5% to 2%** of the total volume.

2. **Baked Goods (e.g., cakes, cookies, muffins):**

* **Function:** Black tea extract adds flavor to baked goods and can contribute to a more complex taste profile.
* **Typical usage:**
  + In **baked goods** like **cakes**, **cookies**, or **muffins**, black tea extract is generally used at **0.1% to 0.5%** of the total product weight to add a subtle tea flavor.

3. **Confectionery Products (e.g., candies, chocolates):**

* **Function:** Provides a tea-flavored profile for products like chocolates, candies, and other sweets.
* **Typical usage:**
  + In **confectionery** products, such as **chocolates** or **gummies**, black tea extract is typically used at **0.1% to 0.5%** of the total product weight, depending on the flavor intensity desired.

4. **Dairy Products (e.g., tea-flavored yogurt, ice cream, milk-based beverages):**

* **Function:** Adds tea flavor to dairy products, such as **yogurts** and **ice cream**, or provides a milder tea flavor in milk-based beverages.
* **Typical usage:**
  + In **tea-flavored ice creams** or **milk-based beverages**, black tea extract is typically used at **0.1% to 0.5%** of the total product weight or volume.
  + For a more prominent flavor, it can be used at **0.5% to 1%**.

5. **Health and Nutritional Products (e.g., energy bars, protein shakes, functional foods):**

* **Function:** Black tea extract is included for its antioxidant properties and possible energy-boosting effects.
* **Typical usage:**
  + In **health products** like **energy bars**, **protein shakes**, and **functional foods**, the extract is typically used in amounts of **0.5% to 2%** of the total product weight, especially if health benefits or caffeine content are emphasized.

6. **Snacks (e.g., granola bars, tea-flavored snacks):**

* **Function:** Imparts a distinct tea flavor and can be used for flavor diversity in snack foods.
* **Typical usage:**
  + In **snack foods**, such as **granola bars** or **tea-flavored chips**, black tea extract is used at **0.1% to 1%** of the total product weight, depending on the strength of flavor desired.

7. **Processed Foods (e.g., sauces, dressings):**

* **Function:** Adds a subtle tea flavor to sauces, marinades, or dressings.
* **Typical usage:**
  + In **sauces** or **salad dressings**, black tea extract is typically used at **0.1% to 0.5%** of the total product weight, contributing flavor without overwhelming the other ingredients.

8. **Frozen Foods (e.g., frozen desserts, tea-flavored treats):**

* **Function:** Used for flavoring frozen desserts, especially for creating tea-based frozen treats like **frozen yogurt** or **ice cream**.
* **Typical usage:**
  + In **frozen desserts**, black tea extract is used at **0.1% to 1%** of the total product weight.

Summary of Typical Amounts in Commercial Food Products:

* **Beverages (iced tea, energy drinks):** **0.1% to 2%** of total product volume.
* **Baked Goods (cakes, cookies, muffins):** **0.1% to 0.5%** of total product weight.
* **Confectionery Products (candies, chocolates):** **0.1% to 0.5%** of total product weight.
* **Dairy Products (yogurt, ice cream):** **0.1% to 1%** of total product weight or volume.
* **Health and Nutritional Products (energy bars, protein shakes):** **0.5% to 2%** of total product weight.
* **Snacks (granola bars, tea-flavored snacks):** **0.1% to 1%** of total product weight.
* **Processed Foods (sauces, dressings):** **0.1% to 0.5%** of total product weight.
* **Frozen Foods (frozen desserts, tea-flavored treats):** **0.1% to 1%** of total product weight.

Conclusion:  
The typical amount of **black tea extract** used in commercial food products generally ranges from **0.1% to 2%** of the total product weight or volume, depending on the type of food and the desired flavor intensity or health benefits. In products where the tea flavor is meant to be subtle (like in **snacks** or **baked goods**), the extract is used in smaller amounts. In beverages or health-focused products, the concentration may be higher to highlight the tea flavor or provide functional benefits like antioxidants or caffeine.

[1:59](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731952778935429)

BeeChoo Liang

**Broccoli extract** is increasingly used in commercial food products for its health benefits, particularly due to its high levels of antioxidants (such as sulforaphane) and vitamins (like vitamin C and K). It is often marketed for its potential anti-inflammatory, detoxifying, and cancer-fighting properties. The typical amount of **broccoli extract** used in commercial food products depends on the product type and the intended health benefits or flavor profile.  
Here’s a breakdown of typical usage ranges for broccoli extract in various food categories:  
1. **Health and Nutritional Products (e.g., dietary supplements, protein shakes, energy bars):**

* **Function:** Broccoli extract is included for its health benefits, particularly for its antioxidants and detoxifying properties.
* **Typical usage:**
  + In **dietary supplements** like **capsules** or **tablets**, broccoli extract is often used at **10% to 20%** of the total product weight (in powdered or concentrated form).
  + In **protein shakes** and **energy bars**, broccoli extract is typically used at **0.5% to 2%** of the total product weight, depending on the dosage required for the product’s health claims.

2. **Beverages (e.g., smoothies, health drinks, juices):**

* **Function:** Adds antioxidants and health benefits to beverages, while contributing a mild flavor.
* **Typical usage:**
  + In **health drinks**, **smoothies**, or **functional beverages**, broccoli extract is typically used at **0.1% to 1%** of the total product volume.
  + For a **mild flavor** and health benefit infusion, the extract is often used at **0.5% to 1%** of the total volume.

3. **Processed Foods (e.g., soups, sauces, ready-to-eat meals):**

* **Function:** Used for its nutritional benefits and to add a subtle flavor.
* **Typical usage:**
  + In **processed foods** like **soups**, **sauces**, or **ready-to-eat meals**, broccoli extract is typically used at **0.1% to 0.5%** of the total product weight.
  + The exact concentration can vary depending on whether the extract is used for flavoring or for its health benefits.

4. **Dairy Products (e.g., smoothies, yogurt, milk-based beverages):**

* **Function:** Used to provide nutritional benefits, such as added antioxidants and vitamins, to dairy-based drinks.
* **Typical usage:**
  + In **smoothies** or **yogurts**, broccoli extract is often used at **0.1% to 0.5%** of the total product weight.
  + For a more **pronounced health effect**, it could be used at levels up to **1%**.

5. **Snacks (e.g., chips, snack bars, granola bars):**

* **Function:** Adds a subtle flavor and health benefits to snacks.
* **Typical usage:**
  + In **snack bars**, **granola bars**, or **vegetable-based chips**, broccoli extract is typically used at **0.1% to 1%** of the total product weight.
  + The exact amount depends on the desired flavor strength and health-focused claims of the product.

6. **Frozen Foods (e.g., frozen meals, frozen vegetables):**

* **Function:** Often used to add nutritional value to frozen meals or vegetables.
* **Typical usage:**
  + In **frozen meals** or **vegetable mixes**, broccoli extract is typically used at **0.1% to 0.5%** of the total product weight.
  + In some **frozen vegetable dishes**, broccoli extract might be added for its flavor and health properties at a concentration of **0.5% to 1%**.

7. **Cosmetic or Skin-Related Food Products (e.g., edible skincare products):**

* **Function:** Due to its antioxidant properties, broccoli extract is sometimes used in edible skincare products for anti-aging or detox benefits.
* **Typical usage:**
  + In **edible skincare products** or **beauty drinks**, broccoli extract is typically used at **0.1% to 1%** of the total product weight or volume.

Summary of Typical Amounts in Commercial Food Products:

* **Health and Nutritional Products (supplements, protein shakes, energy bars):** **0.5% to 20%** (often higher in supplements).
* **Beverages (smoothies, health drinks, juices):** **0.1% to 1%** of total product volume.
* **Processed Foods (soups, sauces, ready-to-eat meals):** **0.1% to 0.5%** of total product weight.
* **Dairy Products (smoothies, yogurt, milk-based beverages):** **0.1% to 1%** of total product weight or volume.
* **Snacks (chips, snack bars, granola bars):** **0.1% to 1%** of total product weight.
* **Frozen Foods (frozen meals, frozen vegetables):** **0.1% to 1%** of total product weight.
* **Cosmetic or Skin-Related Products (edible skincare):** **0.1% to 1%** of total product weight or volume.

Conclusion:  
The typical amount of **broccoli extract** used in commercial food products is generally between **0.1% and 1%** of the total product weight or volume for most food applications, such as beverages, snacks, and processed foods. In **health-focused** products or **dietary supplements**, the concentration can be significantly higher, ranging from **5% to 20%** of the product weight, particularly when the extract is included for its antioxidant or detoxifying properties. The use of broccoli extract is typically more about enhancing the nutritional profile of a product rather than providing a strong flavor, which is why the concentrations tend to be relatively low in most foods.

[12:15 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731989726628149)

BeeChoo Liang

**Fermented rice extract** is used in commercial food products primarily for its health benefits, particularly due to its high concentration of bioactive compounds such as peptides, amino acids, and antioxidants. It is believed to have beneficial effects on digestion, gut health, and skin health. The extract is also used for its flavor-enhancing properties, often in fermented or savory food products.  
The typical amount of **fermented rice extract** used in commercial food products depends on the type of product and the intended health benefits or flavor profile. Here's an overview of typical usage levels in various food categories:  
1. **Health and Nutritional Products (e.g., supplements, functional foods):**

* **Function:** Fermented rice extract is included for its antioxidant, anti-inflammatory, and digestive benefits.
* **Typical usage:**
  + In **dietary supplements** (e.g., capsules or tablets), fermented rice extract can make up **10% to 20%** of the total product weight, often as a concentrated powder.
  + In **functional foods** (e.g., fortified snacks, energy bars), the extract is typically used at **0.5% to 2%** of the total product weight, depending on the product’s health claims and benefits.

2. **Beverages (e.g., health drinks, smoothies, fermented beverages):**

* **Function:** Used to add health benefits, such as gut health support and antioxidant properties, to beverages.
* **Typical usage:**
  + In **health drinks** or **fermented beverages**, fermented rice extract is typically used at **0.1% to 1%** of the total product volume.
  + In **smoothies** or other fortified beverages, it is commonly used at **0.5% to 2%** to provide digestive benefits and enhance nutritional content.

3. **Processed Foods (e.g., sauces, soups, ready-to-eat meals):**

* **Function:** Enhances the nutritional profile of processed foods, contributing to digestive and antioxidant benefits.
* **Typical usage:**
  + In **processed foods** like **soups**, **sauces**, or **ready-to-eat meals**, fermented rice extract is typically used at **0.1% to 0.5%** of the total product weight.
  + It can be used at slightly higher levels, up to **1%**, depending on the desired health benefit or flavor enhancement.

4. **Dairy Products (e.g., yogurt, fermented milk drinks):**

* **Function:** Adds functional benefits, such as probiotics and digestive support, to dairy products.
* **Typical usage:**
  + In **yogurts**, **fermented milk drinks**, or other dairy-based functional foods, fermented rice extract is used at **0.1% to 0.5%** of the total product weight or volume.
  + For more pronounced health benefits, it might be used at **0.5% to 1%**.

5. **Snacks (e.g., energy bars, granola bars, health snacks):**

* **Function:** Contributes to the health profile of snacks by adding beneficial compounds from the fermentation process.
* **Typical usage:**
  + In **energy bars** or **granola bars**, the amount of fermented rice extract typically ranges from **0.5% to 2%** of the total product weight, depending on the desired functional benefit.
  + For **health-focused snacks**, it could be used at **1% to 3%**.

6. **Cosmetic and Skin Products (e.g., edible skincare, beauty drinks):**

* **Function:** Fermented rice extract may also be included in some edible skincare products for its purported benefits to skin health.
* **Typical usage:**
  + In **edible skincare products** or **beauty drinks**, it is generally used at **0.1% to 1%** of the total product weight or volume, depending on the intended cosmetic effect.

Summary of Typical Amounts in Commercial Food Products:

* **Health and Nutritional Products (supplements, functional foods):** **0.5% to 20%** of total product weight.
* **Beverages (health drinks, smoothies, fermented beverages):** **0.1% to 2%** of total product volume.
* **Processed Foods (soups, sauces, ready-to-eat meals):** **0.1% to 1%** of total product weight.
* **Dairy Products (yogurt, fermented milk drinks):** **0.1% to 1%** of total product weight or volume.
* **Snacks (energy bars, granola bars, health snacks):** **0.5% to 3%** of total product weight.
* **Cosmetic and Skin Products (edible skincare, beauty drinks):** **0.1% to 1%** of total product weight or volume.

Conclusion:  
The typical amount of **fermented rice extract** used in commercial food products generally ranges from **0.1% to 3%** of the total product weight or volume, depending on the type of product and the intended health or flavor goals. In **health and nutritional products**, such as dietary supplements or functional foods, the extract can make up a higher proportion of the product, typically between **0.5% and 20%**, particularly if it is used in a concentrated form. For most beverages, processed foods, and snacks, the extract is used at **lower concentrations**, with the goal of enhancing the product’s nutritional profile without overpowering the overall flavor.



BeeChoo LiangBeeChoo Liang  [12:44 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731991458129179)

Typical Usage Amounts of Hemp Extract in Commercial Food Products:  
1. **Beverages (e.g., teas, infused water, smoothies):**

* **Function:** Adds cannabinoids (like CBD), terpenes, and a subtle hemp flavor to beverages.
* **Typical usage:**
  + **CBD-infused beverages:** **10 mg to 50 mg per serving**, equivalent to **0.01% to 0.1%** of the total product volume, depending on local regulations and desired potency.
  + **General hemp extract:** **0.1% to 1%** for flavor and mild health benefits.

2. **Snacks (e.g., energy bars, granola bars, crackers):**

* **Function:** Enhances nutritional value with cannabinoids, omega fatty acids, and plant proteins.
* **Typical usage:**
  + **Powdered hemp extract:** **0.5% to 5%** of the total weight for nutritional purposes.
  + **CBD-focused products:** Typically **5 mg to 25 mg per serving**, equivalent to **0.1% to 1%**.

3. **Oils and Cooking Ingredients:**

* **Function:** Used as a flavoring or a nutritional supplement.
* **Typical usage:**
  + Hemp extract is blended at **0.1% to 2%** of the total product weight, depending on the concentration of cannabinoids and flavor profile.

4. **Confectionery (e.g., gummies, chocolates, candies):**

* **Function:** Delivers cannabinoids or adds a subtle earthy flavor.
* **Typical usage:**
  + **CBD-infused gummies or chocolates:** **5 mg to 25 mg per piece**, typically comprising **0.1% to 1%** of the product weight.
  + For flavor and nutrition, **0.5% to 2%** of hemp extract may be used.

5. **Dairy and Non-Dairy Alternatives (e.g., hemp milk, yogurt, ice cream):**

* **Function:** Provides cannabinoids, protein, and omega fatty acids to dairy or non-dairy products.
* **Typical usage:**
  + **Hemp extract:** **0.1% to 1%** of the total product weight or volume.
  + CBD-specific products may contain **5 mg to 25 mg per serving**.

6. **Baked Goods (e.g., bread, cookies, muffins):**

* **Function:** Adds cannabinoids, flavor, and nutrients like omega fatty acids.
* **Typical usage:**
  + **Hemp extract:** **0.5% to 3%** of the total product weight.
  + CBD-focused baked goods often include **5 mg to 25 mg per serving**.

7. **Health and Nutritional Products (e.g., dietary supplements, protein powders):**

* **Function:** Provides concentrated cannabinoids, antioxidants, and essential fatty acids.
* **Typical usage:**
  + Hemp extract in **capsules** or **powders** is typically **10% to 20%** of the product weight.
  + CBD supplements often include **10 mg to 50 mg per serving**, depending on potency.

8. **Savory Foods (e.g., sauces, dressings, ready-to-eat meals):**

* **Function:** Adds nutritional benefits and enhances flavor with hemp's nutty, earthy taste.
* **Typical usage:**
  + **Hemp extract:** **0.1% to 1%** of the total product weight or volume.
  + CBD-infused products may include **5 mg to 15 mg per serving**.

Summary of Typical Amounts in Commercial Food Products:

* **Beverages:** **0.01% to 1%** (5 mg to 50 mg per serving for CBD).
* **Snacks:** **0.5% to 5%** or **5 mg to 25 mg per serving for CBD**.
* **Oils and Cooking Ingredients:** **0.1% to 2%**.
* **Confectionery:** **0.1% to 2%** or **5 mg to 25 mg per piece for CBD**.
* **Dairy/Non-Dairy Products:** **0.1% to 1%**.
* **Baked Goods:** **0.5% to 3%** or **5 mg to 25 mg per serving for CBD**.
* **Health Products:** **10% to 20%** for powders or **10 mg to 50 mg per serving for CBD**.
* **Savory Foods:** **0.1% to 1%**.

Notes:

1. **Regulations:** The amount of hemp extract, especially CBD, is strictly regulated in many regions. Always ensure compliance with local laws.
2. **Concentration:** Extract potency varies widely. Adjust amounts based on whether the product uses full-spectrum hemp extract, broad-spectrum extract, or CBD isolate.
3. **Flavor Profile:** Hemp extract has a nutty, earthy flavor, so higher concentrations may affect taste in some foods.
4. **Consumer Preferences:** Products marketed for relaxation or wellness may use higher CBD concentrations (e.g., 25 mg per serving).

In general, **hemp extract is used at lower concentrations** (0.1% to 1%) for general flavor and nutrition, but in **CBD-focused products**, precise dosages like 5–50 mg per serving are common.

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BeeChoo Liang

**Kola nut extract**, derived from the seeds of the kola tree, is primarily used in commercial food products for its caffeine content, flavoring, or both. It is particularly notable in beverages, confectionery, and energy-focused products. The typical usage depends on the product type, its desired caffeine content, and the role of the kola nut extract (flavor vs. functional ingredient).Typical Usage Amounts of Kola Nut Extract in Commercial Food Products:  
1. **Beverages (e.g., colas, energy drinks, teas):**

* **Function:** Provides natural caffeine and contributes to the distinct flavor associated with traditional cola.
* **Typical usage:**
  + **Caffeine-focused products:** **0.01% to 0.2%** (equivalent to approximately **10–50 mg of caffeine per serving**, depending on extract concentration).
  + **Flavor-focused products:** **0.05% to 0.1%** of the total product volume.

2. **Energy Bars and Snacks:**

* **Function:** Acts as a natural caffeine source and adds a mild, nutty flavor.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 1%** of the total product weight, depending on the desired energy boost.
  + Typically equates to **10–50 mg of caffeine per serving**.

3. **Confectionery (e.g., chocolates, candies, chewing gum):**

* **Function:** Adds caffeine for energy and mild kola flavor to sweets.
* **Typical usage:**
  + **Powdered or liquid extract:** **0.05% to 0.2%**, providing **10–30 mg of caffeine per serving**.

4. **Supplements and Nutritional Products:**

* **Function:** Serves as a natural caffeine source for energy or weight management.
* **Typical usage:**
  + **Powdered extract:** **5% to 15%** of the supplement's total weight.
  + Commonly provides **50–200 mg of caffeine per serving**.

5. **Baked Goods (e.g., specialty cookies, cakes):**

* **Function:** Adds mild kola flavor and an energy-boosting element.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.5%** of the total product weight.
  + Equivalent to **10–30 mg of caffeine per serving**.

6. **Savory Foods (e.g., sauces, marinades):**

* **Function:** Occasionally used for its nutty flavor and mild stimulant effects.
* **Typical usage:**
  + **Liquid or powdered extract:** **0.05% to 0.1%** of the total product weight.

Summary of Typical Amounts:

* **Beverages:** **0.01% to 0.2%** (providing **10–50 mg of caffeine per serving**).
* **Energy Bars and Snacks:** **0.1% to 1%** (providing **10–50 mg of caffeine per serving**).
* **Confectionery:** **0.05% to 0.2%** (providing **10–30 mg of caffeine per serving**).
* **Supplements:** **5% to 15%** of total product weight (providing **50–200 mg of caffeine per serving**).
* **Baked Goods:** **0.1% to 0.5%** (providing **10–30 mg of caffeine per serving**).
* **Savory Foods:** **0.05% to 0.1%** for subtle flavor.

Notes:

1. **Caffeine Content:** Kola nut extract typically contains **2–3% caffeine**. Usage amounts are adjusted based on the desired caffeine levels in the final product.
2. **Regulations:** Many countries regulate caffeine levels in food and beverages. Ensure compliance with local laws.
3. **Flavor Considerations:** While kola nut adds a distinct flavor, it may be blended with other natural or artificial flavorings for traditional "cola" profiles.
4. **Consumer Preferences:** Kola nut extract is often marketed as a "natural energy source," appealing to health-conscious consumers.

In most products, the amount of kola nut extract used is carefully controlled to achieve the desired balance of flavor and caffeine content.

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BeeChoo Liang

**Lemongrass extract** is used in commercial food products for its refreshing citrusy flavor and aromatic qualities. The amount used depends on the product type and the desired intensity of flavor. Because lemongrass extract is potent, small amounts are typically sufficient to achieve the desired flavor profile.Typical Usage Amounts of Lemongrass Extract in Commercial Food Products:  
1. **Beverages (e.g., teas, flavored water, cocktails):**

* **Function:** Adds a refreshing, citrusy aroma and flavor.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.2%** of the total product volume.
  + **Concentrated extract:** **0.01% to 0.1%**, depending on potency.

2. **Soups, Curries, and Sauces:**

* **Function:** Imparts a distinct lemongrass flavor common in Asian cuisine.
* **Typical usage:**
  + **Liquid or powdered extract:** **0.1% to 0.5%** of the total weight or volume.
  + Higher amounts are used in concentrated flavor bases.

3. **Snacks and Savory Foods (e.g., chips, crackers, marinades):**

* **Function:** Enhances flavor profiles with citrusy and herbaceous notes.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.3%** of the total weight.
  + **Liquid extract:** **0.05% to 0.2%.**

4. **Confectionery (e.g., candies, chocolates, desserts):**

* **Function:** Adds a unique, citrusy twist to sweet treats.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.1%** of the total product weight.
  + **Powdered extract:** **0.05% to 0.2%.**

5. **Dairy Products (e.g., yogurt, ice cream, cheese):**

* **Function:** Provides a fresh, aromatic flavor complementing creamy textures.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.2%** of the total product weight or volume.
  + **Powdered extract:** **0.1% to 0.3%.**

6. **Baked Goods (e.g., cookies, cakes, bread):**

* **Function:** Adds a light, aromatic citrus flavor.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.2%** of the total product weight.
  + **Powdered extract:** **0.1% to 0.3%.**

7. **Health and Nutritional Products (e.g., supplements, functional foods):**

* **Function:** Adds flavor and potential health benefits (e.g., antioxidant and anti-inflammatory properties).
* **Typical usage:**
  + **Powdered extract:** **0.1% to 1%** of the product weight.
  + **Liquid extract:** **0.05% to 0.2%.**

Summary of Typical Amounts:

* **Beverages:** **0.01% to 0.2%** (depending on concentration).
* **Soups, Curries, and Sauces:** **0.1% to 0.5%.**
* **Snacks and Savory Foods:** **0.1% to 0.3%.**
* **Confectionery:** **0.05% to 0.2%.**
* **Dairy Products:** **0.05% to 0.3%.**
* **Baked Goods:** **0.05% to 0.3%.**
* **Health Products:** **0.05% to 1%.**

Notes:

1. **Concentration:** Lemongrass extract is potent, so even small amounts can deliver a strong flavor. Adjustments may be needed depending on whether the extract is diluted or highly concentrated.
2. **Flavor Synergy:** Often blended with other flavors like ginger, coconut, or lime in products for a balanced profile.
3. **Regulations:** Ensure compliance with flavoring standards and regulations in the target market.
4. **Cultural Preferences:** Lemongrass is particularly popular in products inspired by Asian and tropical cuisines.

In most cases, **0.05% to 0.2% of liquid extract or 0.1% to 0.5% of powdered extract** is typical, depending on the application and intensity desired.

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BeeChoo Liang

**Licorice extract**, derived from the root of the *Glycyrrhiza glabra* plant, is commonly used in commercial food products for its natural sweetness, distinct flavor, and functional properties. The amount used varies significantly based on the product type and the intensity of flavor or sweetness desired.Typical Usage Amounts of Licorice Extract in Commercial Food Products:  
1. **Confectionery (e.g., licorice candies, gummies, lozenges):**

* **Function:** Provides the primary flavor and acts as a natural sweetener.
* **Typical usage:**
  + **Liquid extract:** **1% to 5%** of the total product weight.
  + **Powdered extract:** **0.5% to 2%**, depending on desired intensity.
  + Licorice-flavored candies may have higher concentrations for a bold taste.

2. **Beverages (e.g., herbal teas, soft drinks, flavored water):**

* **Function:** Adds mild sweetness and a unique flavor profile, often combined with other herbs.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.5%** of the total product volume.
  + **Powdered extract:** **0.1% to 0.3%.**

3. **Snacks (e.g., protein bars, flavored nuts):**

* **Function:** Enhances flavor with a hint of sweetness and licorice undertones.
* **Typical usage:**
  + **Liquid extract:** **0.1% to 0.3%.**
  + **Powdered extract:** **0.1% to 0.5%.**

4. **Dairy Products (e.g., ice cream, yogurt, flavored milk):**

* **Function:** Adds a unique, aromatic flavor profile.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.2%** of the total product weight or volume.
  + **Powdered extract:** **0.05% to 0.3%.**

5. **Baked Goods (e.g., cookies, cakes, breads):**

* **Function:** Provides mild sweetness and aromatic notes for specialty recipes.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.5%.**
  + **Liquid extract:** **0.05% to 0.2%.**

6. **Health and Nutritional Products (e.g., supplements, functional foods):**

* **Function:** Acts as a sweetener and provides bioactive compounds (e.g., glycyrrhizin) with purported health benefits.
* **Typical usage:**
  + **Powdered extract:** **0.5% to 5%** of the product weight.
  + **Liquid extract:** **0.1% to 1%.**

7. **Savory Foods (e.g., marinades, sauces, spice blends):**

* **Function:** Adds a subtle sweetness and earthy, aromatic flavor.
* **Typical usage:**
  + **Powdered extract:** **0.05% to 0.2%.**
  + **Liquid extract:** **0.05% to 0.1%.**

Summary of Typical Amounts:

* **Confectionery:** **0.5% to 5%** (highest concentration).
* **Beverages:** **0.05% to 0.5%.**
* **Snacks:** **0.1% to 0.5%.**
* **Dairy Products:** **0.05% to 0.3%.**
* **Baked Goods:** **0.05% to 0.5%.**
* **Health Products:** **0.5% to 5%.**
* **Savory Foods:** **0.05% to 0.2%.**

Notes:

1. **Sweetening Power:** Licorice extract is naturally sweet (up to 50 times sweeter than sugar due to glycyrrhizin), so small amounts can significantly affect sweetness.
2. **Flavor Profile:** The strong, distinctive taste of licorice can dominate, so careful balancing is needed when used in combination with other flavors.
3. **Regulations and Safety:** Excessive consumption of licorice (due to glycyrrhizin) can lead to health concerns such as elevated blood pressure or potassium imbalances. Many jurisdictions have limits on glycyrrhizin content in foods.
4. **Consumer Preferences:** Licorice flavor is polarizing, with strong regional and cultural preferences affecting its use.

In most applications, **0.05% to 5% of licorice extract** is typical, with higher amounts in confectionery and health products.

[12:56](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731992202753689)

BeeChoo Liang

**Lime extract**, known for its vibrant citrus flavor and aroma, is commonly used in commercial food products to enhance flavor profiles. The amount of lime extract used depends on the product type, the concentration of the extract, and the desired intensity of lime flavor.Typical Usage Amounts of Lime Extract in Commercial Food Products:  
1. **Beverages (e.g., flavored water, soft drinks, cocktails, teas):**

* **Function:** Adds a refreshing citrus note.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.3%** of the total product volume.
  + **Concentrated extract:** **0.01% to 0.1%.**

2. **Confectionery (e.g., candies, gummies, chocolates):**

* **Function:** Provides a tangy citrus flavor.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.2%** of the total product weight.
  + **Powdered extract:** **0.1% to 0.3%.**

3. **Snacks and Savory Foods (e.g., chips, marinades, dips):**

* **Function:** Enhances flavor with zesty lime notes.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.5%.**
  + **Liquid extract:** **0.05% to 0.2%.**

4. **Dairy Products (e.g., ice cream, yogurt, flavored milk):**

* **Function:** Provides a citrusy twist to creamy textures.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.2%** of the total product weight.
  + **Powdered extract:** **0.1% to 0.3%.**

5. **Baked Goods (e.g., cakes, cookies, bread):**

* **Function:** Adds a tangy flavor and aromatic quality.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.5%.**
  + **Liquid extract:** **0.05% to 0.2%.**

6. **Health and Nutritional Products (e.g., supplements, protein bars):**

* **Function:** Contributes a refreshing citrus flavor and potential antioxidant properties.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.5%.**
  + **Liquid extract:** **0.05% to 0.2%.**

7. **Sauces and Condiments (e.g., salad dressings, hot sauces):**

* **Function:** Adds brightness and tang to the flavor profile.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.3%.**
  + **Powdered extract:** **0.1% to 0.3%.**

Summary of Typical Amounts:

* **Beverages:** **0.01% to 0.3%.**
* **Confectionery:** **0.05% to 0.3%.**
* **Snacks and Savory Foods:** **0.1% to 0.5%.**
* **Dairy Products:** **0.05% to 0.3%.**
* **Baked Goods:** **0.05% to 0.5%.**
* **Health Products:** **0.05% to 0.5%.**
* **Sauces and Condiments:** **0.05% to 0.3%.**

Notes:

1. **Concentration Matters:** Lime extracts can vary widely in strength, particularly between natural and artificial versions. Adjust amounts based on extract concentration.
2. **Flavor Synergy:** Often combined with other citrus flavors (e.g., lemon, orange) or complementary ingredients like ginger or coconut.
3. **Cultural and Regional Preferences:** Lime is popular in a variety of cuisines, especially tropical and Latin American, and is used extensively in products targeting those markets.
4. **Regulatory Compliance:** Ensure the extract is compliant with food-grade and labeling standards in the intended market.

In general, **0.05% to 0.5% of lime extract** is typical for most applications, with higher amounts in snacks, baked goods, and savory products requiring a bolder lime flavor.



BeeChoo LiangBeeChoo Liang  [1:53 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731995618592299)

**Maple extract**, derived from natural or artificial flavoring sources, is used in commercial food products to impart a rich, sweet, and distinctive maple flavor. The typical amount depends on the product type, the intensity of the flavor desired, and whether the extract is natural or artificial (artificial extracts often have a stronger concentration).Typical Usage Amounts of Maple Extract in Commercial Food Products:  
1. **Beverages (e.g., flavored coffees, teas, lattes, cocktails):**

* **Function:** Adds a subtle or bold maple flavor, depending on application.
* **Typical usage:**
  + **Liquid extract:** **0.1% to 0.3%** of the total product volume.
  + **Powdered extract:** **0.05% to 0.2%.**

2. **Confectionery (e.g., candies, caramels, fudge):**

* **Function:** Provides a rich and sweet maple flavor.
* **Typical usage:**
  + **Liquid extract:** **0.2% to 0.5%** of the total product weight.
  + **Powdered extract:** **0.1% to 0.3%.**

3. **Baked Goods (e.g., cookies, cakes, muffins, pancakes):**

* **Function:** Adds a sweet, aromatic maple flavor to the final product.
* **Typical usage:**
  + **Liquid extract:** **0.2% to 0.5%** of the total product weight.
  + **Powdered extract:** **0.1% to 0.3%.**

4. **Snacks (e.g., granola, popcorn, trail mixes):**

* **Function:** Enhances flavor with sweet and aromatic maple notes.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.5%.**
  + **Liquid extract:** **0.2% to 0.5%.**

5. **Dairy and Plant-Based Alternatives (e.g., ice creams, yogurts, milks):**

* **Function:** Provides a complementary sweetness and flavor to creamy bases.
* **Typical usage:**
  + **Liquid extract:** **0.1% to 0.3%.**
  + **Powdered extract:** **0.05% to 0.2%.**

6. **Sauces and Condiments (e.g., syrups, marinades, dressings):**

* **Function:** Adds depth and sweetness to complement other flavors.
* **Typical usage:**
  + **Liquid extract:** **0.2% to 0.5%.**
  + **Powdered extract:** **0.1% to 0.3%.**

7. **Health and Nutritional Products (e.g., protein bars, flavored powders):**

* **Function:** Adds flavor while keeping sugar content low.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.3%.**
  + **Liquid extract:** **0.1% to 0.3%.**

Summary of Typical Amounts:

* **Beverages:** **0.1% to 0.3%.**
* **Confectionery:** **0.1% to 0.5%.**
* **Baked Goods:** **0.1% to 0.5%.**
* **Snacks:** **0.1% to 0.5%.**
* **Dairy Products:** **0.05% to 0.3%.**
* **Sauces and Condiments:** **0.2% to 0.5%.**
* **Health Products:** **0.1% to 0.3%.**

Notes:

1. **Concentration Matters:** Artificial maple extracts are typically stronger than natural ones, requiring smaller amounts.
2. **Flavor Balance:** Maple flavor pairs well with vanilla, cinnamon, and butter flavors, but excessive use can overwhelm the product.
3. **Consumer Preferences:** Maple flavor is especially popular in breakfast-related products (e.g., syrups, pancakes) and fall-themed items.
4. **Regional Use:** Products targeting North American markets often feature maple flavors more prominently.

In general, **0.1% to 0.5% of maple extract** is typical for most applications, with the exact amount depending on the product type and flavor intensity desired.

[1:53](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731995625850889)

BeeChoo Liang

**Marjoram extract**, derived from the herb *Origanum majorana*, is used in commercial food products for its warm, slightly sweet, and aromatic flavor. It is often employed as a seasoning in savory foods and herbal blends. The typical amount used depends on the product type and the desired flavor intensity.Typical Usage Amounts of Marjoram Extract in Commercial Food Products:  
1. **Savory Foods (e.g., soups, sauces, stews):**

* **Function:** Adds depth and herbal flavor.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.2%** of the total product weight.
  + **Powdered extract:** **0.1% to 0.3%.**

2. **Processed Meats (e.g., sausages, cured meats):**

* **Function:** Enhances flavor with a warm herbal note.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.15%.**
  + **Powdered extract:** **0.1% to 0.25%.**

3. **Seasoning Blends (e.g., dry rubs, marinades):**

* **Function:** Provides a characteristic Mediterranean or herbal flavor.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.5%.**

4. **Snacks (e.g., seasoned chips, crackers, nuts):**

* **Function:** Adds complexity to savory and herbal profiles.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.3%.**
  + **Liquid extract:** **0.05% to 0.2%.**

5. **Bakery Items (e.g., herb breads, savory pastries):**

* **Function:** Adds aromatic and herbal notes.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.3%.**
  + **Liquid extract:** **0.05% to 0.15%.**

6. **Herbal Beverages and Teas:**

* **Function:** Provides a mild herbal flavor with warm notes.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.2%.**
  + **Powdered extract:** **0.1% to 0.3%.**

Summary of Typical Amounts:

* **Savory Foods:** **0.05% to 0.3%.**
* **Processed Meats:** **0.05% to 0.25%.**
* **Seasoning Blends:** **0.1% to 0.5%.**
* **Snacks:** **0.05% to 0.3%.**
* **Bakery Items:** **0.05% to 0.3%.**
* **Herbal Beverages:** **0.05% to 0.3%.**

Notes:

1. **Concentration Matters:** Concentrated extracts require lower usage levels compared to powdered or less-concentrated forms.
2. **Flavor Pairing:** Marjoram pairs well with thyme, rosemary, and oregano, complementing a wide range of savory dishes.
3. **Regional Preferences:** Commonly used in Mediterranean, Middle Eastern, and European cuisines.
4. **Regulatory Compliance:** Ensure the extract is food-grade and labeled appropriately for the market.

In most applications, **0.05% to 0.3% of marjoram extract** is typical, with higher amounts in seasoning blends and snacks for a more pronounced flavor.

[1:55](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731995733942129)

BeeChoo Liang

**Mint extract**, commonly derived from peppermint or spearmint, is widely used in commercial food products for its refreshing and cooling flavor. The typical amount varies depending on the concentration of the extract and the product type.Typical Usage Amounts of Mint Extract in Commercial Food Products:  
1. **Confectionery (e.g., candies, chewing gum, mints, chocolates):**

* **Function:** Provides a bold and cooling mint flavor.
* **Typical usage:**
  + **Liquid extract:** **0.1% to 0.3%** of the total product weight.
  + **Powdered extract:** **0.05% to 0.2%.**

2. **Beverages (e.g., teas, flavored waters, cocktails):**

* **Function:** Adds a refreshing minty note.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.2%.**
  + **Powdered extract:** **0.03% to 0.1%.**

3. **Dairy and Frozen Desserts (e.g., ice creams, yogurts, milkshakes):**

* **Function:** Complements creamy bases with a refreshing flavor.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.2%.**
  + **Powdered extract:** **0.03% to 0.1%.**

4. **Baked Goods (e.g., cookies, cakes, brownies):**

* **Function:** Provides a subtle mint flavor to enhance sweetness.
* **Typical usage:**
  + **Liquid extract:** **0.1% to 0.3%.**
  + **Powdered extract:** **0.05% to 0.2%.**

5. **Snacks (e.g., flavored chips, crackers):**

* **Function:** Adds a unique and refreshing herbal flavor.
* **Typical usage:**
  + **Powdered extract:** **0.05% to 0.2%.**
  + **Liquid extract:** **0.03% to 0.1%.**

6. **Savory Products (e.g., marinades, sauces):**

* **Function:** Adds a subtle minty freshness to savory dishes.
* **Typical usage:**
  + **Liquid extract:** **0.03% to 0.1%.**
  + **Powdered extract:** **0.02% to 0.05%.**

Summary of Typical Amounts:

* **Confectionery:** **0.05% to 0.3%.**
* **Beverages:** **0.03% to 0.2%.**
* **Dairy/Frozen Desserts:** **0.03% to 0.2%.**
* **Baked Goods:** **0.05% to 0.3%.**
* **Snacks:** **0.03% to 0.2%.**
* **Savory Products:** **0.02% to 0.1%.**

Notes:

1. **Concentration Matters:** Mint oil-based extracts are stronger and require lower usage levels compared to water-based or powdered forms.
2. **Flavor Pairing:** Mint pairs well with chocolate, vanilla, citrus, and herbal flavors.
3. **Regional Preferences:** Mint is especially popular in Middle Eastern, Mediterranean, and North American cuisines, as well as in seasonal or holiday products.
4. **Intensity Consideration:** Higher concentrations can dominate other flavors, so mint extract should be used sparingly in balanced recipes.

In most commercial food applications, **0.03% to 0.3% of mint extract** is typical, with lower amounts in savory or subtly flavored products and higher amounts in confectionery and desserts.

[1:57](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731995860190609)

BeeChoo Liang

**Oat extract**, derived from the oat plant (*Avena sativa*), is used in commercial food products for its mild, naturally sweet flavor and functional benefits, including its potential for supporting digestive health and providing a source of antioxidants. The typical amount used in food products depends on the desired flavor and health benefits, as well as the product type.Typical Usage Amounts of Oat Extract in Commercial Food Products:  
1. **Beverages (e.g., oat milk, smoothies, energy drinks):**

* **Function:** Adds a subtle, naturally sweet flavor, often for dairy-free or plant-based formulations.
* **Typical usage:**
  + **Liquid extract:** **0.1% to 0.5%** of the total product volume.
  + **Powdered extract:** **0.05% to 0.3%.**

2. **Baked Goods (e.g., cookies, cakes, muffins, granola):**

* **Function:** Enhances flavor with a mild oat taste, often in combination with other grains.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.5%** of the total product weight.
  + **Liquid extract:** **0.05% to 0.3%.**

3. **Breakfast Cereals (e.g., oat flakes, granola bars):**

* **Function:** Contributes to the oat flavor profile and adds nutritional value.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.3%.**
  + **Liquid extract:** **0.05% to 0.2%.**

4. **Dairy and Plant-Based Alternatives (e.g., yogurts, ice creams, plant-based cheeses):**

* **Function:** Adds mild sweetness and helps to create a smooth texture in dairy alternatives.
* **Typical usage:**
  + **Liquid extract:** **0.1% to 0.5%.**
  + **Powdered extract:** **0.05% to 0.2%.**

5. **Snacks (e.g., protein bars, energy bars, oat-based snacks):**

* **Function:** Imparts a mild oat flavor and can be used to enhance texture and moisture.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.5%.**
  + **Liquid extract:** **0.05% to 0.3%.**

6. **Health and Nutritional Products (e.g., meal replacements, functional foods):**

* **Function:** Offers nutritional benefits, particularly fiber and antioxidants, while adding flavor.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.5%.**
  + **Liquid extract:** **0.05% to 0.3%.**

7. **Confectionery (e.g., chocolates, flavored candies):**

* **Function:** Enhances flavor with a natural oat undertone.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.3%.**
  + **Liquid extract:** **0.05% to 0.2%.**

Summary of Typical Amounts:

* **Beverages:** **0.1% to 0.5%.**
* **Baked Goods:** **0.1% to 0.5%.**
* **Breakfast Cereals:** **0.1% to 0.3%.**
* **Dairy Alternatives:** **0.05% to 0.5%.**
* **Snacks:** **0.1% to 0.5%.**
* **Health Products:** **0.1% to 0.5%.**
* **Confectionery:** **0.05% to 0.3%.**

Notes:

1. **Concentration Differences:** Liquid extracts may be more concentrated, so smaller amounts are needed compared to powdered or dry forms.
2. **Flavor Balance:** Oat extract has a mild flavor, so it generally complements other ingredients rather than dominating the taste.
3. **Nutritional Focus:** Oat extract is often included in products for its health benefits, such as promoting digestive health or acting as a source of fiber, antioxidants, and vitamins.
4. **Product Variability:** Usage rates may vary depending on whether the product is formulated for health purposes or flavor enhancement.

In most commercial food applications, **0.05% to 0.5% of oat extract** is typical, with higher usage amounts in health-focused or oat-based products.

[1:59](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731995968424249)

BeeChoo Liang

**Oregano extract**, derived from the *Origanum vulgare* plant, is used in commercial food products for its strong, aromatic, and slightly bitter flavor. It is commonly used in Mediterranean, Italian, and Mexican cuisines. The typical amount used varies depending on the product type, its desired flavor profile, and the concentration of the extract.Typical Usage Amounts of Oregano Extract in Commercial Food Products:  
1. **Savory Foods (e.g., sauces, soups, marinades, dressings):**

* **Function:** Adds a robust, herby flavor with a hint of bitterness.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.2%** of the total product weight.
  + **Powdered extract:** **0.1% to 0.3%.**

2. **Processed Meats (e.g., sausages, jerky, deli meats):**

* **Function:** Imparts a characteristic Mediterranean or Italian flavor.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.15%.**
  + **Powdered extract:** **0.1% to 0.25%.**

3. **Herb Blends and Seasonings (e.g., spice mixes, dry rubs):**

* **Function:** Provides a flavorful punch to seasoning mixes.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.5%.**

4. **Pizza and Pasta Sauces:**

* **Function:** Adds depth and flavor to Italian-inspired dishes.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.2%.**
  + **Powdered extract:** **0.1% to 0.3%.**

5. **Snacks (e.g., flavored chips, crackers, nuts):**

* **Function:** Adds a savory, herbal flavor that pairs well with other seasonings.
* **Typical usage:**
  + **Powdered extract:** **0.1% to 0.3%.**
  + **Liquid extract:** **0.05% to 0.1%.**

6. **Frozen Foods (e.g., frozen pizzas, ready meals):**

* **Function:** Provides a fresh, herby flavor in convenience foods.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.1%.**
  + **Powdered extract:** **0.1% to 0.3%.**

7. **Herbal Teas and Beverages:**

* **Function:** Adds a mild herbal note to infusions and flavored beverages.
* **Typical usage:**
  + **Liquid extract:** **0.05% to 0.1%.**
  + **Powdered extract:** **0.03% to 0.1%.**

Summary of Typical Amounts:

* **Savory Foods:** **0.05% to 0.3%.**
* **Processed Meats:** **0.05% to 0.25%.**
* **Herb Blends and Seasonings:** **0.1% to 0.5%.**
* **Pizza/Pasta Sauces:** **0.05% to 0.3%.**
* **Snacks:** **0.05% to 0.3%.**
* **Frozen Foods:** **0.05% to 0.3%.**
* **Herbal Teas:** **0.03% to 0.1%.**

Notes:

1. **Concentration Variability:** Higher concentrations of oregano extract are often found in oil-based extracts, while lower concentrations are used in water-based extracts or powdered forms.
2. **Strong Flavor Profile:** Oregano has a potent flavor, so it's typically used in smaller amounts compared to other herbs.
3. **Complementary Flavors:** Oregano pairs well with thyme, basil, and garlic, and is often used in conjunction with these in commercial food products.

In most commercial applications, **0.05% to 0.3% of oregano extract** is typical, with slightly higher amounts in seasoning blends and savory products for a stronger herbal impact.



BeeChoo LiangBeeChoo Liang  [2:34 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731998063181069)

Peppermint oil is commonly used in commercial food products primarily for its distinctive flavor and refreshing aroma. The amount used depends on the type of product, the desired flavor intensity, and regulatory guidelines. Here are typical usage amounts in various food applications:  
1. **Confectionery Products (Candies, Gum, Mints)**:

* **Peppermint oil** is often used in candies, chewing gum, mints, and similar products to provide a strong, refreshing mint flavor.
* In these products, peppermint oil is typically used in concentrations of **0.05% to 0.3%** of the total product weight. For example:
  + In chewing gum, **0.1% to 0.2%** is common.
  + In mint candies and hard candies, it might range from **0.05% to 0.2%**.

2. **Beverages (Teas, Liqueurs, Soft Drinks)**:

* Peppermint oil can be used in beverages like mint tea, herbal drinks, or alcoholic beverages (e.g., peppermint schnapps).
* In these drinks, peppermint oil might be used at **0.01% to 0.05%**, depending on the desired flavor strength. This can be equivalent to a few drops per liter or gallon.

3. **Baked Goods (Cookies, Cakes, etc.)**:

* In baked goods such as cookies, cakes, and pastries, peppermint oil is typically used in small amounts to impart a subtle mint flavor.
* The usual concentration is around **0.05% to 0.1%** of the total dough or batter weight.

4. **Dairy Products (Ice Cream, Yogurt, Milk)**:

* Peppermint oil can be added to dairy products, particularly in flavored ice creams, yogurts, and milk-based beverages.
* In these products, it is typically used at concentrations ranging from **0.05% to 0.1%**.

5. **Functional and Health Foods**:

* Peppermint oil might also be used in functional foods, such as those marketed for digestive health, as peppermint is known to have soothing effects on the stomach.
* In these types of products, peppermint oil can be used in slightly higher concentrations, ranging from **0.1% to 0.5%**.

6. **Flavorings and Extracts**:

* When peppermint extract is used instead of essential oil, it may be more diluted, with typical usage levels ranging from **0.1% to 1%**, depending on the strength of the extract.

Important Considerations:

* **Flavor Profile**: Peppermint oil is highly concentrated, and even small amounts can impart a strong flavor. It's important to balance the oil with other ingredients in a product to avoid overwhelming the overall taste.
* **Regulatory Guidelines**: In the U.S., the Food and Drug Administration (FDA) considers peppermint oil to be generally recognized as safe (GRAS) when used within certain limits. However, the exact allowed amount can vary depending on the region and product type.

Example:  
For **peppermint-flavored hard candy**, a typical formula might use peppermint oil at around **0.1%**, which would translate to 1 gram of peppermint oil for every 1,000 grams (1 kilogram) of candy mixture.  
In general, the key is that peppermint oil is highly potent, so it's used sparingly to achieve the desired flavor without overpowering the product.

[2:37](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731998261662279)

BeeChoo Liang

Diglycerides (specifically **mono- and diglycerides of fatty acids**) are widely used in commercial food products as emulsifiers, stabilizers, and surfactants. They help blend ingredients that would otherwise separate, such as oil and water, and improve texture, shelf life, and consistency in a variety of food products.  
The typical amount of diglycerides used in commercial food products depends on the type of product, the desired effect, and the regulatory guidelines. Here’s an overview of how diglycerides are used in different types of food:  
1. **Baked Goods (Bread, Cakes, Pastries, etc.)**

* In baked goods, mono- and diglycerides are primarily used as emulsifiers to improve texture, extend freshness, and stabilize dough or batter.
* The typical usage ranges from **0.1% to 0.5%** of the total product weight.
  + For example, in **bread dough**, diglycerides may be used at around **0.1% to 0.3%** of the flour weight.
  + In **cakes** or **cookies**, the amount can be slightly higher, up to **0.5%**.

2. **Margarine and Shortening**

* In margarine and shortening, diglycerides help create the desired smooth texture and aid in emulsification.
* The typical concentration in margarine is **0.5% to 1.5%**.
  + Diglycerides help ensure uniform consistency and prevent oil separation.

3. **Dairy Products (Ice Cream, Creamers, etc.)**

* In dairy products like ice cream, powdered coffee creamers, and other cream-based products, diglycerides act as emulsifiers to improve texture and prevent the separation of fat and water.
* The concentration typically ranges from **0.1% to 0.5%** by weight, depending on the product.

4. **Confectionery Products (Chocolate, Candy, etc.)**

* Diglycerides are used in chocolate and candy coatings to prevent crystallization, ensure smoothness, and help the fat blend with other ingredients.
* The typical amount used in **chocolate** and **candy coatings** is around **0.2% to 0.5%** by weight.

5. **Processed Foods (Sauces, Dressings, etc.)**

* In emulsified sauces, salad dressings, and mayonnaise, diglycerides help keep the oil and water phases from separating.
* The typical concentration in sauces and dressings is **0.1% to 0.5%**, although it can be higher in certain products like mayonnaise.

6. **Frozen Foods (Frozen Pizza, Frozen Desserts)**

* In frozen foods, particularly those with multiple components (like pizza or ready meals), diglycerides help to emulsify and stabilize sauces, toppings, and fillings.
* The usage is typically in the range of **0.1% to 0.3%** of the total product weight.

7. **Pet Food**

* In some pet foods, diglycerides are used to improve the palatability, texture, and shelf life.
* The concentration varies, but it is typically around **0.1% to 0.5%**.

Summary of Typical Usage Ranges:

* **Emulsifier (General)**: **0.1% to 0.5%**
* **Baked Goods**: **0.1% to 0.5%**
* **Margarine/Shortening**: **0.5% to 1.5%**
* **Dairy Products**: **0.1% to 0.5%**
* **Confectionery**: **0.2% to 0.5%**
* **Processed Foods**: **0.1% to 0.5%**

Factors Influencing Usage:

* **Product Type**: The amount varies depending on whether the product is a liquid (like salad dressing) or a solid (like bread).
* **Desired Function**: If the product requires more stability (e.g., emulsifying oils in dressings or preventing crystallization in chocolate), the amount of diglycerides may be higher.
* **Regulations**: Food manufacturers must comply with local food safety and regulatory guidelines, which can influence the maximum allowable levels of diglycerides in food products.

Because diglycerides are effective in very small amounts, they are often used in relatively low concentrations, typically around **0.1% to 1.5%** of the total product weight.



BeeChoo LiangBeeChoo Liang  [2:50 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731999045919529)

Ginger oil is used in commercial food products primarily for its distinctive, spicy, and aromatic flavor. The amount of ginger oil used in food products depends on factors like the type of product, flavor intensity desired, and regulatory standards. Ginger oil is highly concentrated, so it is typically used in very small quantities.  
Here’s an overview of typical amounts of ginger oil used in different types of food products:  
1. **Confectionery Products (Candies, Gum, Mints)**

* Ginger oil is often used in candies, chewing gum, and mints, typically to impart a mild, warming flavor.
* The typical concentration is very low, ranging from **0.05% to 0.2%** of the total product weight.
  + In **ginger-flavored hard candies** or **gummies**, the concentration might be closer to **0.1%**.
  + In **ginger gum**, the concentration is typically around **0.05%**.

2. **Beverages (Teas, Soft Drinks, Alcoholic Drinks)**

* Ginger oil is used in some beverages like ginger ale, ginger beer, teas, or certain alcoholic drinks (e.g., ginger-based cocktails).
* The concentration of ginger oil in these products is usually around **0.01% to 0.05%** by volume, due to the potency of the oil.
  + For instance, in **ginger ale**, you might find around **0.01% to 0.05%** ginger oil, with additional flavoring often coming from ginger extract or ginger concentrate.

3. **Baked Goods (Gingerbread, Cakes, Cookies)**

* In baked goods such as gingerbread, ginger cookies, and cakes, ginger oil can be used to enhance the flavor and aroma.
* Typically, **0.05% to 0.2%** of ginger oil is used in the batter or dough.
  + For example, in **gingerbread cookies**, the oil might be used at around **0.1%** to give a rich, spicy flavor.

4. **Savory Products (Sauces, Marinades, Dressings)**

* Ginger oil can also be used in savory applications such as sauces, marinades, and salad dressings, particularly in Asian-inspired or spicy dishes.
* The amount of ginger oil used is typically in the range of **0.05% to 0.2%** of the total product weight.
  + In a **ginger-soy sauce**, ginger oil might be used at around **0.1%** for a balanced, aromatic taste.

5. **Frozen Foods (Ginger-Infused Dishes)**

* In frozen food products such as pre-made meals or ginger-flavored frozen desserts, ginger oil may be used in small quantities to enhance flavor and aroma.
* The concentration in these products typically falls within the range of **0.05% to 0.1%**.

6. **Health or Functional Foods**

* Ginger oil may be included in functional foods marketed for digestive health or as an anti-inflammatory.
* The concentration in these products is typically very low, generally around **0.05% to 0.2%** by weight.

7. **Flavored Snacks (Chips, Popcorn)**

* Some flavored snacks, particularly those with a spicy or exotic flavor profile, may include ginger oil for an extra kick.
* Typical usage is around **0.05% to 0.1%** by weight.

Typical Usage Ranges:

* **Confectionery**: **0.05% to 0.2%**
* **Beverages**: **0.01% to 0.05%**
* **Baked Goods**: **0.05% to 0.2%**
* **Savory Foods**: **0.05% to 0.2%**
* **Frozen Foods**: **0.05% to 0.1%**
* **Health Foods**: **0.05% to 0.2%**

Considerations:

* **Potency**: Ginger oil is highly concentrated, so only small amounts are needed to impart the desired flavor. It’s often used in combination with other ginger ingredients, such as ginger extract or ground ginger, to balance the overall taste.
* **Flavor Profile**: The strong, pungent, and spicy notes of ginger oil can dominate a product if used excessively. Therefore, manufacturers typically use it sparingly to avoid overpowering the overall flavor.
* **Regulatory Guidelines**: Ginger oil is generally recognized as safe (GRAS) by regulatory authorities like the FDA when used in small amounts, but as with any essential oil, it should be used within the recommended limits.

Summary:  
Ginger oil is a powerful ingredient, and its typical use in commercial food products generally ranges from **0.01% to 0.2%**, depending on the product type. The goal is to enhance flavor without overwhelming the other ingredients, as the oil’s potency makes even small amounts effective.

[2:52](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1731999163445619)

BeeChoo Liang

Peppermint essential oil is commonly used in commercial food products for its strong, refreshing mint flavor and aroma. It’s highly concentrated, so only small amounts are needed to achieve the desired taste. The typical amount used in food products depends on the type of product, the flavor intensity, and any relevant regulatory guidelines.  
Here’s an overview of typical amounts of **peppermint essential oil** used in different types of commercial food products:  
1. **Confectionery (Candies, Gum, Mints)**

* **Peppermint essential oil** is widely used in products like candies, chewing gum, mints, and other sweets to provide a bold mint flavor.
* The concentration of peppermint oil is typically around **0.05% to 0.3%** of the total product weight.
  + For example, in **peppermint hard candies**, the concentration is usually around **0.1% to 0.2%**.
  + In **chewing gum**, the typical amount of peppermint essential oil is around **0.05%**.

2. **Beverages (Teas, Soft Drinks, Alcoholic Beverages)**

* Peppermint oil is often used in beverages like peppermint tea, mint-flavored sodas, and alcoholic drinks (e.g., peppermint cocktails).
* The concentration in these drinks is generally **0.01% to 0.05%** by volume, as peppermint oil is very potent.
  + For example, in **peppermint tea**, peppermint oil might be used at around **0.01% to 0.05%**.
  + In **mint-flavored sodas** or **ginger ale**, peppermint oil can be used at **0.05%** or less.

3. **Baked Goods (Cookies, Cakes, Muffins)**

* In baked goods such as **peppermint cookies**, **cakes**, and **muffins**, peppermint oil is used to impart a minty flavor.
* The typical usage is around **0.05% to 0.1%** of the total batter or dough weight.
  + In **gingerbread cookies** or **peppermint-flavored cakes**, you may find peppermint oil at about **0.1%**.

4. **Dairy Products (Ice Cream, Yogurt, Creamers)**

* Peppermint essential oil can be used in dairy products like **mint-flavored ice cream**, **mint yogurt**, or **coffee creamers**.
* In these products, peppermint oil is typically used in concentrations ranging from **0.05% to 0.1%** by weight.
  + For example, in **mint chocolate chip ice cream**, peppermint oil might be used at around **0.05%**.

5. **Savory Products (Sauces, Marinades, Dressings)**

* While less common, peppermint oil may be used in certain savory applications like sauces, marinades, or dressings, particularly for Middle Eastern or Mediterranean-inspired recipes.
* The concentration is typically very low, around **0.05% to 0.1%**, as the flavor needs to be subtle.

6. **Functional and Health Foods (Digestive Aids, Herbal Products)**

* In functional foods marketed for digestive health or relaxation, peppermint oil is sometimes included for its soothing properties.
* The typical amount used in these types of products might be slightly higher than in confections, ranging from **0.1% to 0.5%** by weight, depending on the intended health benefit and formulation.

7. **Flavored Snacks (Chips, Popcorn, etc.)**

* Some flavored snacks, particularly those with a unique or bold flavor profile, may contain small amounts of peppermint oil.
* The concentration is typically around **0.05% to 0.1%**, depending on the product and desired intensity of mint flavor.

Typical Usage Ranges:

* **Confectionery (Candies, Gum, Mints)**: **0.05% to 0.3%**
* **Beverages (Teas, Soft Drinks, Alcoholic Drinks)**: **0.01% to 0.05%**
* **Baked Goods (Cookies, Cakes, Muffins)**: **0.05% to 0.1%**
* **Dairy Products (Ice Cream, Yogurt, Creamers)**: **0.05% to 0.1%**
* **Savory Products (Sauces, Dressings, Marinades)**: **0.05% to 0.1%**
* **Functional Foods**: **0.1% to 0.5%**
* **Flavored Snacks (Chips, Popcorn)**: **0.05% to 0.1%**

Key Considerations:

1. **Potency**: Peppermint essential oil is highly concentrated, so only a small amount is required to provide the desired flavor. It’s often used in combination with other peppermint ingredients (like peppermint extract or ground peppermint) to balance the flavor.
2. **Flavor Balance**: While peppermint oil can provide a strong and refreshing mint flavor, too much can easily overpower the other ingredients. The typical usage is carefully balanced to ensure the product has a pleasant mint flavor without being overly pungent.
3. **Regulatory Guidelines**: The FDA recognizes peppermint oil as generally regarded as safe (GRAS) when used in small quantities, but as with any essential oil, it should be used within recommended limits. Different countries and regulatory bodies may have their own guidelines on how much peppermint oil is allowed in food products.

Example Calculation:  
For a **peppermint-flavored hard candy**, if the total batch weighs 1,000 grams, and the recipe calls for **0.1%** peppermint essential oil, then you would use **1 gram** of peppermint oil in the entire batch.  
In summary, peppermint essential oil is used in food products in concentrations typically ranging from **0.01% to 0.3%**, depending on the product. Due to its potency, it is often used sparingly to provide a refreshing mint flavor without overwhelming the other flavors in the product.



BeeChoo LiangBeeChoo Liang  [7:31 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732015885941849)

**Oil of mustard** (often referred to as **mustard essential oil**) is derived from the seeds of the mustard plant (typically *Brassica juncea* or *Brassica nigra*) and is primarily used for its strong, pungent flavor and potential health benefits. In commercial food products, mustard oil is used sparingly due to its intense flavor and strong aroma. It is not as commonly used in food as other oils, but it can be found in certain types of products where a distinctive mustard flavor is desired.  
The typical amounts of **mustard oil** used in commercial food products depend on the type of product and the desired flavor intensity. Here’s an overview of typical usage ranges in various categories:  
1. **Mustard Condiments (Mustard Sauces, Dressings, and Spreads)**

* Mustard oil is commonly used in **mustard condiments** like mustard sauces, salad dressings, and spreads (e.g., mustard for hot dogs or sandwiches).
* The typical concentration in these types of products is **0.1% to 0.5%** by weight.
  + For example, in a **classic yellow mustard**, you might see mustard oil used at around **0.2% to 0.3%**.
  + In **mustard salad dressings** or **mustard-based sauces**, the oil might also be in the range of **0.1% to 0.3%**.

2. **Pickles and Preserved Foods**

* Mustard oil is a key ingredient in many **pickles** and **preserved vegetables**, particularly in Indian and Middle Eastern cuisine, where it adds both flavor and preservation qualities.
* The typical usage is **0.5% to 2%**, depending on the strength of flavor desired and the preservation needs.
  + In **Indian-style pickles** or **sauces**, mustard oil can be used in relatively high amounts, ranging from **1% to 2%** of the total volume, as it contributes both to flavor and as a preservative.

3. **Savory Foods (Sauces, Marinades, and Meat Preparations)**

* Mustard oil can also be used in **marinades**, **sauces**, and **meat preparations**, especially in certain regional cuisines where its pungency adds depth to the flavor profile.
* The typical concentration is around **0.1% to 0.5%** by weight, depending on the desired level of mustard flavor.
  + For example, in **barbecue sauces**, the amount of mustard oil might be around **0.1% to 0.2%**.

4. **Baked Goods (Mustard-flavored Biscuits, Bread)**

* Some **baked goods** and **savory bread products** might contain mustard oil to enhance flavor, especially in regional recipes.
* The amount used is typically around **0.05% to 0.1%** by weight of the total dough or batter.

5. **Flavored Snacks (Chips, Popcorn, Pretzels)**

* Mustard oil can be used in **flavored snacks** like **mustard-flavored chips**, **popcorn**, or **pretzels**, providing a sharp, tangy flavor.
* The typical concentration is around **0.05% to 0.1%** by weight.

6. **Functional Foods (Herbal Products, Supplements)**

* In some **functional foods** or herbal products, mustard oil may be included due to its purported health benefits, such as promoting digestion and offering anti-inflammatory properties.
* The concentration used in these products is generally around **0.1% to 0.5%**.

7. **Cooking Oils and Blends**

* While mustard oil is used in cooking, it is less commonly found as a standalone cooking oil in commercial food products outside certain regions (such as India). However, **mustard oil blends** can be found in some products.
* The concentration in these blends is typically higher and can range from **10% to 30%** mustard oil, mixed with other oils like soybean or canola oil.

Typical Usage Ranges for Mustard Oil in Commercial Food Products:

* **Mustard Condiments (Mustard Sauces, Dressings, Spreads)**: **0.1% to 0.5%**
* **Pickles and Preserved Foods**: **0.5% to 2%**
* **Savory Foods (Sauces, Marinades, Meat Preparations)**: **0.1% to 0.5%**
* **Baked Goods**: **0.05% to 0.1%**
* **Flavored Snacks (Chips, Popcorn)**: **0.05% to 0.1%**
* **Functional Foods**: **0.1% to 0.5%**

Key Considerations:

1. **Flavor Profile**: Mustard oil is very potent and has a sharp, pungent, and somewhat spicy flavor. Therefore, it is generally used in small amounts to avoid overpowering the dish. This is why its usage is typically low in most food products.
2. **Culinary Tradition**: The use of mustard oil is more common in specific culinary traditions, particularly in South Asian, Middle Eastern, and Mediterranean cuisines. In these regions, mustard oil can be a dominant ingredient in cooking and pickling.
3. **Regulatory Guidelines**: In certain countries, such as the United States, mustard oil is classified as "not generally recognized as safe" (GRAS) for direct food consumption due to concerns about erucic acid content. However, it is widely used in regions where it has a long history of culinary use. In many countries, mustard oil is legally sold for use in food products, particularly in regions where it is a traditional cooking oil.
4. **Preservation**: Mustard oil is also valued for its preservative qualities, especially in pickling, where it helps prevent spoilage and extend shelf life.

Example Calculation:  
For a **mustard sauce** weighing 1,000 grams, if the recipe calls for **0.2%** mustard oil, then **2 grams** of mustard oil would be used in the entire batch. Similarly, for a **pickled vegetable** product using **1%** mustard oil, you would use **10 grams** of mustard oil per 1,000 grams of the total product.  
In summary, **mustard oil** is typically used in small quantities in commercial food products, generally between **0.1% and 0.5%** for flavoring and emulsifying purposes. In certain products, particularly pickles or regional specialties, it may be used in larger amounts (up to 2%). Due to its strong flavor and potential regulatory restrictions in some countries, mustard oil is used carefully and in specific culinary contexts.

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BeeChoo Liang

**Oil of oregano** is a potent essential oil extracted from the leaves of the oregano plant (*Origanum vulgare*), known for its strong flavor and medicinal properties. In commercial food products, oregano oil is typically used in very small quantities due to its intense flavor, which can easily overpower a product if used excessively. It's most often found in **oregano-flavored** products or as an added component in spice blends, sauces, dressings, and functional foods, especially those with Mediterranean or Italian flavor profiles.  
Typical Amounts of **Oil of Oregano** Used in Commercial Food Products:  
Here’s a breakdown of typical usage ranges for **oil of oregano** in various food categories:  
1. **Spice Blends (Italian Seasoning, Pizza Seasoning, etc.)**

* Oil of oregano is often included in spice blends, particularly those that are used for Italian or Mediterranean flavors, like **pizza seasoning**, **Italian seasoning**, or **herb mixes**.
* The typical concentration in these products is around **0.1% to 0.5%** by weight.
  + For example, in a **pizza seasoning** blend, oregano oil might be used at **0.2% to 0.5%** of the total weight to give a noticeable herbal kick without overpowering the blend.

2. **Sauces and Marinades**

* In products like **tomato-based sauces**, **marinades**, and **dressings**, oregano oil is sometimes used to enhance the herbal flavor.
* The amount of oil of oregano typically ranges from **0.05% to 0.2%** by weight.
  + For example, in a **pasta sauce** or **pizza sauce**, you might find **0.1%** of oregano oil, as the flavor is concentrated and needs to be used sparingly.

3. **Prepared Foods (Frozen Meals, Dips, etc.)**

* Some prepared foods, such as **frozen Mediterranean-style meals**, **herb-flavored dips**, and **ready-to-eat sauces**, may contain small amounts of oregano oil to add flavor.
* The concentration is typically around **0.05% to 0.2%** by weight, depending on the product’s flavor profile.

4. **Confectionery (Herbal Candies, Lozenges, etc.)**

* In certain **herbal candies**, **lozenges**, or **gums** marketed for their soothing or digestive benefits, oil of oregano might be used for its strong, aromatic flavor.
* The amount typically ranges from **0.01% to 0.05%**, as the flavor is potent and needs to be used in very low concentrations.

5. **Functional Foods (Health Products, Supplements)**

* Oil of oregano is sometimes included in **functional foods** or **supplements** marketed for health benefits, such as **digestive aids**, **immune boosters**, or **antioxidant-rich products**.
* In these applications, the concentration of oregano oil might be slightly higher, typically ranging from **0.1% to 0.5%** by weight, as it’s more of a functional ingredient rather than a flavoring agent.
  + For example, in an **oregano oil supplement**, the oil could be present at around **0.2% to 0.5%** of the total product weight.

6. **Flavored Snacks (Chips, Popcorn, etc.)**

* Oregano oil may be used in certain **flavored snacks** like **chips**, **popcorn**, or **crackers** to impart an herbal, slightly spicy note.
* The amount is typically around **0.05% to 0.1%** by weight, depending on the desired flavor strength.

7. **Herbal Beverages (Teas, Tonics)**

* In **herbal teas** or **herbal tonics**, oil of oregano is sometimes included for its health-promoting properties, though it’s used sparingly due to its potent flavor.
* The typical concentration is around **0.01% to 0.05%** by volume, as the oil is highly concentrated.

Typical Usage Ranges:

* **Spice Blends (Italian Seasoning, Pizza Seasoning)**: **0.1% to 0.5%**
* **Sauces and Marinades**: **0.05% to 0.2%**
* **Prepared Foods (Frozen Meals, Dips)**: **0.05% to 0.2%**
* **Confectionery (Herbal Candies, Lozenges)**: **0.01% to 0.05%**
* **Functional Foods (Health Products, Supplements)**: **0.1% to 0.5%**
* **Flavored Snacks (Chips, Popcorn)**: **0.05% to 0.1%**
* **Herbal Beverages (Teas, Tonics)**: **0.01% to 0.05%**

Key Considerations:

1. **Potency**: Oil of oregano is extremely concentrated, so only very small amounts are needed to impart the desired flavor. The oil is typically used in combination with other ingredients to balance the overall flavor profile of the product.
2. **Flavor Profile**: The flavor of oregano oil is strong, pungent, and slightly spicy. When used in food products, it adds a distinctive herbal and peppery note. It’s often used sparingly to avoid overpowering the other ingredients.
3. **Health Benefits**: Beyond its flavor, oil of oregano is often used in health-oriented products due to its reputed antibacterial, antiviral, and antioxidant properties. As such, its use in functional foods or supplements may be higher than in flavoring applications.
4. **Regulatory Guidelines**: While oil of oregano is generally recognized as safe (GRAS) for use in food, it should be used in accordance with the recommended limits due to its high concentration and potential to irritate if consumed in excessive quantities.

Example Calculation:  
For a **pizza sauce** weighing 1,000 grams, if the recipe calls for **0.1%** oil of oregano, you would use **1 gram** of oregano oil for the entire batch. Similarly, in a **flavored snack product** using **0.05%** oregano oil, you would use **0.5 grams** per kilogram of product.  
Summary:  
Oil of oregano is used in very small quantities in commercial food products due to its potent flavor and aroma. Typical usage ranges from **0.01% to 0.5%** depending on the product type. It’s most commonly found in **spice blends**, **sauces**, **herbal products**, and **functional foods**, with its strong, pungent flavor carefully balanced to avoid overpowering the product.

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BeeChoo Liang

**Oil of oregano extract** is a diluted form of oregano essential oil, typically suspended in a carrier oil (like olive oil or coconut oil) to reduce its potency while still delivering the characteristic flavor and potential health benefits of oregano. It's often used in food products to provide flavor, as well as for its purported antimicrobial and antioxidant properties. The typical amount of **oregano extract** used in commercial food products depends on the desired intensity of flavor and functional benefits.  
Typical Amount of **Oil of Oregano Extract** in Commercial Food Products  
Here’s an overview of typical usage levels for **oregano extract** across different food categories:  
1. **Spice Blends (Italian Seasoning, Pizza Seasoning, etc.)**

* Oil of oregano extract is commonly used in **herb seasoning blends** like **Italian seasoning**, **pizza seasoning**, and other spice mixes for its strong herbal flavor.
* The typical concentration is **0.05% to 0.3%** by weight.
  + In **pizza seasoning** or **herb blends**, you might find oregano extract used at around **0.1% to 0.2%** to enhance the overall flavor without overpowering the mix.

2. **Sauces, Dressings, and Marinades**

* In **sauces**, **dressings**, and **marinades**, oregano extract is often included to provide a subtle herbal kick, especially in Mediterranean or Italian-style recipes.
* The typical usage range is **0.05% to 0.2%** by weight.
  + For example, in a **tomato-based pasta sauce** or a **Mediterranean salad dressing**, oregano extract might be used at about **0.1%** to **0.2%**.

3. **Prepared and Convenience Foods (Frozen Meals, Canned Foods, etc.)**

* In **prepared foods** like **frozen meals**, **ready-made sauces**, and **canned foods**, oregano extract may be used for flavor enhancement.
* The amount typically ranges from **0.05% to 0.1%** by weight.
  + For instance, in a **ready-to-eat pasta sauce**, oregano extract might be used at **0.1%** to **0.2%** to provide a fresh herbal flavor.

4. **Flavored Snacks (Chips, Popcorn, Crackers, etc.)**

* Oregano extract can be used in **flavored snacks**, such as **herb-flavored chips**, **popcorn**, or **crackers**, to impart a mild oregano flavor.
* The typical concentration is **0.05% to 0.1%** by weight.
  + In **herb-flavored popcorn** or **chips**, oregano extract might be used at about **0.05% to 0.1%** to deliver a light yet noticeable oregano taste.

5. **Confectionery (Herbal Candies, Lozenges, etc.)**

* **Oregano extract** may be used in **herbal candies** or **lozenges** marketed for digestive health or soothing properties.
* The amount is typically very low, around **0.01% to 0.05%**, due to the strong flavor of oregano.
  + In **herbal lozenges** or **cough drops**, oregano extract would be used at very low levels to avoid overpowering the other ingredients.

6. **Functional Foods (Supplements, Herbal Beverages, etc.)**

* Oregano extract is sometimes used in **functional foods**, such as **herbal teas**, **beverages**, or **dietary supplements**, where its health-promoting properties (such as antimicrobial and antioxidant effects) are highlighted.
* The concentration in these products can range from **0.1% to 0.5%** by weight, depending on the intended health benefits.
  + For example, in an **oregano extract supplement** or **herbal tea**, oregano extract could be used at **0.2% to 0.5%** of the product.

7. **Pickles and Fermented Foods**

* Oregano extract is sometimes included in the brine of **pickles** or other **fermented foods**, particularly in Mediterranean and Middle Eastern cuisine.
* The typical amount is around **0.1% to 0.5%**, depending on the product and flavor intensity.
  + For example, in **pickled vegetables**, oregano extract might be used at **0.2%** to enhance the overall seasoning profile.

Typical Usage Ranges for Oregano Extract:

* **Spice Blends (Italian Seasoning, Pizza Seasoning)**: **0.05% to 0.3%**
* **Sauces, Dressings, Marinades**: **0.05% to 0.2%**
* **Prepared Foods (Frozen Meals, Canned Foods)**: **0.05% to 0.1%**
* **Flavored Snacks (Chips, Popcorn, Crackers)**: **0.05% to 0.1%**
* **Confectionery (Herbal Candies, Lozenges)**: **0.01% to 0.05%**
* **Functional Foods (Supplements, Herbal Beverages)**: **0.1% to 0.5%**
* **Pickles and Fermented Foods**: **0.1% to 0.5%**

Key Considerations:

1. **Potency**: Oregano extract, while milder than pure oregano essential oil, is still a concentrated flavoring agent. Only small amounts are needed to achieve the desired flavor, so it's typically used sparingly to avoid overpowering the dish or product.
2. **Flavor Profile**: The flavor of oregano extract is herbal, slightly bitter, and peppery, with earthy undertones. It complements Mediterranean, Italian, and some Middle Eastern dishes, but too much can create an unbalanced flavor profile.
3. **Health Benefits**: Oregano extract is also used in functional foods for its reported health benefits, such as its antimicrobial, antifungal, and antioxidant properties. This may justify higher concentrations in supplements or health-oriented products.
4. **Regulatory Guidelines**: Oregano extract is generally recognized as safe (GRAS) by regulatory bodies like the FDA when used in typical amounts in food. However, its usage should comply with the recommended limits to ensure safe consumption, particularly in functional or health-focused products.

Example Calculation:

* For a **pizza sauce** weighing 1,000 grams, if the recipe calls for **0.1%** oregano extract, you would use **1 gram** of oregano extract for the entire batch.
* For a **herb-flavored chip** product, if the recipe calls for **0.05%** oregano extract, you would use **0.5 grams** per kilogram of chips.

Summary:  
**Oregano extract** is typically used in commercial food products at concentrations ranging from **0.01% to 0.5%**, depending on the product. It’s most commonly found in **spice blends**, **sauces**, **marinades**, **snacks**, **pickles**, and **functional foods**. Due to its strong herbal flavor, oregano extract is used in small amounts to enhance the overall flavor profile without overwhelming the product. In functional foods and health products, the concentration may be higher to capitalize on its reputed health benefits.

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BeeChoo Liang

**Oregano oil** is a highly concentrated essential oil, and its use in commercial food products is typically limited to very small amounts due to its strong, potent flavor. The amount of oregano oil used depends on the type of product, the desired flavor intensity, and whether the oil is being used primarily for flavor or for its health-related properties.  
Here's an overview of typical amounts of **oregano oil** used in various commercial food products:  
1. **Spice Blends (Italian Seasoning, Pizza Seasoning, etc.)**

* **Oregano oil** is sometimes included in **spice blends**, especially in **Italian seasoning** or **pizza seasoning**, to enhance the oregano flavor.
* The typical concentration of oregano oil in these blends is very low, typically between **0.05% to 0.2%** by weight.
  + For example, in a **pizza seasoning** or **herb blend**, oregano oil might be used at **0.1% to 0.2%** by weight.

2. **Sauces, Dressings, and Marinades**

* In **sauces**, **dressings**, and **marinades**, oregano oil can be used to provide a more concentrated oregano flavor compared to dried oregano.
* The typical usage rate is **0.05% to 0.1%** by weight.
  + In a **tomato-based pasta sauce** or a **Mediterranean dressing**, oregano oil could be used at around **0.05% to 0.1%**, given its strong flavor.

3. **Prepared and Convenience Foods (Frozen Meals, Canned Foods, etc.)**

* In **prepared foods** such as **frozen meals**, **ready-made sauces**, and **canned foods**, oregano oil is sometimes used to infuse the food with a subtle, herbal flavor.
* The concentration is usually between **0.05% to 0.1%** by weight.
  + For example, in **pre-packaged pasta sauces** or **meat marinades**, oregano oil might be used at around **0.1%**.

4. **Flavored Snacks (Chips, Popcorn, Crackers, etc.)**

* Oregano oil is occasionally used in **flavored snacks**, like **herb-flavored chips**, **popcorn**, or **crackers**, to impart a light oregano flavor.
* The typical concentration is **0.05% to 0.1%** by weight.
  + For instance, in **herb-flavored popcorn**, oregano oil might be used at about **0.05%** to deliver a mild oregano taste.

5. **Functional Foods (Herbal Supplements, Beverages, etc.)**

* In **functional foods** and **herbal supplements** marketed for their health benefits (such as **antioxidant** or **digestive support**), oregano oil can be used at slightly higher concentrations.
* The amount typically ranges from **0.1% to 0.5%** by weight, depending on the product’s intended benefits.
  + For example, in an **oregano oil supplement** or an **herbal beverage**, oregano oil might be used at **0.2% to 0.5%**.

6. **Pickles and Fermented Foods**

* In **pickles** and other **fermented foods**, oregano oil may be used for flavoring and preservation purposes, especially in Mediterranean-style or health-oriented pickles.
* The concentration is generally **0.1% to 0.3%** by weight.
  + For example, in **pickled vegetables** or **fermented foods**, oregano oil might be added at around **0.1%** to **0.2%**.

7. **Confectionery (Herbal Candies, Lozenges, etc.)**

* In some **herbal candies**, **lozenges**, or **gums** marketed for soothing or digestive benefits, oregano oil may be used in tiny quantities.
* The typical concentration is very low, ranging from **0.01% to 0.05%** by weight.
  + For instance, in an **herbal lozenge** or **cough drop**, oregano oil could be used at **0.01%** to **0.05%**, as it is highly concentrated and potent.

Typical Usage Ranges for **Oregano Oil**:

* **Spice Blends (Italian Seasoning, Pizza Seasoning)**: **0.05% to 0.2%**
* **Sauces, Dressings, Marinades**: **0.05% to 0.1%**
* **Prepared and Convenience Foods (Frozen Meals, Canned Foods)**: **0.05% to 0.1%**
* **Flavored Snacks (Chips, Popcorn, Crackers)**: **0.05% to 0.1%**
* **Functional Foods (Herbal Supplements, Beverages)**: **0.1% to 0.5%**
* **Pickles and Fermented Foods**: **0.1% to 0.3%**
* **Confectionery (Herbal Candies, Lozenges)**: **0.01% to 0.05%**

Key Considerations:

1. **Potency**: Oregano oil is highly concentrated, so it’s used in very small quantities, even in products that are meant to highlight oregano flavor. Overuse can lead to an overpowering, bitter, and spicy taste.
2. **Flavor Profile**: Oregano oil has a very strong, spicy, and aromatic flavor, and is best used in moderation. It's often used in conjunction with other ingredients to round out its sharpness.
3. **Health Benefits**: Oregano oil is commonly included in **functional foods**, **health supplements**, and **herbal beverages** due to its reputed antimicrobial, antioxidant, and anti-inflammatory properties. In these cases, higher concentrations may be used to deliver potential health benefits.
4. **Regulatory Guidelines**: While oregano oil is generally regarded as safe (GRAS) in small amounts, its strong concentration means that its use must be carefully controlled in food products to avoid excessive intake. Regulatory bodies like the **FDA** may not approve oregano oil in all food applications, particularly in large quantities or certain types of foods.

Example Calculation:

* In a **pizza sauce** that weighs 1,000 grams, if the recipe calls for **0.1% oregano oil**, then you would use **1 gram** of oregano oil for the entire batch.
* In a **herb-flavored chip** product that weighs 1 kilogram, if the recipe calls for **0.05% oregano oil**, you would use **0.5 grams** of oregano oil.

Summary:  
**Oregano oil** is typically used in very small quantities in commercial food products, ranging from **0.01% to 0.5%** by weight, depending on the type of product and whether it’s used for flavor or functional purposes. In **spice blends**, **sauces**, **snacks**, and **functional foods**, oregano oil is used carefully to impart its distinctive herbal flavor without overwhelming the product. It is most commonly found in products that aim to deliver an **Italian**, **Mediterranean**, or **herbal** flavor, and is used in even smaller amounts in **health supplements** or **confectionery**.

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BeeChoo Liang

**Oregano essential oil** is a potent, aromatic oil that is used sparingly in commercial food products due to its strong flavor and concentrated properties. It is extracted from the leaves and flowers of the *Origanum vulgare* plant and is known for its robust, spicy, and slightly bitter taste. Because of its intensity, oregano essential oil is typically used in very small amounts in food products, primarily for flavoring and occasionally for its purported health benefits (antioxidant, antimicrobial, etc.).  
Typical Amounts of **Oregano Essential Oil** in Commercial Food Products  
Here’s an overview of typical usage levels for **oregano essential oil** across various food categories:  
1. **Spice Blends (Italian Seasoning, Pizza Seasoning, etc.)**

* **Oregano essential oil** is sometimes used in spice blends like **Italian seasoning**, **pizza seasoning**, or **herb mixes** to intensify the oregano flavor.
* The typical concentration in these blends is **0.05% to 0.2%** by weight.
  + For example, in **pizza seasoning**, oregano oil might be used at about **0.1% to 0.2%** to deliver a noticeable oregano flavor without overwhelming the product.

2. **Sauces, Dressings, and Marinades**

* In **sauces**, **dressings**, and **marinades**, oregano essential oil can be used to impart a more potent flavor, especially in Mediterranean or Italian-style recipes.
* The typical usage range is **0.05% to 0.1%** by weight.
  + For example, in a **tomato-based pasta sauce** or **Mediterranean dressing**, oregano essential oil might be used at **0.05% to 0.1%** by weight, as the oil is quite concentrated.

3. **Prepared and Convenience Foods (Frozen Meals, Canned Foods, etc.)**

* In **prepared foods** such as **frozen meals**, **ready-made sauces**, or **canned foods**, oregano oil is sometimes included to enhance the overall flavor profile.
* The amount is typically **0.05% to 0.1%** by weight.
  + For example, in **pre-packaged tomato sauces** or **meat marinades**, oregano essential oil might be used at **0.1%** by weight.

4. **Flavored Snacks (Chips, Popcorn, Crackers, etc.)**

* **Oregano essential oil** can be used in **flavored snacks** like **chips**, **popcorn**, or **crackers** to deliver a subtle oregano flavor.
* The concentration typically ranges from **0.05% to 0.1%** by weight.
  + For example, in **herb-flavored popcorn** or **savory crackers**, oregano essential oil could be used at about **0.05%**.

5. **Functional Foods (Herbal Supplements, Beverages, etc.)**

* In **functional foods** or **herbal supplements** that emphasize health benefits (e.g., antimicrobial or antioxidant properties), oregano essential oil may be used at slightly higher concentrations.
* The amount typically ranges from **0.1% to 0.5%** by weight, depending on the health-focused claims of the product.
  + For example, in an **oregano oil supplement** or an **herbal beverage**, oregano essential oil might be used at **0.2% to 0.5%** of the total weight.

6. **Pickles and Fermented Foods**

* In some **pickles** or **fermented foods**, oregano essential oil is added for flavor and potential preservation benefits, particularly in Mediterranean-style pickles.
* The concentration is generally **0.1% to 0.3%** by weight.
  + For example, in **pickled vegetables** or **fermented foods**, oregano essential oil might be used at about **0.1%** to **0.2%**.

7. **Confectionery (Herbal Candies, Lozenges, etc.)**

* **Oregano essential oil** may be used in **herbal candies**, **lozenges**, or **cough drops** that highlight oregano's soothing properties for digestive or respiratory health.
* The amount is typically **0.01% to 0.05%** by weight due to its strong flavor.
  + For example, in an **herbal lozenge** or **cough drop**, oregano essential oil would be used at a very low concentration, typically around **0.01%** to **0.05%**.

Typical Usage Ranges for **Oregano Essential Oil**:

* **Spice Blends (Italian Seasoning, Pizza Seasoning)**: **0.05% to 0.2%**
* **Sauces, Dressings, Marinades**: **0.05% to 0.1%**
* **Prepared and Convenience Foods (Frozen Meals, Canned Foods)**: **0.05% to 0.1%**
* **Flavored Snacks (Chips, Popcorn, Crackers)**: **0.05% to 0.1%**
* **Functional Foods (Herbal Supplements, Beverages)**: **0.1% to 0.5%**
* **Pickles and Fermented Foods**: **0.1% to 0.3%**
* **Confectionery (Herbal Candies, Lozenges)**: **0.01% to 0.05%**

Key Considerations:

1. **Potency**: **Oregano essential oil** is highly concentrated and potent. As a result, it is used in very small quantities to prevent it from overpowering the flavor of the food product. Its flavor is strong, pungent, and spicy, so a little goes a long way.
2. **Flavor Profile**: The flavor of oregano essential oil is much more intense than dried oregano or oregano extract. It has a peppery, spicy kick, and its aroma is very distinctive. The oil is often used to complement other spices or herbs in a product.
3. **Health Benefits**: Oregano essential oil is valued for its **antioxidant**, **antimicrobial**, and **anti-inflammatory** properties. In health-oriented products, especially **herbal supplements** or **functional foods**, oregano essential oil may be used in higher concentrations to capitalize on its purported health benefits.
4. **Regulatory Guidelines**: Oregano essential oil is generally recognized as safe (GRAS) by the **FDA** for use in small quantities in food. However, due to its strong properties, it is subject to limits to ensure safe consumption.

Example Calculation:

* In a **pizza sauce** weighing 1,000 grams, if the recipe calls for **0.1% oregano essential oil**, you would use **1 gram** of oregano essential oil for the entire batch.
* In **herb-flavored crackers** weighing 1 kilogram, if the recipe calls for **0.05% oregano essential oil**, you would use **0.5 grams** of oregano essential oil.

Summary:  
**Oregano essential oil** is typically used in **very small amounts** in commercial food products, ranging from **0.01% to 0.5%** by weight, depending on the product and its intended flavor or health benefits. It is most commonly found in **spice blends**, **sauces**, **prepared foods**, **snacks**, and **functional foods**. The strong, potent flavor of oregano essential oil makes it ideal for use in small quantities to enhance the flavor profile without overwhelming the product. In **health-focused products**, its higher concentrations can be used to take advantage of its antimicrobial and antioxidant properties.



BeeChoo LiangBeeChoo Liang  [7:47 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732016854583889)

**Allspice oil** is a potent essential oil derived from the dried berries of the *Pimenta dioica* tree, which is native to the Caribbean and Central America. It has a warm, aromatic flavor reminiscent of a combination of cinnamon, cloves, and nutmeg. As with other essential oils, the amount of allspice oil used in commercial food products is typically quite low due to its strong flavor and aroma.  
Here’s a breakdown of the typical usage of **allspice oil** in various commercial food products:  
1. **Spice Blends and Seasonings**

* Allspice oil can be included in **spice blends** such as **pumpkin pie spice**, **apple pie spice**, or **gingerbread seasoning**, where it adds a warm, aromatic note.
* The typical usage in spice blends ranges from **0.05% to 0.2%** by weight.
  + For example, in **pumpkin pie spice** or **holiday spice blends**, you might find **allspice oil** used at **0.1% to 0.2%** to complement other spices without overpowering the mix.

2. **Baked Goods (Cookies, Cakes, Pies)**

* In **baked goods** such as **cookies**, **cakes**, or **pies**, allspice oil can be used to add a deep, aromatic flavor, especially in recipes with **spiced fruits** (e.g., apple, pear, or pumpkin).
* The concentration typically ranges from **0.05% to 0.1%** by weight.
  + For instance, in **gingerbread cookies** or a **spiced apple pie filling**, allspice oil might be used at about **0.05% to 0.1%**.

3. **Sauces, Marinades, and Dressings**

* Allspice oil can sometimes be found in **savory sauces**, **marinades**, or **dressings**, particularly in Caribbean or Mediterranean-inspired recipes, where it contributes to the depth of flavor.
* The typical usage in sauces and marinades is **0.05% to 0.1%** by weight.
  + In **barbecue sauces** or **spiced marinades**, allspice oil might be used at **0.05%** to **0.1%** to add complexity to the flavor profile.

4. **Flavored Beverages (Herbal Teas, Spiced Drinks)**

* In **flavored beverages** like **spiced teas**, **apple cider**, or other **herbal drinks**, allspice oil is occasionally used for its warm, slightly sweet, and aromatic properties.
* The typical concentration is **0.01% to 0.05%** by weight.
  + For example, in **spiced cider** or a **winter herbal tea blend**, allspice oil might be used at **0.05%** or lower to avoid overpowering the drink with its potent flavor.

5. **Confectionery (Candies, Chocolates, Gums)**

* **Allspice oil** can be used in **candies**, **chocolates**, or **gums** for a unique, warm flavor, especially in **spiced chocolate** or **holiday-themed confections**.
* The amount typically ranges from **0.01% to 0.05%** by weight.
  + In **spiced chocolate** or **gourmet candy**, allspice oil would typically be used at around **0.01% to 0.05%** due to its strong flavor.

6. **Pickles and Fermented Foods**

* **Allspice oil** can be used in **pickles** or other **fermented foods**, particularly in those with a **Caribbean** or **Mediterranean** flavor profile.
* The concentration is typically between **0.05% to 0.1%** by weight.
  + For example, in **pickled vegetables** or **fermented olives**, allspice oil might be used at around **0.05%** to **0.1%**.

7. **Herbal and Functional Foods (Supplements, Health Products)**

* Allspice oil is occasionally included in **herbal supplements** or **functional foods** for its aromatic and purported digestive benefits.
* The concentration in these products is typically **0.05% to 0.1%** by weight, depending on the product formulation.
  + For instance, in an **herbal digestive supplement** or **spiced functional drink**, allspice oil might be used at **0.05%** to **0.1%** for its flavor and potential health benefits.

Typical Usage Ranges for **Allspice Oil**:

* **Spice Blends and Seasonings**: **0.05% to 0.2%**
* **Baked Goods (Cookies, Cakes, Pies)**: **0.05% to 0.1%**
* **Sauces, Marinades, and Dressings**: **0.05% to 0.1%**
* **Flavored Beverages (Herbal Teas, Spiced Drinks)**: **0.01% to 0.05%**
* **Confectionery (Candies, Chocolates, Gums)**: **0.01% to 0.05%**
* **Pickles and Fermented Foods**: **0.05% to 0.1%**
* **Herbal and Functional Foods (Supplements, Health Products)**: **0.05% to 0.1%**

Key Considerations:

1. **Potency**: **Allspice oil** is very potent, and even a small amount can have a significant impact on the flavor of a product. Therefore, it's used in very low concentrations, typically less than **0.2%** by weight in most food products.
2. **Flavor Profile**: Allspice oil has a distinctive warm, aromatic flavor that combines hints of **cinnamon**, **clove**, and **nutmeg**. This makes it especially useful in sweet spice blends, but it can also add complexity to savory dishes.
3. **Health Benefits**: In some cases, allspice oil is used for its **antioxidant**, **anti-inflammatory**, and **digestive** properties. It is sometimes found in **herbal supplements** and **functional foods** marketed for digestive health.
4. **Regulatory Guidelines**: **Allspice oil** is generally recognized as safe (GRAS) by the FDA when used in appropriate concentrations in food. However, because it is an essential oil, its use is typically regulated to ensure safe consumption, particularly in high-volume or mass-market products.

Example Calculation:

* For a **spiced cookie dough** weighing 1,000 grams, if the recipe calls for **0.05% allspice oil**, you would use **0.5 grams** of allspice oil for the entire batch.
* In **spiced apple cider** that weighs 1 liter, if the recipe calls for **0.05% allspice oil**, you would use **0.5 milliliters** of allspice oil (since 1 milliliter of essential oil weighs approximately 1 gram).

Summary:  
**Allspice oil** is typically used in very small amounts in commercial food products, ranging from **0.01% to 0.2%** by weight. It is most commonly found in **spice blends**, **baked goods**, **sauces**, **pickles**, **confectionery**, and **functional foods**. Due to its strong flavor and potent aromatic profile, allspice oil is used sparingly to provide a warm, spiced note without overpowering other ingredients. Its use is common in products that require **sweet spice** notes, especially for **holiday** or **Caribbean-inspired** foods.

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BeeChoo Liang

**Aphanizomenon flos-aquae** (AFA) is a type of blue-green algae found primarily in **Klamath Lake** (Oregon, USA). It has become popular in the health food market due to its purported health benefits, which include high concentrations of **protein**, **vitamins**, **minerals**, **antioxidants**, and **omega-3 fatty acids**. It’s often sold in powdered form or as an extract and is used in various dietary supplements, functional foods, and beverages.  
Because of its nutritional profile, **Aphanizomenon flos-aquae** is commonly included in health-focused or **functional foods**, especially products targeting **detoxification**, **energy**, or **immune support**. However, its use in commercial food products is generally regulated and limited due to its potency and the specific nature of its active compounds.  
Typical Amounts of **Aphanizomenon flos-aquae** Used in Commercial Food Products  
The amount of **Aphanizomenon flos-aquae** (AFA) used in commercial products depends on the type of product and the intended health or nutritional benefit. Here are typical amounts and formulations where it may be found:  
1. **Dietary Supplements (Capsules, Tablets, Powders)**

* AFA is most commonly used in **dietary supplements** like **capsules**, **tablets**, and **powders**. These products are designed to provide higher concentrations of the algae's nutrients.
* The typical dosage in these products is **500 mg to 1,500 mg** per serving, but this can vary depending on the brand and specific health benefits being targeted.
* For example, a supplement might contain **500 mg to 1 g** of AFA per capsule or tablet, with recommended servings being 1-2 capsules per day.

2. **Functional Beverages (Smoothies, Juices, Energy Drinks)**

* Aphanizomenon flos-aquae is sometimes added to **functional beverages**, particularly **smoothies**, **juices**, or **energy drinks** marketed for their **detox**, **immune-boosting**, or **energy-enhancing** properties.
* The typical concentration in such products ranges from **0.1% to 1%** by weight (i.e., **100 mg to 1,000 mg per serving**).
  + For example, in a **500 ml bottle of energy drink**, it might contain around **500 mg to 1,000 mg** of AFA.
  + In **smoothie powders** or **meal replacement drinks**, the algae powder might be used at **0.5% to 1%** by weight, depending on the product formulation.

3. **Superfoods and Nutritional Bars**

* Aphanizomenon flos-aquae is sometimes included in **superfood blends** or **nutritional bars** that aim to provide a rich source of protein, vitamins, and antioxidants.
* The typical amount used in **bars** or **powdered mixes** is **0.5% to 1%** by weight.
  + For instance, in a **50-gram superfood bar**, it might contain **250 mg to 500 mg** of AFA.

4. **Smoothie or Protein Powder Blends**

* Aphanizomenon flos-aquae is used in **protein powders**, **superfood smoothie mixes**, and other **functional powder blends** for its nutritional profile. These products may contain higher concentrations, particularly when marketed as **superfoods**.
* In these types of products, the concentration is typically between **0.5% and 2%** by weight, depending on the desired nutrient density and taste.
  + A typical serving of **smoothie powder** may contain **500 mg to 2,000 mg** of AFA per serving.

5. **Energy Bars and Supplements for Athletic Performance**

* Aphanizomenon flos-aquae is sometimes used in **energy bars** and other products aimed at athletes or individuals looking for a natural boost of energy.
* The typical usage is **0.5% to 1%** by weight, depending on the formulation.
  + For example, in a **40-gram energy bar**, it might contain about **200 mg to 400 mg** of AFA.

6. **Baked Goods and Other Food Products**

* Although less common, Aphanizomenon flos-aquae has been incorporated into some **baked goods**, **granola**, or **functional foods** to add nutritional value.
* The amount used in these types of products is typically very low—usually in the range of **0.05% to 0.5%** by weight.
  + For instance, in **granola** or **energy bites**, AFA might make up **0.1% to 0.5%** of the total weight, delivering **100 mg to 500 mg** of AFA per serving.

Typical Usage Ranges for **Aphanizomenon flos-aquae** in Commercial Products:

* **Dietary Supplements (Capsules, Tablets, Powders)**: **500 mg to 1,500 mg per serving**.
* **Functional Beverages (Smoothies, Juices, Energy Drinks)**: **0.1% to 1% by weight** (e.g., **100 mg to 1,000 mg per serving**).
* **Superfood and Nutritional Bars**: **0.5% to 1% by weight** (e.g., **250 mg to 500 mg per serving**).
* **Smoothie or Protein Powder Blends**: **0.5% to 2% by weight** (e.g., **500 mg to 2,000 mg per serving**).
* **Energy Bars and Performance Supplements**: **0.5% to 1% by weight** (e.g., **200 mg to 400 mg per serving**).
* **Baked Goods or Granola**: **0.05% to 0.5% by weight** (e.g., **100 mg to 500 mg per serving**).

Key Considerations:

1. **Concentration and Potency**: Aphanizomenon flos-aquae is nutrient-dense, and small amounts are typically sufficient to provide a significant health benefit. Due to its potency, it’s used in low to moderate concentrations in most food products, particularly functional foods and beverages.
2. **Nutritional Benefits**: AFA is valued for its **rich protein content**, **omega-3 fatty acids**, **vitamins (like B-vitamins)**, **minerals (like iron and magnesium)**, and **antioxidants**. It is commonly marketed as a **superfood** in various forms, including powder and extract.
3. **Taste and Sensory Profile**: The taste of Aphanizomenon flos-aquae can be **earthy**, **grassy**, or **slightly bitter**. In food products, it is often used in combination with other ingredients to balance its flavor and ensure it does not dominate the taste profile.
4. **Regulatory Considerations**: As a blue-green algae, Aphanizomenon flos-aquae is generally considered **safe** (GRAS) for use in food products. However, since it is often consumed in concentrated forms (e.g., powders and extracts), quality control and testing are critical to ensure safety, particularly with regard to **contaminants** (e.g., heavy metals, microcystins).

Example Calculation:

* For a **smoothie powder** (weighing **50 grams per serving**), if the recipe calls for **1% AFA**, you would use **0.5 grams** of AFA powder per serving.
* In a **500 ml bottle of energy drink**, if it contains **0.5% AFA**, the product would contain **2.5 grams** of AFA per bottle.

Summary:  
**Aphanizomenon flos-aquae** is typically used in **small to moderate amounts** in commercial food products, particularly in **dietary supplements**, **functional beverages**, **superfoods**, and **energy bars**. The concentration typically ranges from **0.05% to 2% by weight**, depending on the product type and desired nutritional benefits. The use of AFA is common in **health-focused** and **performance-boosting** products, thanks to its high nutritional value, including **protein**, **antioxidants**, and **omega-3s**. It’s important to control the amount used, as it is a potent ingredient that can impact both flavor and health benefits.

[7:52](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732017160378499)

BeeChoo Liang

**Black cumin** (also known as **nigella sativa**) is a spice derived from the seeds of a flowering plant in the **Ranunculaceae** family. It is used in many cuisines, especially in Middle Eastern, Mediterranean, and South Asian cooking, known for its slightly bitter, peppery, and aromatic flavor. The seeds can be used whole or ground, and black cumin oil or extract is sometimes used in certain commercial food products for both flavor and potential health benefits.  
In commercial food products, black cumin is typically used in smaller amounts because of its potent flavor profile. The typical usage of **black cumin** in food products depends on whether it's used in its **seed** form (whole or ground), as an **oil**, or as an **extract**.  
Typical Amounts of **Black Cumin** Used in Commercial Food Products  
1. **Spice Blends and Seasonings**

* **Black cumin seeds** are often incorporated into **spice blends** such as **garam masala**, **curry powders**, or **Mediterranean spice mixes**. The amount used in these blends depends on the desired flavor intensity.
* **Typical usage**: **0.1% to 1%** by weight, depending on the blend.
  + For example, in **curry powder**, **0.2% to 0.5%** of the total weight might be black cumin seeds.

2. **Baked Goods (Breads, Crackers, etc.)**

* Black cumin seeds are sometimes added to **baked goods** like **flatbreads**, **crackers**, or **bagels**. It provides a mild, earthy flavor that complements other herbs and spices.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For instance, in a **bread dough** or **crackers**, black cumin might be used at **0.1% to 0.5%** by weight.

3. **Oil (Black Cumin Seed Oil)**

* **Black cumin seed oil** is used in small amounts in various **dressings**, **sauces**, and **functional foods** for both flavor and potential health benefits, such as **anti-inflammatory** and **antioxidant** properties.
* **Typical usage**: **0.05% to 0.2%** by weight in **dressings**, **sauces**, or **smoothie mixes**.
  + For example, in a **salad dressing** or **sauce**, **0.05% to 0.1%** by weight of black cumin oil might be used to provide a mild, aromatic flavor.

4. **Herbal or Functional Beverages**

* In some **functional beverages**, particularly those marketed as **detox** or **health drinks**, **black cumin extract** or **black cumin seed oil** is included for its nutritional and therapeutic properties.
* **Typical usage**: **0.05% to 0.1%** by weight.
  + For example, in a **health beverage** or **herbal tea**, the amount of black cumin oil or extract could be around **0.05%** to **0.1%** of the total product weight.

5. **Prepared Foods (Pickles, Sauces, Marinades)**

* Black cumin is sometimes added to **pickles**, **marinades**, or **sauces**, especially in **Middle Eastern** or **Indian** cuisines. The flavor is subtle but adds a complex layer to the overall taste profile.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For example, in **pickled vegetables** or **marinade mixtures**, the concentration might range from **0.1% to 0.3%** by weight.

6. **Confectionery (Candies, Sweets, etc.)**

* While less common, black cumin can sometimes be found in **specialty candies** or **gourmet chocolates**, particularly those that draw on Middle Eastern or South Asian flavors.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + In a **gourmet chocolate** or **spiced candy**, black cumin might be used at around **0.05%** to **0.2%** of the total weight.

7. **Nut Butters and Snacks**

* Black cumin seeds or its oil might be used in **nut butters** (e.g., peanut butter or almond butter) or **savory snacks** (e.g., spiced nuts, chips, or trail mix) to introduce an earthy and aromatic flavor.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For instance, in a **savory nut butter** or **spiced snack mix**, black cumin might be used at **0.1%** to **0.5%** of the total weight.

Summary of Typical Amounts in Commercial Food Products:

* **Spice Blends and Seasonings**: **0.1% to 1%** by weight
* **Baked Goods (Breads, Crackers)**: **0.1% to 0.5%** by weight
* **Black Cumin Seed Oil**: **0.05% to 0.2%** by weight (in dressings, sauces, functional beverages)
* **Herbal or Functional Beverages**: **0.05% to 0.1%** by weight
* **Prepared Foods (Pickles, Sauces, Marinades)**: **0.1% to 0.5%** by weight
* **Confectionery (Candies, Sweets)**: **0.05% to 0.2%** by weight
* **Nut Butters and Snacks**: **0.1% to 0.5%** by weight

Key Considerations:

1. **Flavor Intensity**: Black cumin has a strong, distinctive flavor, which is why it is used in **small quantities** in food products. The intensity of the flavor can vary depending on whether the product contains **whole seeds**, **ground seeds**, or **oil**.
2. **Form of Use**: The form in which black cumin is used—whether as **whole seeds**, **ground powder**, or **oil**—impacts the concentration used. **Oil** is more concentrated and potent, so it is used at lower levels compared to **seeds** or **ground powder**.
3. **Health Benefits**: Black cumin is often marketed for its **antioxidant**, **anti-inflammatory**, and **immune-boosting** properties, and can sometimes be used at slightly higher concentrations in **functional foods** or **health supplements**.
4. **Sensory Profile**: Black cumin can be quite aromatic, with a complex flavor profile. It is commonly described as **earthy**, **spicy**, **slightly bitter**, and **peppery**, which can make it a perfect addition to savory foods or foods with a spice-centric flavor profile (e.g., Indian, Middle Eastern, and Mediterranean).

Example Calculation:

* For a **savory snack mix** (weighing **100 grams**), if the recipe calls for **0.3% black cumin seeds**, you would use **0.3 grams** of black cumin.
* In a **salad dressing** (weighing **200 grams**), if the recipe calls for **0.1% black cumin oil**, you would use **0.2 grams** (or **200 mg**) of black cumin oil.

Conclusion:  
**Black cumin** is used in commercial food products in relatively **small amounts**, typically ranging from **0.05% to 1%** by weight, depending on the product. It is most commonly found in **spice blends**, **baked goods**, **sauces**, **functional beverages**, and **savory snacks**. Its potent flavor requires careful balancing in the formulation, and it is especially useful in products with a complex, earthy, and slightly peppery flavor profile.

[7:56](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732017384472489)

BeeChoo Liang

**Peppermint oil extract** (often referred to as **peppermint extract** or **peppermint oil** when used in food products) is a concentrated form of peppermint flavor derived from the leaves of the *Mentha piperita* plant. It has a strong, minty aroma and flavor and is commonly used in a variety of **food products**, particularly for its refreshing taste and cooling sensation.  
When used in commercial food products, **peppermint oil extract** is typically used in small quantities because of its intense flavor. The amount used depends on the type of food, the form of the extract (liquid, powder, or oil), and the intended flavor profile.  
Typical Amounts of **Peppermint Oil Extract** Used in Commercial Food Products  
1. **Confectionery (Candies, Chocolates, Gums)**

* Peppermint oil extract is widely used in **mint-flavored candies**, **gum**, and **chocolates**. Its cooling sensation and distinct flavor make it a popular choice for mint products.
* **Typical usage**: **0.1% to 1%** by weight.
  + For example, in a **mint chocolate** or **peppermint hard candy**, peppermint oil extract is often used at **0.2% to 0.5%** of the total product weight.

2. **Baked Goods (Cookies, Cakes, Muffins)**

* In **baked goods**, peppermint oil extract is used to impart a refreshing mint flavor in **cookies**, **cakes**, and **cupcakes**. It's especially popular during the **holiday season** for products like **peppermint brownies** and **mint chocolate chip cookies**.
* **Typical usage**: **0.05% to 0.1%** by weight.
  + For instance, in a **cake batter** or **cookie dough**, peppermint oil extract might be used at **0.05% to 0.1%** to achieve a subtle mint flavor.

3. **Beverages (Teas, Energy Drinks, Soft Drinks)**

* Peppermint oil extract is sometimes added to **beverages**, such as **mint-flavored teas**, **energy drinks**, or **sparkling waters**. It provides a refreshing mint taste, and is often used in combination with other flavors.
* **Typical usage**: **0.01% to 0.05%** by weight.
  + For example, in a **mint tea** or **sparkling water**, peppermint oil extract might be used at **0.01% to 0.05%** for a subtle mint flavor.

4. **Ice Cream and Frozen Desserts**

* Peppermint oil extract is a common ingredient in **mint-flavored ice cream**, **gelato**, or **frozen yogurt**, particularly when paired with **chocolate** or **chocolate chips** for a **mint chocolate chip** flavor.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + In a **mint chocolate chip ice cream**, peppermint oil extract could be used at **0.05% to 0.1%** of the total product weight, depending on how strong the mint flavor needs to be.

5. **Chewing Gums and Mints**

* Peppermint oil extract is frequently used in **gum** and **breath mints** due to its intense mint flavor and refreshing effect.
* **Typical usage**: **0.1% to 1%** by weight.
  + In **sugar-free gum** or **breath mints**, peppermint oil extract might be used at **0.5% to 1%**, given that these products often have a strong mint flavor.

6. **Dairy Products (Yogurt, Milkshakes)**

* Peppermint oil extract can be used to flavor **yogurts**, **milkshakes**, or **smoothies**, particularly in **holiday-themed** or **mint chocolate** varieties.
* **Typical usage**: **0.01% to 0.05%** by weight.
  + For instance, in a **mint-flavored yogurt** or **milkshake**, peppermint oil extract may be used at **0.01% to 0.05%** for a subtle minty taste.

7. **Syrups, Sauces, and Dressings**

* **Peppermint oil extract** is sometimes included in **syrups**, **sauces**, and **dressings** (especially **mint chocolate syrup** or **mint sauces** used in desserts or as toppings).
* **Typical usage**: **0.05% to 0.1%** by weight.
  + In **mint chocolate syrup** or **dessert sauces**, peppermint oil extract might be used at **0.05% to 0.1%** by weight to enhance the mint flavor.

8. **Functional Foods (Supplements, Herbal Products)**

* Peppermint oil extract may be used in certain **functional foods** or **herbal products** due to its soothing properties for the digestive system and its **cooling effect**.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + In **herbal supplements** or **digestive health products**, peppermint oil extract might be included at **0.05% to 0.2%** by weight.

Typical Usage Ranges for **Peppermint Oil Extract**:

* **Confectionery (Candies, Chocolates, Gums)**: **0.1% to 1%** by weight
* **Baked Goods (Cookies, Cakes, Muffins)**: **0.05% to 0.1%** by weight
* **Beverages (Teas, Energy Drinks, Soft Drinks)**: **0.01% to 0.05%** by weight
* **Ice Cream and Frozen Desserts**: **0.05% to 0.2%** by weight
* **Chewing Gums and Mints**: **0.1% to 1%** by weight
* **Dairy Products (Yogurt, Milkshakes)**: **0.01% to 0.05%** by weight
* **Syrups, Sauces, and Dressings**: **0.05% to 0.1%** by weight
* **Functional Foods (Supplements, Herbal Products)**: **0.05% to 0.2%** by weight

Key Considerations:

1. **Potency**: Peppermint oil extract is highly concentrated, so only a small amount is needed to achieve a strong flavor. This makes it a versatile ingredient, but it also requires precise formulation to avoid overpowering the final product.
2. **Flavor Profile**: Peppermint oil extract has a **sharp**, **minty**, and **cooling** flavor, which can be refreshing but also quite intense. It’s typically used in combination with other ingredients to balance its strong flavor, especially in products like baked goods, beverages, and confections.
3. **Health and Functional Benefits**: In addition to its flavoring properties, peppermint oil is also used for its **digestive** and **cooling** effects, which may be marketed as health benefits in certain functional foods or supplements.
4. **Sensory Impact**: Peppermint oil extract imparts not only a flavor but also a **cooling sensation** that can affect the overall sensory experience of a food product. This is especially valued in **minty** candies, **ice cream**, and **beverages**.

Example Calculation:

* In a **mint chocolate bar** (weighing **100 grams**), if the recipe calls for **0.2% peppermint oil extract**, you would use **0.2 grams** (200 milligrams) of peppermint oil extract.
* In a **bottle of mint soda** (weighing **500 grams**), if it contains **0.05% peppermint oil extract**, the product would contain **0.25 grams** (250 milligrams) of peppermint oil extract.

Summary:  
**Peppermint oil extract** is typically used in **small quantities** in commercial food products, ranging from **0.01% to 1%** by weight, depending on the product and desired flavor intensity. It is most commonly found in **confectionery**, **baked goods**, **beverages**, **ice cream**, **chewing gum**, and **syrups**. Given its **strong** and **cooling** flavor, peppermint oil extract is usually added in very low amounts to avoid overpowering the product’s flavor profile, and it is often paired with other ingredients to balance its potency.

[7:59](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732017561438689)

BeeChoo Liang

**Peppermint oil flavor** is a flavored oil typically used in food products to impart the characteristic **minty** and **refreshing** taste of peppermint. Unlike **peppermint essential oil**, which is extracted from peppermint leaves and can be highly concentrated, **peppermint oil flavor** is often a **flavoring agent** designed to give a consistent, milder mint taste while being more stable and suitable for use in a variety of foods and beverages. It can be in a liquid form or as part of a more complex **flavoring blend**.  
When used in commercial food products, the amount of peppermint oil flavor added varies based on the type of product, its intended flavor profile, and the form of the oil (e.g., liquid or encapsulated). Because peppermint oil flavor is typically **less potent** than peppermint essential oil, it is often used in slightly higher concentrations.  
Typical Amounts of **Peppermint Oil Flavor** Used in Commercial Food Products  
1. **Confectionery (Candies, Chocolates, Gums)**

* **Peppermint oil flavor** is most commonly found in **mint-flavored candies**, **chocolates**, and **gum** products. In these applications, peppermint is typically a key flavor, so it is used in moderate quantities.
* **Typical usage**: **0.1% to 1%** by weight.
  + For example, in a **mint chocolate bar** or **peppermint hard candy**, peppermint oil flavor might be used at **0.2% to 0.5%** of the total weight.
  + In **gum**, the concentration could be slightly higher, up to **1%**, depending on the desired intensity of mint flavor.

2. **Baked Goods (Cookies, Cakes, Muffins)**

* Peppermint oil flavor is used in **baked goods** such as **mint-flavored cookies**, **cakes**, and **cupcakes**. It adds a refreshing mint taste without overpowering the sweetness of the baked good.
* **Typical usage**: **0.05% to 0.1%** by weight.
  + For instance, in a **cookie dough** or **cake batter**, peppermint oil flavor might be used at **0.05% to 0.1%** to give a gentle mint flavor that complements other ingredients.

3. **Beverages (Teas, Energy Drinks, Soft Drinks)**

* Peppermint oil flavor is sometimes used in **mint-flavored teas**, **energy drinks**, and **carbonated beverages**, particularly for seasonal or refreshing drinks.
* **Typical usage**: **0.01% to 0.1%** by weight.
  + For example, in a **mint tea** or **sparkling mint water**, the concentration of peppermint oil flavor could range from **0.01% to 0.05%** by weight, giving a mild mint note without overpowering the beverage.

4. **Ice Cream and Frozen Desserts**

* Peppermint oil flavor is commonly used in **mint ice cream** or **mint chocolate chip** frozen desserts, where it is paired with chocolate or other mix-ins.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + In a **mint chocolate chip ice cream**, peppermint oil flavor could be used at **0.05% to 0.1%** of the total weight, ensuring a balanced mint flavor.

5. **Chewing Gums and Breath Mints**

* In **chewing gum** and **breath mints**, peppermint oil flavor provides the strong, refreshing minty taste that these products are known for.
* **Typical usage**: **0.2% to 1%** by weight.
  + In **sugar-free gum** or **breath mints**, the concentration of peppermint oil flavor might range from **0.5% to 1%** by weight, depending on the desired intensity of mint.

6. **Dairy Products (Yogurt, Milkshakes)**

* Peppermint oil flavor is occasionally used in **mint-flavored yogurt**, **milkshakes**, and **smoothies**. It can be used to provide a cool, refreshing note, particularly in holiday-themed or seasonal varieties.
* **Typical usage**: **0.01% to 0.05%** by weight.
  + For example, in a **mint milkshake** or **mint yogurt**, peppermint oil flavor may be used at **0.01% to 0.05%** to achieve a subtle minty flavor.

7. **Syrups, Sauces, and Dressings**

* Peppermint oil flavor can be found in **mint syrups**, **sauces**, and **dressings**, especially in dessert applications or for beverages like **hot cocoa**.
* **Typical usage**: **0.05% to 0.1%** by weight.
  + For instance, in **mint chocolate syrup** or a **dessert sauce**, peppermint oil flavor might be used at **0.05% to 0.1%** to provide a gentle mint flavor.

Typical Usage Ranges for **Peppermint Oil Flavor**:

* **Confectionery (Candies, Chocolates, Gums)**: **0.1% to 1%** by weight
* **Baked Goods (Cookies, Cakes, Muffins)**: **0.05% to 0.1%** by weight
* **Beverages (Teas, Energy Drinks, Soft Drinks)**: **0.01% to 0.1%** by weight
* **Ice Cream and Frozen Desserts**: **0.05% to 0.2%** by weight
* **Chewing Gums and Breath Mints**: **0.2% to 1%** by weight
* **Dairy Products (Yogurt, Milkshakes)**: **0.01% to 0.05%** by weight
* **Syrups, Sauces, and Dressings**: **0.05% to 0.1%** by weight

Key Considerations:

1. **Flavor Intensity**: Peppermint oil flavor is **less concentrated** than peppermint essential oil, allowing it to be used in higher amounts without overwhelming the product. However, the flavor is still quite potent, so precise formulation is necessary to avoid an overpowering mint taste.
2. **Formulation Flexibility**: Peppermint oil flavor is highly versatile and can be used in a variety of food products. It’s especially useful in **holiday-themed** or **seasonal products** such as **mint chocolate** treats or **mint-flavored beverages**.
3. **Stability**: Peppermint oil flavor is generally more **stable** than peppermint essential oil, making it a better choice for use in processed and packaged foods. It also tends to have a **longer shelf life**, especially when used in lower concentrations.
4. **Sensory Impact**: The **minty** and **cooling** sensation of peppermint oil flavor is a key feature in products where refreshment is the desired outcome (e.g., gum, mints, ice cream). The oil also adds a characteristic **cooling effect** that enhances the sensory experience.

Example Calculation:

* For a **mint chocolate bar** (weighing **100 grams**), if the recipe calls for **0.3% peppermint oil flavor**, you would use **0.3 grams** (300 milligrams) of peppermint oil flavor.
* In a **bottle of mint soda** (weighing **500 grams**), if it contains **0.05% peppermint oil flavor**, the product would contain **0.25 grams** (250 milligrams) of peppermint oil flavor.

Summary:  
**Peppermint oil flavor** is commonly used in **small to moderate amounts** in a wide range of commercial food products, with typical usage ranging from **0.01% to 1%** by weight. It is frequently found in **confectionery**, **baked goods**, **beverages**, **ice cream**, **gum**, and **dairy products**. Its milder flavor and **cooling effect** make it ideal for use in both sweet and savory items, especially those targeting refreshing or minty experiences.

[8:01](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732017673429789)

BeeChoo Liang

**Sumac** is a tangy, sour spice made from the dried and ground berries of the *Rhus* plant, commonly used in Middle Eastern, Mediterranean, and South Asian cuisines. It has a tart, lemony flavor and is often used to add a zesty kick to salads, meats, rice dishes, sauces, and even in spice blends. It can also be found in certain packaged food products for its distinctive flavor and vibrant color.  
In commercial food products, **sumac** is typically used in relatively small quantities due to its strong, tangy flavor. The exact amount depends on the type of food, whether it's used in its **whole** form (as a spice), or **ground** form, and the intended flavor profile of the product.  
Typical Amounts of **Sumac** Used in Commercial Food Products  
1. **Spice Blends and Seasonings**

* Sumac is often included in **spice blends** like **za'atar** (a Middle Eastern spice mix), where it contributes to the overall tangy, citrus-like flavor profile. It may also be found in other regional blends or standalone seasoning mixes for meats, vegetables, and rice.
* **Typical usage**: **0.1% to 2%** by weight, depending on the blend.
  + For example, in a **za'atar blend**, sumac might make up **1% to 2%** of the total weight of the seasoning mix.

2. **Prepared Foods (Salads, Dips, Marinades)**

* Sumac is commonly used in prepared foods like **salads**, **dips** (e.g., hummus, baba ganoush), and **marinades** for its tangy, lemony flavor. In these products, it typically appears as a flavoring agent, enhancing the overall taste without overpowering the dish.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For instance, in a **salad dressing**, sumac might be used at **0.1% to 0.2%**, while in a **marinade** or **dip**, it could be used at **0.2% to 0.5%** by weight.

3. **Beverages (Herbal Teas, Juices)**

* In some cultures, sumac is used to flavor **herbal teas** or **juices**. Sumac-based beverages (like **sumac lemonade**) are popular in Middle Eastern regions. The tangy, sour notes of sumac are used to provide a refreshing flavor.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + For a **sumac-flavored beverage** or **herbal tea**, the amount used may be **0.05% to 0.2%** by weight, depending on the strength of the flavor desired.

4. **Snacks (Chips, Crackers, and Nut Mixes)**

* Sumac is sometimes used in **savory snacks** like **chips**, **crackers**, or **spiced nut mixes**. It can add a citrusy note that complements other spices and ingredients.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For example, in a **flavored cracker** or **spiced nut mix**, sumac might be used at **0.1% to 0.3%** by weight.

5. **Sauces and Condiments**

* Sumac is sometimes used to flavor **sauces**, especially in **Middle Eastern** or **Mediterranean** dishes. It adds a sour note to **tomato-based sauces**, **yogurt-based sauces**, or **dressings**.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + In a **tomato sauce** or **yogurt-based dressing**, sumac could be used at **0.1% to 0.3%** by weight to give a mild, tangy flavor.

6. **Baked Goods**

* Although not as common, sumac may be used in certain **baked goods** (e.g., **savory breads**, **flatbreads**) for a unique tangy twist, particularly in Middle Eastern or Mediterranean recipes.
* **Typical usage**: **0.05% to 0.1%** by weight.
  + In a **flatbread** or **savory muffin**, sumac might be used at **0.05% to 0.1%** of the total weight.

Typical Usage Ranges for **Sumac**:

* **Spice Blends and Seasonings**: **0.1% to 2%** by weight
* **Prepared Foods (Salads, Dips, Marinades)**: **0.1% to 0.5%** by weight
* **Beverages (Herbal Teas, Juices)**: **0.05% to 0.2%** by weight
* **Snacks (Chips, Crackers, Nut Mixes)**: **0.1% to 0.5%** by weight
* **Sauces and Condiments**: **0.1% to 0.5%** by weight
* **Baked Goods**: **0.05% to 0.1%** by weight

Key Considerations:

1. **Flavor Profile**: Sumac has a **tangy, lemony** flavor with mild **berry** and **sour** notes. It’s often used as a **souring agent** to replace or complement citrus in a dish, so the amount used depends on how strong the sour or citrus flavor needs to be.
2. **Concentration**: As sumac is relatively **potent** but not overpowering, it is used in **small amounts**. The **freshness** and **quality** of the sumac will also affect how much is needed to achieve the desired taste.
3. **Form**: **Ground sumac** is most commonly used in food products, though it can sometimes be included in its **whole** form or as part of spice blends. Ground sumac is more readily incorporated into commercial products, but whole berries or sumac extract might be used for specific purposes.
4. **Cultural and Regional Uses**: Sumac is a staple in **Middle Eastern**, **Mediterranean**, and **South Asian cuisines**, so it’s often found in ethnic and regional foods. It’s commonly used in **za’atar** (a spice blend), **fattoush** (a type of salad), or as a garnish for dishes like **kebabs** and **rice pilafs**.

Example Calculation:

* For a **spiced nut mix** (weighing **100 grams**), if the recipe calls for **0.2% sumac**, you would use **0.2 grams** (200 milligrams) of sumac.
* In a **herbaceous dressing** (weighing **500 grams**), if the recipe contains **0.3% sumac**, you would use **1.5 grams** of sumac.

Summary:  
**Sumac** is typically used in **small amounts** in commercial food products, with typical usage ranging from **0.05% to 2%** by weight, depending on the product and the desired flavor intensity. It is commonly found in **spice blends**, **prepared foods** (like dips, salads, and marinades), **beverages**, **snacks**, **sauces**, and **condiments**. Its **tangy** and **lemony** flavor is used to provide a mild sourness, and it is often paired with other spices and ingredients to create a balanced, refreshing flavor profile.

[8:03](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732017835263019)

BeeChoo Liang

**Instant tea powder** is a convenient form of tea that is often used in commercial food and beverage products. It is made by spray-drying or freeze-drying brewed tea into a fine powder, which can then be easily dissolved in hot or cold liquids. Instant tea powder is popular in **ready-to-drink beverages**, **flavored drinks**, **instant tea mixes**, and as an ingredient in various **baked goods** and **confectionery** products.  
The amount of **instant tea powder** used in commercial food products varies based on the desired flavor strength, the form of the product (e.g., beverage, mix, or inclusion), and the specific use case (e.g., as a flavoring or functional ingredient). It is generally used in small amounts because it is highly concentrated and can impart a strong tea flavor even at low levels.  
Typical Amounts of **Instant Tea Powder** Used in Commercial Food Products  
1. **Beverages (Ready-to-Drink, Instant Tea Mixes)**

* **Instant tea powder** is commonly used in **ready-to-drink teas** (e.g., **iced tea**, **lemon tea**, **green tea drinks**) or **instant tea mixes** that consumers can mix with water.
* **Typical usage**: **0.5% to 2%** by weight.
  + For example, in an **instant iced tea mix**, the amount of **instant tea powder** used might range from **1% to 2%** of the total product weight, depending on the strength of the tea flavor desired.
  + In a **ready-to-drink tea beverage**, the tea powder may be part of a larger formula, contributing around **0.5% to 1%** of the total product weight for flavoring purposes.

2. **Flavored Tea Beverages**

* In **flavored tea drinks**, where instant tea powder is combined with fruit flavors, citrus, or other botanicals, the concentration of tea powder will be adjusted to complement the flavor without overpowering it.
* **Typical usage**: **0.1% to 1%** by weight.
  + For example, in a **fruit-flavored iced tea** or a **lemon tea drink**, the instant tea powder might be used at **0.1% to 0.5%** to add a subtle tea base flavor without dominating the fruit or other flavor notes.

3. **Baked Goods (Cookies, Cakes, Muffins)**

* **Instant tea powder** is sometimes used in **baked goods** like **tea-flavored cakes**, **cookies**, and **muffins** to add a distinctive tea flavor. It is used in small amounts as a flavoring ingredient.
* **Typical usage**: **0.5% to 1.5%** by weight.
  + In a **tea-flavored cake batter** or **cookie dough**, instant tea powder might be used at **0.5% to 1%** by weight, depending on the intensity of tea flavor required.
  + In more specialized or premium products (e.g., **matcha tea muffins** or **earl grey cookies**), the tea powder could be used at **1% to 1.5%** by weight.

4. **Confectionery (Candy, Chocolate, Chewing Gum)**

* Instant tea powder can be added to **confectionery products** like **chocolate**, **candies**, and **chewing gum** to provide a tea-inspired flavor profile. It is typically used in small amounts as a flavoring agent.
* **Typical usage**: **0.2% to 1%** by weight.
  + In a **chocolate tea truffle** or **green tea-flavored candy**, the instant tea powder may be used at **0.2% to 0.5%** to add a subtle flavor.
  + In a **gum** with a **tea flavor**, the amount may be closer to **1%**, depending on the product's flavor formulation.

5. **Dairy Products (Ice Cream, Yogurt, Smoothies)**

* Instant tea powder is used in **dairy-based products** like **ice cream**, **yogurt**, and **smoothies** to provide a unique tea flavor. This is especially common in **green tea ice cream** or **chai yogurt**.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + In **green tea ice cream** or a **tea-flavored smoothie**, instant tea powder might be used at **0.1% to 0.3%** by weight.
  + In products where the tea is the primary flavor (e.g., **matcha ice cream**), the concentration may be higher, around **0.3% to 0.5%**.

6. **Sauces, Dressings, and Seasonings**

* Instant tea powder can sometimes be found in **sauces**, **dressings**, and **seasonings** that aim to impart a tea-infused flavor, especially in **Asian-inspired** or **fusion cuisines**.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + For instance, in a **matcha salad dressing** or a **chai-inspired sauce**, the tea powder might be used at **0.05% to 0.1%** to complement other flavors without overwhelming the dish.

7. **Functional Foods and Supplements**

* Instant tea powder, especially from **green tea**, is sometimes added to **functional foods** or **dietary supplements** for its **antioxidant** properties or **caffeine content**. It's included in things like **energy bars**, **protein shakes**, or **dietary supplements**.
* **Typical usage**: **0.2% to 1%** by weight.
  + In a **green tea extract supplement** or an **energy bar**, the amount of instant tea powder might be used at **0.2% to 0.5%** by weight for flavor and functional benefits.

Typical Usage Ranges for **Instant Tea Powder**:

* **Beverages (Ready-to-Drink, Instant Tea Mixes)**: **0.5% to 2%** by weight
* **Flavored Tea Beverages**: **0.1% to 1%** by weight
* **Baked Goods (Cookies, Cakes, Muffins)**: **0.5% to 1.5%** by weight
* **Confectionery (Candy, Chocolate, Chewing Gum)**: **0.2% to 1%** by weight
* **Dairy Products (Ice Cream, Yogurt, Smoothies)**: **0.1% to 0.5%** by weight
* **Sauces, Dressings, and Seasonings**: **0.05% to 0.2%** by weight
* **Functional Foods and Supplements**: **0.2% to 1%** by weight

Key Considerations:

1. **Flavor Strength**: Instant tea powder is typically **concentrated**, so small amounts are often sufficient to impart a **strong tea flavor**. Overuse may result in a bitter or overpowering taste, especially in baked goods or desserts.
2. **Type of Tea**: The **type of tea** (e.g., **black**, **green**, **matcha**, **chai**) and its flavor profile will influence the amount used. For example, **matcha tea powder** is more potent and may require lower concentrations compared to **black tea powder**.
3. **Product Functionality**: When used in **functional foods** (like those with **green tea extract** for its **antioxidant** properties), the **amount used** will depend on both the desired **flavor profile** and the **functional benefits** being targeted, such as the **caffeine content** or **polyphenol levels**.
4. **Blend with Other Ingredients**: In beverages or prepared foods, **instant tea powder** is often blended with other flavors (e.g., **citrus**, **herbs**, **spices**) or sweeteners to balance its naturally **astringent** and **bitter** taste.

Example Calculation:

* In a **green tea-flavored candy** (weighing **100 grams**), if the recipe calls for **0.5% instant tea powder**, you would use **0.5 grams** (500 milligrams) of instant tea powder.
* For a **tea latte powder mix** (weighing **200 grams**), if it contains **1% instant tea powder**, the product would contain **2 grams** of instant tea powder.

Summary:  
**Instant tea powder** is used in a range of commercial food products, typically in concentrations of **0.05% to 2%** by weight, depending on the type of product and the desired flavor profile. It is commonly found in **beverages**, **baked goods**, **confectionery**, **dairy products**, **sauces**, and **functional foods**. The **amount used** varies based on the specific use case, with **stronger flavors** (e.g., matcha or green tea) requiring lower quantities, while **instant tea mixes** or **ready-to-drink beverages** may contain higher concentrations.



BeeChoo LiangBeeChoo Liang  [8:17 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732018626852869)

**Orange essential oil** is commonly used in commercial food products for its **bright, citrusy** flavor and **aromatic appeal**. It is extracted from the peel of the **sweet orange** (*Citrus sinensis*) and is primarily used as a **flavoring agent** in a wide range of foods and beverages. Because orange essential oil is highly concentrated, it is typically used in small amounts to avoid overpowering the product.  
Typical Amounts of **Orange Essential Oil** Used in Commercial Food Products  
1. **Beverages (Juices, Soft Drinks, Liqueurs)**

* Orange essential oil is commonly used in **beverages** like **orange juice**, **flavored sodas**, and **alcoholic drinks** (e.g., orange liqueurs like Cointreau or Grand Marnier). It imparts a **natural citrus note** and can enhance the overall flavor profile.
* **Typical usage**: **0.01% to 0.1%** by weight.
  + For example, in an **orange soda** or a **ready-to-drink orange beverage**, orange essential oil might be used at **0.05% to 0.1%** by weight.
  + In **orange-flavored liqueurs**, the amount may be slightly higher due to the need to balance with other flavors and alcohol, typically around **0.05% to 0.1%** by volume.

2. **Confectionery (Candies, Chocolate, Chewing Gum)**

* In **candies**, **chocolates**, and **chewing gum**, orange essential oil is often used to provide a fresh, **zesty citrus flavor**. It works especially well in **dark chocolate** or **citrus-flavored candies**.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + In **orange-flavored candies** or **chocolate**, orange essential oil may be used at **0.1%** by weight.
  + For **chewing gum**, the amount may range from **0.05% to 0.1%**, depending on the desired intensity of the orange flavor.

3. **Baked Goods (Cookies, Cakes, Muffins, Pastries)**

* Orange essential oil is frequently used in **baked goods** such as **cakes**, **cookies**, **muffins**, and **pastries** to add a natural orange flavor. It pairs well with other ingredients like **chocolate**, **spices**, and **nuts**.
* **Typical usage**: **0.05% to 0.1%** by weight.
  + In a **cookie dough** or **cake batter**, orange essential oil might be used at **0.05% to 0.1%** by weight to provide a subtle citrusy flavor.
  + For a **glaze** or **frosting**, the concentration could be slightly higher, around **0.1%**.

4. **Dairy Products (Yogurt, Ice Cream, Smoothies)**

* Orange essential oil is sometimes used in **dairy-based products** like **ice cream**, **yogurt**, and **smoothies** for a refreshing citrus flavor. It adds a natural **orange zest** without the need for artificial flavorings.
* **Typical usage**: **0.01% to 0.05%** by weight.
  + In **orange yogurt** or **orange ice cream**, the concentration could range from **0.01% to 0.05%** by weight.
  + For **smoothies** or **milkshakes**, it would be used at around **0.02% to 0.05%** to give a light, refreshing citrus note.

5. **Flavoring for Sauces, Dressings, and Seasonings**

* Orange essential oil is occasionally used in **sauces**, **dressings**, and **seasonings**, particularly in **citrus-based marinades** or for **fruit sauces**.
* **Typical usage**: **0.01% to 0.05%** by weight.
  + In a **salad dressing** or a **citrus-based sauce**, the oil would typically be used at **0.02% to 0.05%** to enhance the flavor without overwhelming the dish.

6. **Functional Foods (Energy Bars, Supplements)**

* In some **functional foods**, **energy bars**, or **dietary supplements**, orange essential oil is used for both **flavor** and its potential **health benefits** (e.g., antioxidants). It can also provide a refreshing and aromatic citrus note to the product.
* **Typical usage**: **0.01% to 0.05%** by weight.
  + In **energy bars** or **supplements**, the amount of orange essential oil is typically kept low, around **0.01% to 0.05%**, as it is used primarily as a flavor enhancer.

Typical Usage Ranges for **Orange Essential Oil**:

* **Beverages (Juices, Soft Drinks, Liqueurs)**: **0.01% to 0.1%** by weight
* **Confectionery (Candies, Chocolate, Chewing Gum)**: **0.05% to 0.2%** by weight
* **Baked Goods (Cookies, Cakes, Muffins, Pastries)**: **0.05% to 0.1%** by weight
* **Dairy Products (Yogurt, Ice Cream, Smoothies)**: **0.01% to 0.05%** by weight
* **Flavoring for Sauces, Dressings, and Seasonings**: **0.01% to 0.05%** by weight
* **Functional Foods (Energy Bars, Supplements)**: **0.01% to 0.05%** by weight

Key Considerations:

1. **Concentration**: Orange essential oil is very **potent** and concentrated, so it is typically used in **small amounts** to avoid an overpowering citrus flavor or bitterness. It’s often blended with other flavors (e.g., **vanilla**, **chocolate**, **spices**) to balance its brightness.
2. **Solubility**: Orange essential oil is **oil-soluble**, meaning it can be challenging to incorporate it into aqueous products (e.g., drinks) without emulsifiers. In such cases, emulsified formulations or flavor compounds like **orange oil extract** may be used as a more stable and water-soluble alternative.
3. **Flavor Profile**: The flavor profile of orange essential oil is bright, sweet, and tangy. Its usage is often driven by the desire to impart a **fresh, natural orange flavor** without resorting to artificial flavorings.
4. **Aromatic Qualities**: In addition to flavor, orange essential oil may also contribute to the **aromatic experience** of the product. This is particularly important in products like **confectionery** and **beverages**.

Example Calculation:

* For a **packaged orange-flavored soda** (weighing **500 grams**), if the recipe calls for **0.05% orange essential oil**, you would use **0.25 grams** (250 milligrams) of orange essential oil.
* In an **orange-flavored chocolate bar** (weighing **100 grams**), if it contains **0.1% orange essential oil**, the product would contain **0.1 grams** (100 milligrams) of orange essential oil.

Summary:  
**Orange essential oil** is typically used in commercial food products in small quantities, ranging from **0.01% to 0.2%** by weight, depending on the type of product and the desired intensity of flavor. It is most commonly found in **beverages**, **confectionery**, **baked goods**, **dairy products**, **sauces**, and **seasonings**. Its **strong citrus flavor** makes it an effective ingredient in imparting a refreshing, natural orange taste, while its **aromatic qualities** add to the sensory experience.



BeeChoo LiangBeeChoo Liang  [8:43 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732020221426719)

**Passion flower** (*Passiflora incarnata*) is often used in **commercial food products** in the form of **extracts**, **teas**, and as a **flavoring agent** due to its mildly **floral** and **herbal flavor**. It is known for its calming effects and is sometimes used in **functional foods** or **beverages** designed to promote relaxation or help with sleep. Passion flower extract is not as commonly used as some other botanical ingredients but can still be found in certain **specialty** or **herbal products**.  
Typical Amounts of **Passion Flower** Used in Commercial Food Products  
1. **Herbal Teas and Beverages**

* Passion flower is most commonly found in **herbal tea blends** or in **relaxation beverages**. It’s often used for its **calming properties**, sometimes in combination with other herbs like **chamomile**, **lavender**, or **lemon balm**.
* **Typical usage**: **0.1% to 1%** by weight.
  + In **passion flower tea** or **herbal tea blends**, the concentration of passion flower extract or dried flower can typically range from **0.1% to 1%** by weight.
  + For example, in a **20-gram tea bag**, there could be **20 mg to 200 mg** of passion flower (depending on whether it's in the form of dried herb or extract).

2. **Functional Beverages (Relaxation, Sleep Aids)**

* Passion flower extract is often added to **functional drinks** designed to promote **calmness**, **relaxation**, or help with **sleep**, such as **sleepy teas**, **relaxation shots**, and **functional waters**.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For a **relaxation drink** or **sleep aid beverage** (such as a **250 ml bottle**), passion flower extract might be used at **0.1% to 0.5%** by weight.
  + This could translate to about **250 mg to 1.25 grams** of passion flower extract per 500 ml of liquid.

3. **Dietary Supplements (Capsules, Tablets)**

* Passion flower is commonly used in **dietary supplements** aimed at promoting relaxation and sleep. These products are typically sold in **capsule** or **tablet** form.
* **Typical usage**: **100 mg to 500 mg** per serving.
  + In a **dietary supplement capsule**, you might see **100 mg to 500 mg** of passion flower extract per capsule, depending on the desired potency. For example, a **2-capsule serving** might contain **200 mg to 1,000 mg** of passion flower extract.

4. **Confectionery (Candies, Chewing Gum)**

* Passion flower is sometimes used as an ingredient in **specialty confectionery products**, particularly those marketed for **calming** or **relaxation** purposes, such as **herbal gummies** or **chewing gum**.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + In **herbal candies** or **chewing gum**, the concentration of passion flower extract is typically around **0.05% to 0.2%** by weight to give a subtle flavor and calming effect.
  + For a **100-gram batch of herbal gummies**, this might equate to **50 mg to 200 mg** of passion flower extract.

5. **Baked Goods (Cookies, Cakes, Muffins, etc.)**

* Passion flower may be used in **baked goods** in combination with other relaxing herbs, though its use in this category is relatively rare.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + In **herbal cookies** or **calming cakes**, passion flower extract might be used at around **0.1% to 0.5%** by weight, depending on the type of product.
  + For example, in a **500-gram batch** of **herbal muffins**, **0.5%** by weight would translate to **2.5 grams** of passion flower extract.

6. **Flavoring in Dairy and Plant-Based Products**

* Passion flower extract may be used in **dairy-based** or **plant-based** products, such as **yogurts**, **smoothies**, or **plant-based milks**. It may be used as a **flavoring agent** or as part of a **relaxation-themed product**.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + In **flavored yogurts** or **plant-based milk beverages**, passion flower extract might be used at **0.05% to 0.2%** by weight to give a subtle floral flavor.
  + For a **250-gram container** of yogurt, this would amount to approximately **125 mg to 500 mg** of passion flower extract.

Typical Usage Ranges for **Passion Flower**:

* **Herbal Teas and Beverages**: **0.1% to 1%** by weight
* **Functional Beverages (Relaxation, Sleep Aids)**: **0.1% to 0.5%** by weight
* **Dietary Supplements (Capsules, Tablets)**: **100 mg to 500 mg** per serving
* **Confectionery (Candies, Chewing Gum)**: **0.05% to 0.2%** by weight
* **Baked Goods (Cookies, Cakes, Muffins)**: **0.1% to 0.5%** by weight
* **Dairy and Plant-Based Products (Yogurt, Smoothies, Plant Milks)**: **0.05% to 0.2%** by weight

Key Considerations:

1. **Extract Concentration**: The potency of **passion flower extract** can vary depending on the preparation method. Standardized extracts (e.g., **4:1**, **10:1**) or **liquid extracts** are typically more concentrated than dried herb. For example, **dried passion flower** may be used in **higher amounts** compared to **extract**.
2. **Flavor Profile**: Passion flower has a **mildly floral**, slightly **herbal** flavor, which may not be very strong on its own. It is often combined with other flavors like **chamomile**, **lavender**, or **lemon balm** to create a balanced taste in relaxation-focused products.
3. **Regulatory Considerations**: Passion flower is generally considered safe for use in food products, but like many botanical ingredients, its usage may be subject to regulations that vary by region. Some countries may require labeling or specific usage guidelines for products that contain passion flower extract, particularly those marketed for functional purposes (such as promoting sleep or relaxation).
4. **Health Effects**: Passion flower is commonly used for its **calming effects** and may be marketed in functional foods aimed at promoting **sleep** or reducing **stress**. While it is generally regarded as safe when used in food products, it should be consumed with caution in high doses or in combination with sedative medications.

Example Calculation:

* For a **functional beverage** (e.g., a **250 ml relaxation drink**), if the formulation uses **0.2% passion flower extract**, the total amount of extract would be **0.5 grams**.
* In a **capsule supplement** with **500 mg passion flower extract** per serving, a **two-capsule dose** would contain **1,000 mg** of passion flower extract.

Summary:  
**Passion flower** is typically used in commercial food products in small amounts, usually in the range of **0.05% to 1%** by weight, depending on the type of product. It is most commonly found in **herbal teas**, **functional beverages** (such as relaxation or sleep aids), **dietary supplements**, and occasionally in **confectionery** or **baked goods**. The concentration of passion flower extract in these products varies based on the intended purpose, whether it’s to provide a calming effect, subtle flavor, or a specific health benefit.

[8:47](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732020470781239)

BeeChoo Liang

**Passion fruit extract** is widely used in **commercial food products** for its **tropical, fruity, and slightly tart** flavor, as well as its **aromatic qualities**. It is derived from the pulp of the **passion fruit** (*Passiflora edulis*), and can be found in a variety of **beverages**, **desserts**, **confectionery**, and **dairy products**. Given its concentrated nature, the amount of passion fruit extract used in food products is typically small, as even a small amount can impart a **distinctive and refreshing flavor**.  
Typical Amounts of **Passion Fruit Extract** Used in Commercial Food Products  
1. **Beverages (Juices, Soft Drinks, Alcoholic Drinks)**

* **Passion fruit extract** is commonly used in **fruit juices**, **flavored sodas**, **smoothies**, and **alcoholic beverages** (like **cocktails** and **liqueurs**) for its **tropical, citrus-like flavor**.
* **Typical usage**: **0.1% to 2%** by weight.
  + In **passion fruit juice**, **fruit-flavored beverages**, or **cocktails**, passion fruit extract is typically used at **0.1% to 1%** by weight to enhance flavor.
  + For example, in a **500 ml bottle of passion fruit juice**, **0.5% passion fruit extract** would equate to **2.5 grams** of extract, providing a strong but balanced flavor.
  + In **flavored sodas** or **sparkling water**, extract usage might range from **0.1% to 0.5%** by weight.

2. **Dairy Products (Yogurt, Ice Cream, Milkshakes)**

* **Passion fruit extract** is frequently used in **dairy products** like **yogurt**, **ice cream**, **frozen desserts**, and **milkshakes** to create a **tropical fruit flavor**.
* **Typical usage**: **0.1% to 1%** by weight.
  + In a **500-gram tub of yogurt** or a **250 ml milkshake**, passion fruit extract may be used in the range of **0.1% to 1%** by weight, depending on the desired intensity of flavor.
  + For example, in **passion fruit-flavored yogurt**, using **0.2%** extract would result in **1 gram** of extract per **500 grams** of yogurt.

3. **Confectionery (Candies, Gummies, Chewing Gum)**

* Passion fruit extract can also be found in **confectionery products** like **candies**, **gummies**, and **chewing gum**, where it adds a **tropical fruit flavor** to these treats.
* **Typical usage**: **0.1% to 1%** by weight.
  + In **fruit-flavored candies** or **gummies**, the extract may be used at around **0.1% to 0.5%** by weight, depending on the formulation and the strength of flavor desired.
  + For example, in a **100-gram batch of gummies**, **0.5% passion fruit extract** would amount to **0.5 grams** of extract.

4. **Baked Goods (Cakes, Pastries, Cookies)**

* **Passion fruit extract** is sometimes used in **baked goods** like **cakes**, **cookies**, or **tarts** for a **fruity twist** in the flavor profile.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For example, in a **500-gram cake batter**, using **0.2% passion fruit extract** would contribute about **1 gram** of extract to provide a subtle fruity flavor.
  + In **pastries** like **tarts** or **croissants** with passion fruit filling, the concentration of extract might range from **0.1% to 0.5%** by weight.

5. **Frozen Desserts (Sorbet, Gelato, Frozen Yogurt)**

* Passion fruit extract is popular in **frozen desserts** such as **sorbet**, **gelato**, or **frozen yogurt**, where its vibrant, tangy flavor complements the creamy texture.
* **Typical usage**: **0.1% to 1%** by weight.
  + In a **500-gram batch of sorbet**, **0.5% passion fruit extract** would amount to **2.5 grams** of extract, delivering a noticeable fruit flavor.
  + For **passion fruit gelato** or **frozen yogurt**, extract is typically used in the range of **0.1% to 0.5%** by weight to provide a subtle tropical flavor.

6. **Sauces, Dressings, and Marinades**

* Passion fruit extract is occasionally used in **sauces**, **dressings**, and **marinades**, particularly those designed for **fruit-based sauces**, **glazes**, or **tropical salads**.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + In a **tropical vinaigrette** or **fruit marinade**, the extract may be used at **0.1% to 0.5%** by weight to provide a light fruit flavor.

7. **Health and Wellness Products (Smoothie Mixes, Supplements)**

* Passion fruit extract is sometimes added to **health supplements** or **smoothie mixes**, often for its **tropical flavor** and **antioxidant content**.
* **Typical usage**: **0.1% to 1%** by weight.
  + In **smoothie mixes** or **powdered supplement blends**, passion fruit extract might be used at **0.1% to 1%** by weight to contribute to the flavor profile and nutrient boost.

Typical Usage Ranges for **Passion Fruit Extract**:

* **Beverages (Juices, Soft Drinks, Alcoholic Drinks)**: **0.1% to 2%** by weight
* **Dairy Products (Yogurt, Ice Cream, Milkshakes)**: **0.1% to 1%** by weight
* **Confectionery (Candies, Gummies, Chewing Gum)**: **0.1% to 1%** by weight
* **Baked Goods (Cakes, Pastries, Cookies)**: **0.1% to 0.5%** by weight
* **Frozen Desserts (Sorbet, Gelato, Frozen Yogurt)**: **0.1% to 1%** by weight
* **Sauces, Dressings, and Marinades**: **0.1% to 0.5%** by weight
* **Health and Wellness Products (Smoothie Mixes, Supplements)**: **0.1% to 1%** by weight

Key Considerations:

1. **Flavor Strength**: Passion fruit extract is concentrated, so it is typically used in **small quantities** to avoid overwhelming the product. Even a small amount can provide a **tropical, tangy flavor**.
2. **Solubility**: Passion fruit extract is water-soluble, making it easy to incorporate into **beverages**, **dairy products**, and other aqueous systems.
3. **Concentration**: Depending on whether the extract is in **liquid** or **powdered** form, the concentration can vary. Standardized extracts might have specific **active ingredient levels**, so it's important to adjust usage according to the desired flavor intensity.
4. **Health Benefits**: Passion fruit is known for its **high vitamin C** and **antioxidant** content, so it may be marketed as part of a **functional food** that offers health benefits such as supporting immune function or providing antioxidants.
5. **Regulatory Considerations**: While passion fruit extract is generally regarded as safe for use in food products, the specific use levels may be subject to **regional regulations** depending on the country and type of product.

Example Calculation:

* In a **250-ml bottle of passion fruit soda**, if the product contains **0.5% passion fruit extract**, the extract would make up **1.25 grams** of the total liquid.
* In a **500-gram tub of passion fruit yogurt**, with **0.2% passion fruit extract**, the total amount of extract would be **1 gram**.

Summary:  
**Passion fruit extract** is typically used in **commercial food products** in small quantities, generally ranging from **0.1% to 2%** by weight, depending on the product type and the desired intensity of flavor. It is most commonly used in **beverages**, **dairy products**, **confectionery**, and **frozen desserts**, where its **tropical, fruity flavor** adds a refreshing and exotic touch. Its usage can also be found in **health products**, **sauces**, and **dressings**.



BeeChoo LiangBeeChoo Liang  [8:54 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732020876642039)

**Guarana** (*Paullinia cupana*) is a plant native to the Amazon, known for its high caffeine content, and is commonly used in **energy drinks**, **dietary supplements**, and **functional foods**. Guarana seeds contain **caffeine**, **theobromine**, and other compounds that can provide a stimulating effect, making it a popular ingredient in **energy-boosting products**. In commercial food products, guarana is typically used in the form of **extracts** or **powders**.  
Typical Amounts of **Guarana** Used in Commercial Food Products  
1. **Energy Drinks and Beverages**

* Guarana is most commonly found in **energy drinks** and **functional beverages** aimed at boosting energy, improving focus, and increasing alertness. Guarana’s caffeine content is often used alongside other stimulants like **caffeine** from coffee or tea to create a synergistic effect.
* **Typical usage**: **0.1% to 1%** by weight.
  + In an **energy drink**, the concentration of guarana extract may typically range from **0.1% to 1%** by weight.
  + For example, in a **250 ml energy drink**, **0.2% guarana extract** would result in **500 mg** of guarana extract.

2. **Dietary Supplements (Capsules, Tablets, Powders)**

* Guarana is commonly included in **dietary supplements** as a source of caffeine, often marketed as a **natural stimulant** or **fat-burning aid**. It is typically found in **capsules**, **tablets**, and **powdered supplement blends**.
* **Typical usage**: **50 mg to 500 mg per serving**.
  + In **dietary supplements**, guarana extract can range from **50 mg to 500 mg per serving** of the product, depending on the intended dosage.
  + For example, a **1-capsule serving** might contain **100 mg to 300 mg** of guarana extract.
  + In **powdered energy supplements** or **pre-workout formulas**, guarana extract is often used in a higher range, with **300 mg to 500 mg per serving** being common.

3. **Functional Foods (Energy Bars, Chews, Gummies)**

* Guarana is also used in **energy bars**, **chews**, and **gummies** marketed as **energy-boosting** or **focus-enhancing** snacks. These products may contain a combination of **guarana**, **caffeine**, and other ingredients like **vitamins** or **adaptogens**.
* **Typical usage**: **0.1% to 1%** by weight.
  + In an **energy bar**, **guarana extract** may be used in concentrations from **0.1% to 1%** by weight. For example, in a **50-gram energy bar**, this would equate to **50 mg to 500 mg** of guarana extract.
  + In **energy gummies**, the typical dosage could be around **50 mg to 200 mg per serving**.

4. **Soft Drinks and Flavored Waters**

* Guarana is sometimes added to **soft drinks** and **flavored waters**, particularly in products marketed as **refreshing** or **energizing** drinks. These products may combine guarana with other ingredients like **ginseng** or **green tea extract** to boost their stimulating effects.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For a **500 ml bottle** of guarana-flavored water or **soft drink**, guarana extract may be used at concentrations around **0.1% to 0.5%** by weight.
  + This would result in about **500 mg to 2.5 grams** of guarana extract per bottle.

5. **Snack Foods (Chocolates, Chewing Gum, Trail Mix)**

* Guarana can be found in **snack foods** such as **chocolates**, **chewing gum**, or **trail mix**, often in combination with other energy-boosting ingredients.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + In **chocolate**, **gum**, or **trail mix**, guarana extract is typically used at **0.05% to 0.2%** by weight to provide a subtle energy boost without altering the taste too much.
  + For a **100-gram chocolate bar**, this would equate to **50 mg to 200 mg** of guarana extract.

6. **Pre-workout Supplements and Weight Loss Products**

* Guarana is often included in **pre-workout supplements** or **weight loss products** due to its stimulant properties and potential thermogenic effects. These products often contain a higher dosage of guarana as part of a complex blend of ingredients designed to increase metabolism and improve performance.
* **Typical usage**: **300 mg to 1,000 mg per serving**.
  + In a **pre-workout supplement**, the dose of guarana extract can range from **300 mg to 1,000 mg per serving**, depending on the formulation and intended effect. The extract is often combined with **caffeine**, **creatine**, or other active ingredients.

Typical Usage Ranges for **Guarana** in Commercial Food Products:

* **Energy Drinks and Beverages**: **0.1% to 1%** by weight
* **Dietary Supplements (Capsules, Tablets, Powders)**: **50 mg to 500 mg per serving**
* **Functional Foods (Energy Bars, Chews, Gummies)**: **0.1% to 1%** by weight
* **Soft Drinks and Flavored Waters**: **0.1% to 0.5%** by weight
* **Snack Foods (Chocolates, Chewing Gum, Trail Mix)**: **0.05% to 0.2%** by weight
* **Pre-workout Supplements and Weight Loss Products**: **300 mg to 1,000 mg per serving**

Key Considerations:

1. **Caffeine Content**: Guarana contains a **high level of caffeine** (around **2–4.5%** of its dry weight). As a result, the **dosage** of guarana extract in food products is carefully regulated to avoid excessive caffeine intake. The typical **caffeine content** in a serving of guarana extract is about **40–50 mg per gram**.
2. **Stimulant Effects**: Given its caffeine content, products with guarana should be consumed in moderation to avoid overstimulation, jitteriness, or other side effects associated with **high caffeine intake**.
3. **Flavor Profile**: Guarana has a **slightly bitter and earthy** flavor, which is why it is often used in **concentrated extracts** that are blended with other **flavors** (like citrus, tropical fruits, or herbal blends) to mask the bitterness.
4. **Regulatory Considerations**: The use of guarana in food products is generally **safe**, but like any stimulant ingredient, its use must comply with **local regulations** on caffeine content and **dosage limits**. In many countries, products marketed as **energy drinks** or **dietary supplements** must clearly disclose the caffeine content.

Example Calculations:

* In a **250 ml bottle of energy drink**, if the product contains **0.2% guarana extract**, this would amount to **500 mg** of guarana extract in the entire bottle.
* In a **dietary supplement capsule**, if it contains **200 mg of guarana extract**, this would deliver approximately **8–10 mg of caffeine** per serving, depending on the extract's concentration.

Summary:  
**Guarana** is typically used in **commercial food products** in small quantities, with typical usage ranges from **0.1% to 1%** by weight in **beverages**, **energy products**, and **dietary supplements**. The amount of guarana extract depends on the product type and the intended effect, with higher doses (e.g., **300 mg to 1,000 mg**) often seen in **pre-workout supplements** and **weight loss products**. Guarana's high caffeine content makes it a potent ingredient for **energy-boosting** products, but it is used cautiously to avoid excessive caffeine intake.



BeeChoo LiangBeeChoo Liang  [9:28 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732022903811179)

**Red marine algae**, often referring to species like **Chondrus crispus** (commonly known as **Irish moss**) and **Gigartina**, is used in a variety of **commercial food products** due to its **nutritional benefits** and functional properties. It is prized for its high content of **minerals**, **vitamins**, and **polysaccharides**, particularly **carrageenan**, which has gelling, thickening, and stabilizing properties.  
Common Uses of **Red Marine Algae** in Food Products:

1. **Thickening Agent**: Carrageenan is one of the most common extracts from red marine algae used in food products as a **thickener**, **stabilizer**, or **gelling agent**. It is widely used in dairy alternatives, ice cream, processed meats, and other food products to improve texture and consistency.
2. **Nutritional Supplements**: Red marine algae, especially **Irish moss**, is used in dietary supplements for its potential **health benefits**, including its rich content of **minerals** (calcium, magnesium, iodine, and potassium), **trace elements**, and **prebiotics**.
3. **Functional Foods**: Red marine algae is also found in functional foods like **smoothie powders**, **energy bars**, and **health drinks**, marketed for its ability to support **digestive health**, **immune function**, and **overall vitality**.

Typical Amounts of **Red Marine Algae** Used in Commercial Food Products:  
1. **Carrageenan (Extracted from Red Marine Algae)**

* Carrageenan, derived from species like **Chondrus crispus** and **Gigartina**, is widely used as a **gelling agent**, **stabilizer**, and **thickener** in processed foods and beverages.
* **Typical usage**: **0.1% to 1%** by weight (depending on the type of carrageenan and the application).
  + In **dairy and non-dairy beverages**, such as **plant-based milk** and **yogurts**, carrageenan might be used at a concentration of **0.1% to 0.5%**.
  + In **gelatin desserts**, **ice cream**, or **puddings**, **0.5% to 1%** carrageenan is typically used to achieve the desired texture.
  + For example, in a **1-liter carton of almond milk**, carrageenan content might range from **0.5 grams to 5 grams** depending on the formulation.

2. **Dietary Supplements (Capsules, Tablets, Powders)**

* Red marine algae (often **Irish moss** or **Chondrus crispus**) is sold as a **dietary supplement** in capsules, tablets, or powdered form. These supplements are marketed for their **mineral** and **digestive health benefits**.
* **Typical usage**: **500 mg to 3,000 mg per serving**.
  + In **capsules** or **tablets**, typical doses range from **500 mg to 1,000 mg** per serving.
  + In **powdered supplements**, the serving size can range from **1,000 mg (1 gram)** to **3,000 mg (3 grams)** per serving.

3. **Smoothie Powders and Meal Replacements**

* **Red marine algae powder**, often including **Irish moss**, is used in **smoothie powders**, **meal replacement powders**, and **nutritional shakes**.
* **Typical usage**: **0.5% to 2%** by weight.
  + For a **50-gram smoothie powder**, the content of **red marine algae** can range from **250 mg to 1,000 mg**.
  + In **meal replacement shakes**, a typical serving might contain between **1,000 mg and 3,000 mg** of powdered red marine algae.

4. **Energy Bars and Snacks**

* **Red marine algae** (especially **Irish moss**) is used in **energy bars** and **protein bars** for its **mineral content** and **fiber**. Its gel-like consistency also contributes to the texture of bars and snacks.
* **Typical usage**: **0.5% to 2%** by weight.
  + In a **60-gram energy bar**, red marine algae might be used at **0.5% to 2%** by weight, resulting in **300 mg to 1,200 mg** of red marine algae per bar.

5. **Frozen Desserts (Ice Cream, Sorbet)**

* In **frozen desserts** like **ice cream** and **sorbets**, **carrageenan** extracted from red marine algae is used to improve texture and prevent ice crystal formation, providing a smooth, creamy texture.
* **Typical usage**: **0.05% to 0.5%** by weight.
  + In a **500-gram batch** of ice cream, **carrageenan** might be used at **0.05% to 0.5%**, which would equal about **250 mg to 2.5 grams** of carrageenan per batch.

6. **Beverages (Health Drinks, Functional Waters)**

* Red marine algae is used in **health drinks** and **functional waters** for its mineral content, especially **iodine** and **calcium**, as well as its prebiotic properties. It is often included in **detox** or **wellness drinks**.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + In a **500 ml health drink**, red marine algae might be used at **0.1% to 0.5%**, contributing **500 mg to 2.5 grams** per bottle.

Summary of Typical Usage Ranges:

* **Carrageenan (Extracted from Red Marine Algae)**: **0.1% to 1%** by weight in beverages, dairy, and desserts.
* **Dietary Supplements (Capsules, Tablets, Powders)**: **500 mg to 3,000 mg per serving**.
* **Smoothie Powders and Meal Replacements**: **0.5% to 2%** by weight.
* **Energy Bars and Snacks**: **0.5% to 2%** by weight.
* **Frozen Desserts**: **0.05% to 0.5%** by weight.
* **Health Drinks and Functional Waters**: **0.1% to 0.5%** by weight.

Key Considerations:

1. **Carrageenan**: The primary use of red marine algae in food manufacturing is in the form of **carrageenan**, a natural polysaccharide that functions as a **thickener**, **gelling agent**, and **emulsifier**. It is found in a wide range of products such as **non-dairy milks**, **ice cream**, **puddings**, and **meat products**.
2. **Health Benefits**: Red marine algae is highly valued for its nutritional profile, providing **iodine**, **calcium**, **magnesium**, and **iron**, and it is often included in **dietary supplements** for **digestive health** and **immune support**.
3. **Taste and Color**: Red marine algae, particularly **Irish moss**, has a mild flavor and is typically used in **extract** or **powdered form** to avoid imparting any strong taste to the final product. In contrast, the flavor of carrageenan is virtually neutral, making it versatile for various food applications.
4. **Regulatory Considerations**: While red marine algae is generally recognized as safe (GRAS) by regulatory bodies like the **FDA**, carrageenan has faced some **controversy** regarding its safety in large amounts, though it is still widely used in food manufacturing.

Example Calculations:

* For a **500 ml bottle of functional beverage** with **0.5% red marine algae**, this would result in **2.5 grams** of algae in the entire bottle.
* A **60-gram energy bar** containing **1% red marine algae** would contain **600 mg** of red marine algae.

Conclusion:  
The typical amounts of **red marine algae** used in **commercial food products** range from **0.1% to 2%** by weight in various applications such as **beverages**, **supplements**, **energy bars**, and **frozen desserts**. The use of **carrageenan**, a major extract of red marine algae, is prevalent in products requiring thickening, gelling, or stabilizing agents, while whole algae forms like **Irish moss** are utilized in **nutritional supplements** and **functional foods**.



BeeChoo LiangBeeChoo Liang  [9:33 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732023227849139)

**Hot pepper extract**, often derived from varieties like **cayenne**, **habanero**, or **jalapeño peppers**, is used in commercial food products primarily for its **spicy heat** and potential **health benefits**. It contains compounds like **capsaicin**, which provides the hot sensation and is often used as a **flavor enhancer**, **natural preservative**, or **functional ingredient**.  
The amount of **hot pepper extract** used in food products depends on the desired level of heat, the type of product, and the target market. Extracts are typically more concentrated than whole peppers or pepper powders, so even small amounts can have a significant impact on the flavor and spiciness.  
Typical Amounts of **Hot Pepper Extract** Used in Commercial Food Products  
1. **Sauces (Hot Sauce, Salsa, Marinades)**

* **Hot pepper extract** is a common ingredient in **hot sauces**, **salsas**, and **marinades** to add heat and flavor intensity.
* **Typical usage**: **0.1% to 5%** by weight (depending on the product's desired heat level).
  + For a **hot sauce** with **extreme heat**, the **pepper extract** might be used at the higher end of the range (**3% to 5%**), while **milder sauces** may use it at around **0.1% to 1%**.
  + For example, in a **100-gram bottle of hot sauce**, **0.1% to 1%** pepper extract would contribute **100 mg to 1 gram** of extract, while a **high-heat sauce** might have **3 to 5 grams** of extract per 100 grams of sauce.

2. **Snacks (Chips, Popcorn, Nuts)**

* **Hot pepper extract** is used in **spicy snack foods** like **chips**, **popcorn**, **pretzels**, and **seasoned nuts** for heat and flavor.
* **Typical usage**: **0.05% to 1%** by weight.
  + For example, in **spicy tortilla chips**, the pepper extract might be used at **0.1% to 0.5%** by weight, which would result in about **100 mg to 500 mg** of pepper extract per **100-gram serving**.
  + In **spicy popcorn**, it might be used at **0.05% to 0.2%** by weight for a more mild heat level.

3. **Processed Meats (Hot Dogs, Sausages, Deli Meats)**

* **Hot pepper extract** is often added to **processed meats** like **hot dogs**, **sausages**, and **deli meats** for a spicy kick and preservation properties.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For example, in **sausages**, **0.1% to 0.5%** pepper extract would provide a **subtle to moderate heat**. This equates to about **100 mg to 500 mg** of extract per **100-gram serving**.
  + In **spicy deli meats**, the extract is usually used at **0.1%** to achieve the right balance of heat without overwhelming the flavor.

4. **Beverages (Spicy Energy Drinks, Alcoholic Beverages)**

* **Hot pepper extract** is sometimes included in **beverages**, especially in **spicy energy drinks**, **cocktails**, or **specialty drinks** like **bloody mary mixes**.
* **Typical usage**: **0.01% to 0.1%** by weight.
  + In a **500 ml bottle of spicy energy drink**, the **hot pepper extract** might be used at concentrations of around **0.01% to 0.05%** by weight.
  + For example, at **0.1%**, the drink would contain about **500 mg** of pepper extract per bottle.

5. **Condiments (Ketchup, Mayonnaise, Dressings)**

* **Hot pepper extract** is sometimes used in **condiments** like **spicy ketchup**, **mayonnaise**, **barbecue sauce**, and **salad dressings** to give them a spicy kick.
* **Typical usage**: **0.05% to 0.5%** by weight.
  + For example, in a **200-gram bottle of spicy ketchup**, the **hot pepper extract** might be used at **0.1%** to **0.5%**, contributing **200 mg to 1 gram** of extract to the entire bottle.

6. **Functional Foods (Weight Loss or Metabolism-Boosting Products)**

* Some commercial **functional foods** (such as **weight loss supplements**, **metabolism boosters**, or **energy bars**) include **pepper extract** for its purported **fat-burning** and **metabolism-boosting** effects.
* **Typical usage**: **0.1% to 1%** by weight.
  + In these products, the usage is generally lower because the goal is more about the **functionality** of capsaicin (increased metabolism) rather than flavor. For example, in a **40-gram energy bar**, the extract could contribute **40 mg to 400 mg** of hot pepper extract.

7. **Candy (Spicy Candies, Chocolates)**

* **Hot pepper extract** is used in **spicy candies**, **chocolate bars**, or **candied fruit** to create a **spicy-sweet** flavor profile.
* **Typical usage**: **0.05% to 1%** by weight.
  + For example, in a **100-gram chocolate bar**, **0.05% to 0.5%** of hot pepper extract could result in **50 mg to 500 mg** of extract in the bar.

Summary of Typical Usage Ranges:

* **Hot Sauces, Salsas, Marinades**: **0.1% to 5%** by weight, depending on the desired heat level.
* **Snacks (Chips, Popcorn, Nuts)**: **0.05% to 1%** by weight.
* **Processed Meats (Hot Dogs, Sausages)**: **0.1% to 0.5%** by weight.
* **Beverages (Energy Drinks, Alcoholic Beverages)**: **0.01% to 0.1%** by weight.
* **Condiments (Ketchup, Mayonnaise, Dressings)**: **0.05% to 0.5%** by weight.
* **Functional Foods**: **0.1% to 1%** by weight.
* **Spicy Candy and Chocolate**: **0.05% to 1%** by weight.

Key Considerations:

1. **Capsaicin Content**: The spiciness of the extract is primarily due to **capsaicin**, the active compound in hot peppers. Commercial extracts can be highly concentrated, so even small amounts can significantly affect the heat level.
2. **Taste Balance**: Hot pepper extract is typically used in small amounts because it can overpower other flavors. Manufacturers adjust the concentration based on the **desired heat level** and **taste profile** of the product.
3. **Health Benefits**: Some food products include **pepper extract** not only for flavor but also for its potential **metabolism-boosting** and **appetite-suppressing** properties. These effects are more noticeable when used consistently in **dietary supplements** or **functional foods**.
4. **Regulatory Considerations**: While pepper extract is generally considered safe, its concentration in food products is regulated by **food safety standards** in different countries to ensure that it is used appropriately.

Example Calculations:

* In a **100-gram jar of spicy salsa** with **1% pepper extract**, there would be **1 gram** of hot pepper extract in the jar.
* A **50-gram bag of spicy chips** with **0.5% pepper extract** would contain **250 mg** of pepper extract.

Conclusion:  
**Hot pepper extract** is used in **commercial food products** at varying concentrations, depending on the heat level and application. Typical usage ranges from **0.1% to 5%** by weight, with **hot sauces**, **snacks**, and **processed meats** usually containing higher concentrations for a noticeable spice level. In contrast, **beverages** and **condiments** typically use lower amounts to add just a hint of heat.



BeeChoo LiangBeeChoo Liang  [9:52 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732024366943079)

In commercial food products, **glycol** typically refers to **propylene glycol** (PG), a synthetic compound used in a variety of applications due to its **humectant**, **preservative**, and **solvent properties**. It is recognized as **generally recognized as safe (GRAS)** by the **U.S. Food and Drug Administration (FDA)** when used in specified quantities in food products.  
Typical Amounts of **Propylene Glycol** Used in Commercial Food Products:

1. **Baked Goods (Cakes, Pies, Pastries)**:
   * **Purpose**: Propylene glycol is used as a **humectant** to retain moisture, improve texture, and extend shelf life.
2. **Typical usage**: **0.1% to 0.5%** by weight.
   * For example, in a **500-gram batch of cake mix**, **0.1% to 0.5%** would correspond to **0.5 grams to 2.5 grams** of propylene glycol.
3. **Ice Cream and Frozen Desserts**:
   * **Purpose**: Propylene glycol helps prevent the formation of ice crystals, providing a **smooth texture** and **creaminess** in ice cream and other frozen desserts.
4. **Typical usage**: **0.1% to 0.3%** by weight.
   * For example, in a **1-liter tub of ice cream**, **0.1% to 0.3%** propylene glycol would be around **1 gram to 3 grams** per tub.
5. **Food Colorings and Flavorings**:
   * **Purpose**: Propylene glycol is used as a **solvent** for food colorings, flavorings, and extracts, ensuring their **uniform distribution** in the product.
   * **Typical usage**: **Variable** depending on the specific formula, but typically in the range of **1% to 5%** by weight in flavor and colorant concentrates. This can vary greatly depending on the concentration of the ingredient being dissolved.
6. **Salad Dressings, Sauces, and Condiments**:
   * **Purpose**: Propylene glycol is used in **dressings, sauces**, and **condiments** to maintain **smooth consistency** and **improve stability** of emulsions.
7. **Typical usage**: **0.1% to 0.5%** by weight.
   * For instance, in a **200-gram bottle of salad dressing**, it could contain around **0.2 grams to 1 gram** of propylene glycol.
8. **Beverages (Fruit Juices, Soft Drinks, Energy Drinks)**:
   * **Purpose**: In beverages, **propylene glycol** is used as a **solvent** for flavors and colors and as a **humectant** to maintain moisture and prevent crystallization.
9. **Typical usage**: **0.1% to 0.2%** by weight.
   * For example, in a **500 ml bottle of fruit juice** or **energy drink**, it could contain **0.5 grams to 1 gram** of propylene glycol.
10. **Canned and Processed Foods**:
    * **Purpose**: Propylene glycol is used as a **preservative** and **texture modifier** in **canned vegetables**, **fruits**, and **meats** to help retain moisture and prevent freezing or freezing damage.
11. **Typical usage**: **0.1% to 0.5%** by weight.
    * For instance, in a **400-gram can of vegetables**, **0.1% to 0.5%** propylene glycol would be **0.4 grams to 2 grams**.
12. **Candies and Confections**:
    * **Purpose**: In candies, propylene glycol helps to maintain **moisture content** and **smooth texture** while preventing crystallization in products like **gummies** and **chewing gum**.
13. **Typical usage**: **0.1% to 1%** by weight.
    * In a **100-gram bag of gummies**, it could contain **100 mg to 1 gram** of propylene glycol, depending on the desired texture.
14. **Gelatin and Marshmallows**:
    * **Purpose**: Propylene glycol is used in gelatin-based foods and marshmallows to enhance **softness**, **moisture retention**, and prevent **hardening**.
15. **Typical usage**: **0.1% to 0.5%** by weight.
    * For example, in a **200-gram pack of marshmallows**, it might contain **0.2 grams to 1 gram** of propylene glycol.

Regulatory Considerations:

* The **FDA** has determined that **propylene glycol** is **safe for use in food products** in concentrations up to **50%** in some products like cake mixes, but actual usage in food products is typically much lower, as noted in the ranges above.
* Some countries may have more stringent regulations on the use of propylene glycol in food products, and it is important to adhere to local food safety guidelines.

Summary of Typical Usage:

* **Baked Goods**: **0.1% to 0.5%** by weight.
* **Ice Cream/Frozen Desserts**: **0.1% to 0.3%** by weight.
* **Food Colorings/Flavorings**: **1% to 5%** by weight (as part of a flavor or colorant solution).
* **Salad Dressings/Sauces**: **0.1% to 0.5%** by weight.
* **Beverages**: **0.1% to 0.2%** by weight.
* **Canned/Processed Foods**: **0.1% to 0.5%** by weight.
* **Candies/Confections**: **0.1% to 1%** by weight.
* **Gelatin/Marshmallows**: **0.1% to 0.5%** by weight.

Conclusion:  
**Propylene glycol** is commonly used in small amounts in a wide variety of **commercial food products** due to its versatility as a **humectant**, **solvent**, and **preservative**. Typical usage ranges from **0.1% to 1%** by weight, with specific concentrations varying depending on the type of product and its intended properties. It is generally considered safe when used within recommended levels by regulatory bodies such as the **FDA**. However, like any food additive, its use should comply with local food safety regulations and be disclosed appropriately on food labels.

Today



BeeChoo LiangBeeChoo Liang  [12:33 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732034010156059)

The amount of black cardamom used in commercial food products varies depending on the type of product, the desired flavor profile, and how the cardamom is incorporated. Black cardamom has a bold, smoky flavor that is quite different from green cardamom, so it is typically used in moderation. Here are some general guidelines:

1. **Spice Blends**: In commercial spice blends like garam masala or curry powders, black cardamom may be used in quantities of around **0.1% to 1%** of the total weight of the blend, depending on how pronounced the flavor is intended to be.
2. **Prepared Foods (e.g., curries, soups, sauces)**: In prepared products like curries or sauces, black cardamom is usually included in small quantities — **less than 0.1% of the product's weight**. It’s often included in whole or crushed form and may not be a dominant flavor, but contributes to the overall complexity.
3. **Beverages**: In commercial beverages like chai tea or flavored spirits, black cardamom might be used in **trace amounts** (around **0.01% to 0.05%**), especially in blends with other spices.
4. **Bakery Products**: In baked goods (e.g., spiced cakes or breads), black cardamom is less common but might be used at **less than 0.05%** of the total recipe weight, due to its strong flavor.
5. **Sweets and Desserts**: For items like flavored syrups, jams, or sweets, black cardamom may be added sparingly, typically **less than 0.1%** of the weight of the product, for its smoky and aromatic qualities.

In commercial food production, the key to using black cardamom is to balance its bold flavor without overpowering other ingredients. It's typically added in small quantities due to its potent and smoky profile.

[12:35](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732034102370409)

BeeChoo Liang

**Glyceryl triacetate** (also known as **triacetin**) is an ester of **glycerin** and **acetic acid**. It is used in a variety of **commercial food products** primarily as a **plasticizer**, **solvent**, and **emulsifier**. It can help to improve the **texture**, **stability**, and **appearance** of certain food products, especially in confectionery, bakery items, and flavored products. It is also used to prevent **crystallization** in sugar-based products and as a **carrier** for certain flavorings or colorants.  
Typical Amount of **Glyceryl Triacetate** Used in Commercial Food Products  
The amount of **glyceryl triacetate** used in food products varies depending on the specific application and the desired effect. Below are some typical usage ranges:  
1. **Confectionery (Candy, Chewing Gum, Gummy Products)**:

* **Purpose**: **Glyceryl triacetate** is often used in **candies**, **chewing gum**, and **gummy products** as a **plasticizer** to help prevent crystallization of sugars, improve **texture**, and enhance the **mouthfeel** of the product.
* **Typical usage**: **0.1% to 1%** by weight.
  + For example, in a **100-gram batch of gummy candy**, the amount of glyceryl triacetate could range from **100 mg to 1 gram**, depending on the product's texture and consistency goals.
* **Chewing gum** typically uses around **0.1% to 0.3%** glyceryl triacetate to maintain the desired chewiness and prevent drying out.

2. **Bakery Products (Cakes, Pastries, Pies)**:

* **Purpose**: In **baked goods**, glyceryl triacetate can help improve the **texture** and **moisture retention** of the product, especially in **cakes**, **pastries**, and **pies**.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + In a **500-gram batch of cake batter**, **0.1% to 0.5%** glyceryl triacetate would correspond to **0.5 grams to 2.5 grams** of the compound.
* It helps to create a **softer crumb** and extend **shelf life** by retaining moisture.

3. **Flavored Products (Flavored Oils, Extracts)**:

* **Purpose**: **Glyceryl triacetate** can be used as a **solvent** and **carrier** for **flavorings**, **colorants**, and **essential oils**, particularly in **oil-based** flavorings for foods such as **candies**, **snacks**, and **beverages**.
* **Typical usage**: **0.1% to 2%** by weight.
  + In **flavored oils** or **extracts**, the usage may range from **0.1%** (in highly concentrated flavor formulations) to **2%** depending on the strength of the flavors and the specific formulation.

4. **Beverages (Energy Drinks, Soft Drinks, Alcoholic Beverages)**:

* **Purpose**: In **beverages**, particularly **alcoholic drinks** and **energy drinks**, glyceryl triacetate can be used to **enhance flavor** and **maintain stability** by acting as a **solvent** for flavors or essential oils.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + In a **500 ml bottle of energy drink** or **flavored alcoholic beverage**, glyceryl triacetate might be used in concentrations ranging from **0.5 grams to 2.5 grams** per bottle.

5. **Fat Replacers (Low-Fat or Fat-Free Products)**:

* **Purpose**: **Glyceryl triacetate** may be used in **fat replacers** or **low-fat foods** to mimic the **mouthfeel** and **texture** of fats without adding significant calories.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **200-gram low-fat product**, it could contain **0.2 grams to 0.6 grams** of glyceryl triacetate, depending on the desired texture.

6. **Preservatives and Anti-Crystallization Agents (Sugar Products)**:

* **Purpose**: **Glyceryl triacetate** helps to prevent **crystallization** in sugar-based products, such as **candies** and **syrups**, by maintaining the smoothness of the product and preventing the formation of crystals.
* **Typical usage**: **0.1% to 1%** by weight.
  + In a **100-gram batch of syrup**, glyceryl triacetate may be used at **0.1% to 1%**, which would result in **100 mg to 1 gram** of the compound.

Regulatory Considerations:

* **Glyceryl triacetate** is generally considered **safe** for use in food products by regulatory bodies like the **FDA** and **EFSA** when used within established guidelines. It is **GRAS** (generally recognized as safe) for use as a food additive in specific applications, though it should be used in **moderation** and according to product-specific regulations.
* As with any food additive, its usage must adhere to **local food safety regulations**, and the ingredient must be properly listed on product labels.

Summary of Typical Usage:

* **Confectionery (Candy, Chewing Gum, Gummy Products)**: **0.1% to 1%** by weight.
* **Bakery Products (Cakes, Pastries, Pies)**: **0.1% to 0.5%** by weight.
* **Flavored Products (Oils, Extracts)**: **0.1% to 2%** by weight.
* **Beverages (Energy Drinks, Soft Drinks)**: **0.1% to 0.5%** by weight.
* **Fat Replacers (Low-Fat Products)**: **0.1% to 0.3%** by weight.
* **Sugar-Based Products (Anti-Crystallization)**: **0.1% to 1%** by weight.

Conclusion:  
**Glyceryl triacetate (triacetin)** is used in **commercial food products** in **small amounts** (typically between **0.1% and 1%** by weight), depending on its application. It is mainly used for its **plasticizing**, **solvent**, and **moisture-retention** properties, making it common in **confectionery**, **bakery**, **beverages**, and products where **texture** and **stability** are important. As with other food additives, its use is regulated to ensure safety and effectiveness, and manufacturers typically use it within safe and established guidelines.

[12:37](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732034270768489)

BeeChoo Liang

**Glyceryl monoestearate** (GMS), also known as **glyceryl monostearate**, is an **emulsifier** and **stabilizing agent** commonly used in **commercial food products**. It is derived from **glycerol** and **stearic acid**, a fatty acid, and is primarily used to **blend oil and water-based ingredients**. GMS helps improve **texture**, **mouthfeel**, and **shelf stability** of food products by preventing separation and stabilizing emulsions.  
Typical Amount of **Glyceryl Monoestearate (GMS)** Used in Commercial Food Products  
The amount of **GMS** used in food products is generally small, as it is an **effective emulsifier** in very low concentrations. The typical range varies depending on the product's intended purpose, but it typically falls within **0.1% to 1%** by weight.  
1. **Baked Goods (Cakes, Pastries, Bread)**

* **Purpose**: **Glyceryl monoestearate** is used to improve the **texture** and **softness** of baked goods and to maintain **moisture retention**. It also helps prevent staling.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + In a **500-gram batch of cake batter**, this would amount to **0.5 grams to 2.5 grams** of GMS.
  + For **bread**, the usage typically falls in the **0.2% to 0.3%** range to improve **loaf volume** and **crumb texture**.

2. **Dairy Products (Ice Cream, Margarine, Butter, Cheese)**

* **Purpose**: GMS is widely used in **dairy products** to **stabilize emulsions**, enhance the **texture**, and improve the **mouthfeel** of products like **ice cream**, **margarine**, and **processed cheese**.
* **Typical usage**:
* **Ice Cream**: **0.1% to 0.3%** by weight.
  + For example, in a **1-liter tub of ice cream**, it would contribute around **1 gram to 3 grams**.
* **Margarine**: **0.3% to 0.5%** by weight.
  + In a **200-gram batch of margarine**, it might be used at around **0.6 grams to 1 gram**.
  + **Cheese (processed or spreadable)**: **0.1% to 0.3%** by weight.

3. **Confectionery (Candy, Chocolate, Chewing Gum)**

* **Purpose**: **GMS** is used in **confectionery** to improve **smoothness**, **emulsify fats**, and prevent separation of ingredients. It is also used in **chewing gum** to improve **texture** and prevent stickiness.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For example, in a **100-gram batch of chocolate**, it could contain **0.1 grams to 0.5 grams** of GMS to enhance its smoothness.
  + In **gum** or **candies**, the range is typically **0.1% to 0.3%** by weight, depending on the product's texture and composition.

4. **Beverages (Emulsified Beverages, Milk Drinks, Smoothies)**

* **Purpose**: **GMS** is used to stabilize emulsions in **beverages** that contain both **oil** (like coconut or almond milk) and **water**.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + In a **500 ml bottle of flavored beverage**, it might contain **0.25 grams to 1 gram** of GMS.
  + It helps to prevent **phase separation** in products like **milk-based smoothies** or **coffee creamers**.

5. **Frozen Foods (Vegetables, Ready Meals, Sauces)**

* **Purpose**: In **frozen foods**, GMS helps prevent the **separation** of sauces, stabilize emulsions in **ready meals**, and improve **texture** in products like **frozen vegetables** or **processed meats**.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **200-gram portion of frozen vegetables** or **sauces**, GMS could be used at around **0.2 grams to 0.6 grams**.

6. **Fat Replacers and Low-Fat Products**

* **Purpose**: GMS is often used in **fat replacers** in **low-fat or fat-free products** to mimic the **mouthfeel** and **texture** of fat without adding significant calories.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For example, in a **200-gram low-fat snack**, it might contain around **0.2 grams to 1 gram** of GMS to replicate the creamy texture that fat would provide.

7. **Salad Dressings and Sauces**

* **Purpose**: GMS is used in **salad dressings**, **mayonnaise**, and other **oil-in-water emulsions** to stabilize the product and maintain consistency.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + In a **200-gram bottle of salad dressing**, the amount of GMS would typically be **0.2 grams to 0.6 grams**.

8. **Miscellaneous Applications (Instant Foods, Spreads)**

* **Purpose**: **GMS** may also be used in **instant soups**, **instant noodles**, **spreads**, and other processed foods to improve **texture** and **stability**.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **100-gram pack of instant noodles**, it might contain **0.1 grams to 0.3 grams** of GMS.

Summary of Typical Usage:

* **Baked Goods (Cakes, Pastries, Bread)**: **0.1% to 0.5%** by weight.
* **Dairy Products (Ice Cream, Margarine, Processed Cheese)**: **0.1% to 0.5%** by weight.
* **Confectionery (Candy, Chocolate, Chewing Gum)**: **0.1% to 0.5%** by weight.
* **Beverages (Emulsified Beverages, Milk Drinks)**: **0.05% to 0.2%** by weight.
* **Frozen Foods (Vegetables, Ready Meals, Sauces)**: **0.1% to 0.3%** by weight.
* **Fat Replacers and Low-Fat Products**: **0.1% to 0.5%** by weight.
* **Salad Dressings and Sauces**: **0.1% to 0.3%** by weight.
* **Miscellaneous Applications (Instant Foods, Spreads)**: **0.1% to 0.3%** by weight.

Regulatory Considerations:

* **Glyceryl monoestearate** is classified as **GRAS (Generally Recognized As Safe)** by the **FDA** when used in food products within the recommended levels. However, usage levels must comply with local food safety regulations, which are designed to ensure that food additives do not exceed safe limits for consumption.
* As with any food additive, **GMS** must be properly labeled in accordance with regulatory guidelines.

Conclusion:  
**Glyceryl monoestearate (GMS)** is typically used in **small quantities** in commercial food products, usually in the range of **0.1% to 1%** by weight, depending on the specific application. Its primary role is to serve as an **emulsifier** and **stabilizer** to improve **texture**, **mouthfeel**, **stability**, and **moisture retention** in a variety of products, including **baked goods**, **dairy**, **confectionery**, **beverages**, and **fat replacers**. When used in food products, it is considered a safe and effective ingredient to enhance the product's quality and consumer appeal.

[12:38](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732034314231219)

BeeChoo Liang

**Glyceryl Monoester** typically refers to **glyceryl monostearate** (GMS), which is an **emulsifier** and **stabilizer** commonly used in food products to help blend oil and water-based ingredients, improve texture, and enhance shelf stability. Its primary function is to act as a **surfactant**, facilitating the **formation of stable emulsions** in products where oil and water need to stay mixed.  
Typical Amount of **Glyceryl Monoester (GMS)** Used in Commercial Food Products:  
The amount of **glyceryl monostearate** used in food products is typically low, as it is an **effective emulsifier** in small concentrations. The exact amount depends on the type of product and the desired properties (e.g., texture, stability). Here’s an overview of typical usage rates in various food products:  
1. **Baked Goods (Cakes, Pastries, Bread)**

* **Purpose**: **Glyceryl monoester** improves the **texture** and **moisture retention** in baked goods. It helps prevent staling, improves volume, and provides a softer crumb.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For example, in a **500-gram batch of cake batter**, **0.1% to 0.5%** would correspond to **0.5 grams to 2.5 grams** of glyceryl monoester.
  + **Bread** often uses **0.2% to 0.3%** by weight to improve **crumb structure** and **softness**.

2. **Dairy Products (Ice Cream, Margarine, Butter, Cheese)**

* **Purpose**: In **dairy products**, glyceryl monoester helps to **stabilize emulsions** between water and fat, improve **texture**, and enhance **mouthfeel**. It is especially useful in **ice cream**, **margarine**, and **processed cheese**.
* **Typical usage**:
* **Ice Cream**: **0.1% to 0.3%** by weight.
  + For example, in a **1-liter tub of ice cream**, it would be about **1 gram to 3 grams**.
* **Margarine**: **0.3% to 0.5%** by weight.
  + In a **200-gram batch of margarine**, it could contain **0.6 grams to 1 gram**.
  + **Processed Cheese**: **0.1% to 0.3%** by weight.

3. **Confectionery (Candy, Chocolate, Chewing Gum)**

* **Purpose**: In **confectionery products**, glyceryl monoester helps improve **smoothness**, **emulsify fats**, and prevent separation in products like **candies**, **chocolates**, and **chewing gum**.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + In a **100-gram batch of chocolate**, it may contain **0.1 grams to 0.5 grams** of glyceryl monoester to enhance **smooth texture** and prevent the fats from separating.
  + In **chewing gum**, the usage rate is typically **0.1% to 0.3%**.

4. **Beverages (Emulsified Beverages, Milk Drinks, Smoothies)**

* **Purpose**: **Glyceryl monoester** is used in **beverages** to stabilize emulsions, prevent separation, and improve **mouthfeel** in drinks that contain both **water** and **oil-based ingredients** (e.g., milk, coconut oil, or flavor oils).
* **Typical usage**: **0.05% to 0.2%** by weight.
  + In a **500 ml bottle of flavored milk** or **smoothie**, the usage might range from **0.25 grams to 1 gram**.

5. **Frozen Foods (Vegetables, Ready Meals, Sauces)**

* **Purpose**: In **frozen foods**, glyceryl monoester helps prevent the **separation** of sauces and improves the **texture** of **ready meals**. It is also used to stabilize **emulsions** in products like **frozen vegetables** or **processed meats**.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **200-gram portion of frozen vegetables** or **sauces**, glyceryl monoester could be used at around **0.2 grams to 0.6 grams**.

6. **Fat Replacers and Low-Fat Products**

* **Purpose**: **Glyceryl monoester** is used in **low-fat** or **fat-free products** as a **fat replacer** to mimic the **mouthfeel** and **texture** of fats without adding significant calories. It helps provide the **creamy texture** of fats in **fat-free dairy products** or **low-fat spreads**.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + In a **200-gram low-fat snack**, it could contain around **0.2 grams to 1 gram** of glyceryl monoester to replicate the creamy mouthfeel of fat.

7. **Salad Dressings and Sauces**

* **Purpose**: **Glyceryl monoester** helps stabilize the **oil-in-water emulsions** in **salad dressings**, **mayonnaise**, and other sauces, preventing phase separation and ensuring smooth consistency.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + In a **200-gram bottle of salad dressing**, the amount of glyceryl monoester would typically range from **0.2 grams to 0.6 grams**.

8. **Miscellaneous Applications (Instant Foods, Spreads)**

* **Purpose**: It is also used in **instant foods**, **spreads**, and other processed products to improve **texture**, **stability**, and **mouthfeel**.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **100-gram pack of instant noodles**, it might contain **0.1 grams to 0.3 grams** of glyceryl monoester.

Summary of Typical Usage:

* **Baked Goods (Cakes, Pastries, Bread)**: **0.1% to 0.5%** by weight.
* **Dairy Products (Ice Cream, Margarine, Processed Cheese)**: **0.1% to 0.5%** by weight.
* **Confectionery (Candy, Chocolate, Chewing Gum)**: **0.1% to 0.5%** by weight.
* **Beverages (Emulsified Beverages, Milk Drinks, Smoothies)**: **0.05% to 0.2%** by weight.
* **Frozen Foods (Vegetables, Ready Meals, Sauces)**: **0.1% to 0.3%** by weight.
* **Fat Replacers and Low-Fat Products**: **0.1% to 0.5%** by weight.
* **Salad Dressings and Sauces**: **0.1% to 0.3%** by weight.
* **Miscellaneous Applications (Instant Foods, Spreads)**: **0.1% to 0.3%** by weight.

Regulatory Considerations:

* **Glyceryl monoester** (glyceryl monostearate) is considered **safe for use** in food products by **regulatory agencies** like the **FDA** and **EFSA**. It is **GRAS (Generally Recognized as Safe)** when used within established guidelines.
* As with all food additives, usage must adhere to local food safety regulations, and the ingredient must be properly labeled in accordance with food labeling laws.

Conclusion:  
**Glyceryl monoester** (glyceryl monostearate) is used in a wide variety of **commercial food products** at **low concentrations** (typically between **0.1% and 0.5%** by weight), depending on the specific application. Its primary role is to act as an **emulsifier** and **stabilizer** to improve the **texture**, **stability**, and **mouthfeel** of products like **baked goods**, **dairy**, **confectionery**, **beverages**, and **low-fat products**. The ingredient is **safe for consumption** when used within regulatory guidelines and plays a key role in enhancing the quality and shelf life of many food products.

[12:39](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732034379749989)

BeeChoo Liang

**Glycerol Esters of Fatty Acids (GEFAs)** are a group of food additives that act primarily as **emulsifiers**, stabilizers, and surfactants. These esters are produced by the reaction of **glycerol** (glycerin) with **fatty acids**, which can be derived from various vegetable oils or animal fats. **Glycerol esters** are commonly used in a wide variety of food products to improve texture, enhance mouthfeel, and maintain consistency in emulsified products.  
Typical Amount of **Glycerol Esters of Fatty Acids (GEFAs)** Used in Commercial Food Products  
The typical usage of **glycerol esters of fatty acids** in food products varies depending on the specific application and desired properties. The general concentration ranges are typically **0.1% to 1.0%** by weight of the final product, though this can vary based on the type of food product and the particular function being performed (e.g., emulsification, stabilization, texture modification).  
Here are some common food products and their typical usage levels for **Glycerol Esters of Fatty Acids**:  
1. **Baked Goods (Cakes, Pastries, Bread)**

* **Purpose**: GEFAs help in improving the **texture**, **volume**, and **moisture retention** of baked goods. They also prevent staling and help in emulsifying fats in dough and batter.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For example, in a **500-gram batch of cake batter**, GEFAs would typically be used in the range of **0.5 grams to 2.5 grams**.
  + In **bread** or **buns**, it could be used at **0.1% to 0.3%** to improve **crumb texture** and **softness**.

2. **Dairy Products (Ice Cream, Margarine, Butter, Cheese)**

* **Purpose**: GEFAs are widely used in **dairy products** to stabilize **emulsions** between water and fat, enhance **smoothness**, and improve **mouthfeel**. They are especially useful in products like **ice cream**, **margarine**, and **processed cheese**.
* **Typical usage**:
* **Ice Cream**: **0.1% to 0.3%** by weight.
  + In a **1-liter tub of ice cream**, the amount of GEFAs could range from **1 gram to 3 grams**.
* **Margarine**: **0.2% to 0.5%** by weight.
  + For a **200-gram batch of margarine**, this would be about **0.4 grams to 1 gram**.
  + **Processed Cheese**: **0.1% to 0.3%** by weight.

3. **Confectionery (Candy, Chocolate, Chewing Gum)**

* **Purpose**: GEFAs are used in **confectionery** to improve the **texture**, prevent the **crystallization** of fats and sugars, and help **stabilize emulsions** in products like **candies**, **chocolates**, and **chewing gum**.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **100-gram batch of chocolate**, GEFAs may be used at **0.1 grams to 0.3 grams** to improve **smoothness**.
  + In **chewing gum**, the usage would typically fall within **0.1% to 0.2%** by weight.

4. **Beverages (Emulsified Beverages, Milk Drinks, Smoothies)**

* **Purpose**: **Glycerol esters of fatty acids** help **stabilize emulsions** in **beverages** that contain both water and oil-based ingredients (e.g., coconut oil, milk, or flavor oils). They help prevent separation and improve **mouthfeel** in emulsified drinks.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + In a **500 ml bottle of milk or smoothie**, GEFAs would typically be used at **0.25 grams to 1 gram** to maintain the **emulsion** and prevent phase separation.

5. **Frozen Foods (Vegetables, Ready Meals, Sauces)**

* **Purpose**: GEFAs are used in **frozen foods** to prevent **separation** of sauces and improve the **texture** of ready meals and other frozen products.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **200-gram portion of frozen vegetables or sauces**, GEFAs could be used at **0.2 grams to 0.6 grams** to prevent separation and maintain a smooth texture during freezing and thawing.

6. **Fat Replacers and Low-Fat Products**

* **Purpose**: In **low-fat** or **fat-free products**, glycerol esters are often used as a **fat replacer** to mimic the **mouthfeel** and **texture** of fats while reducing the calorie content.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + In a **200-gram low-fat snack**, GEFAs could be used at **0.2 grams to 1 gram** to replicate the creamy texture that fat would provide.

7. **Salad Dressings and Sauces**

* **Purpose**: GEFAs help in **stabilizing emulsions** in **salad dressings**, **mayonnaise**, and **other sauces** by preventing separation and maintaining consistency.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For a **200-gram bottle of salad dressing**, the amount of GEFAs would range from **0.2 grams to 0.6 grams**.

8. **Miscellaneous Applications (Instant Foods, Spreads)**

* **Purpose**: GEFAs are also used in **instant foods**, **spreads**, and other processed products to improve **texture**, **stability**, and **mouthfeel**.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **100-gram pack of instant noodles**, it might contain **0.1 grams to 0.3 grams** of GEFAs.

Summary of Typical Usage:

* **Baked Goods (Cakes, Pastries, Bread)**: **0.1% to 0.5%** by weight.
* **Dairy Products (Ice Cream, Margarine, Processed Cheese)**: **0.1% to 0.5%** by weight.
* **Confectionery (Candy, Chocolate, Chewing Gum)**: **0.1% to 0.3%** by weight.
* **Beverages (Emulsified Beverages, Milk Drinks, Smoothies)**: **0.05% to 0.2%** by weight.
* **Frozen Foods (Vegetables, Ready Meals, Sauces)**: **0.1% to 0.3%** by weight.
* **Fat Replacers and Low-Fat Products**: **0.1% to 0.5%** by weight.
* **Salad Dressings and Sauces**: **0.1% to 0.3%** by weight.
* **Miscellaneous Applications (Instant Foods, Spreads)**: **0.1% to 0.3%** by weight.

Regulatory Considerations:

* **Glycerol Esters of Fatty Acids** (GEFAs) are generally **recognized as safe (GRAS)** by regulatory agencies like the **FDA** and **EFSA** when used within established usage levels. They are widely used in food manufacturing without restrictions on their use in most foods.
* As with any food additive, **Glycerol Esters of Fatty Acids** must be used in compliance with local food safety regulations and labeling requirements.

Conclusion:  
**Glycerol Esters of Fatty Acids (GEFAs)** are effective **emulsifiers** and **stabilizers** commonly used in **commercial food products** at relatively low concentrations (usually **0.1% to 0.5%** by weight). They are widely utilized in a variety of food categories, including **baked goods**, **dairy**, **confectionery**, **beverages**, **frozen foods**, and **low-fat products**, to enhance **texture**, **mouthfeel**, and **stability**. These esters play a critical role in ensuring consistent quality and preventing separation in emulsified or oil-based food products.

[12:41](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732034465802539)

BeeChoo Liang

**Glycerin Esters of Fatty Acids**, also known as **glycerol esters of fatty acids (GEFAs)**, are a group of emulsifiers commonly used in food products to improve texture, prevent separation, and enhance the stability of emulsions. These esters are formed by the reaction of **glycerol** (glycerin) with **fatty acids**, which can be derived from vegetable oils, animal fats, or other fatty acid sources.  
In food processing, **glycerin esters of fatty acids** (also sometimes referred to as **glycerol esters of fatty acids** or **GEFAs**) are used at **low concentrations** because they are effective emulsifiers even in small amounts. They help to stabilize oil-water mixtures in food products, improving texture and consistency, and are often found in products like baked goods, dairy, margarine, confectionery, beverages, and frozen foods.  
Typical Amount of **Glycerin Esters of Fatty Acids** Used in Commercial Food Products  
The typical amount of **glycerin esters of fatty acids** used in food products can vary depending on the specific type of product and the desired functionality (e.g., emulsification, stabilization, texture modification). However, the concentration is generally low, typically ranging from **0.05% to 0.5%** by weight of the final product. Here's a breakdown of usage rates in different types of food products:  
1. **Baked Goods (Cakes, Pastries, Bread)**

* **Purpose**: Glycerin esters improve the **texture**, **moisture retention**, and **volume** of baked goods. They also help to prevent staling and maintain freshness.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For example, in a **500-gram batch of cake batter**, **0.5 grams to 2.5 grams** of glycerin esters might be used.
  + In **bread** or **pastry**, the concentration might be around **0.1% to 0.3%** to help improve the **crumb texture** and **softness**.

2. **Dairy Products (Ice Cream, Margarine, Butter, Processed Cheese)**

* **Purpose**: Glycerin esters stabilize the **emulsions** in dairy products like **ice cream**, **margarine**, and **processed cheese**, contributing to a smooth texture and enhanced mouthfeel.
* **Typical usage**:
* **Ice Cream**: **0.1% to 0.3%** by weight.
  + For a **1-liter tub of ice cream**, it could be used in the range of **1 gram to 3 grams**.
* **Margarine**: **0.2% to 0.5%** by weight.
  + In a **200-gram batch of margarine**, this would be about **0.4 grams to 1 gram**.
  + **Processed Cheese**: **0.1% to 0.3%** by weight.

3. **Confectionery (Candy, Chocolate, Chewing Gum)**

* **Purpose**: In **confectionery**, glycerin esters are used to improve **smoothness**, prevent fat separation, and enhance the **texture** of products like **chocolates**, **candies**, and **chewing gum**.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + In a **100-gram batch of chocolate**, glycerin esters might be used at **0.1 grams to 0.3 grams** to improve the **smoothness** of the chocolate coating.
  + In **chewing gum**, the typical usage rate is around **0.1% to 0.2%** by weight.

4. **Beverages (Emulsified Beverages, Milk Drinks, Smoothies)**

* **Purpose**: Glycerin esters are used in **beverages** that require **oil-water emulsions**, such as **flavored milk**, **smoothies**, or **beverages with added oils**. They help **stabilize emulsions** and prevent separation.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + For example, in a **500 ml bottle of milk or smoothie**, glycerin esters would typically be used at **0.25 grams to 1 gram** to help prevent phase separation.

5. **Frozen Foods (Vegetables, Ready Meals, Sauces)**

* **Purpose**: Glycerin esters help maintain the **texture** and prevent the **separation** of sauces or emulsified ingredients in frozen food products. They improve the quality and consistency of frozen meals, vegetables, and sauces.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **200-gram portion of frozen vegetables or sauce**, the typical amount of glycerin esters would range from **0.2 grams to 0.6 grams**.

6. **Fat Replacers and Low-Fat Products**

* **Purpose**: Glycerin esters are often used in **low-fat** or **fat-free products** as **fat replacers**, providing similar **mouthfeel** and **texture** without the calories from fat.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For a **200-gram low-fat snack**, glycerin esters might be used at **0.2 grams to 1 gram** to mimic the creamy texture that fat would provide.

7. **Salad Dressings and Sauces**

* **Purpose**: Glycerin esters help stabilize **emulsions** in **salad dressings**, **mayonnaise**, and other sauces, ensuring smooth texture and preventing separation over time.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + In a **200-gram bottle of salad dressing**, glycerin esters would typically be used in the range of **0.2 grams to 0.6 grams** to ensure that the dressing remains emulsified.

8. **Miscellaneous Applications (Instant Foods, Spreads)**

* **Purpose**: Glycerin esters are used in various **processed foods**, including **instant noodles**, **spreads**, and other packaged products to enhance **texture**, **stability**, and **mouthfeel**.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **100-gram pack of instant noodles**, glycerin esters might be used at **0.1 grams to 0.3 grams** to help improve the texture and consistency of the product.

Summary of Typical Usage:

* **Baked Goods (Cakes, Pastries, Bread)**: **0.1% to 0.5%** by weight.
* **Dairy Products (Ice Cream, Margarine, Processed Cheese)**: **0.1% to 0.5%** by weight.
* **Confectionery (Candy, Chocolate, Chewing Gum)**: **0.1% to 0.3%** by weight.
* **Beverages (Emulsified Beverages, Milk Drinks, Smoothies)**: **0.05% to 0.2%** by weight.
* **Frozen Foods (Vegetables, Ready Meals, Sauces)**: **0.1% to 0.3%** by weight.
* **Fat Replacers and Low-Fat Products**: **0.1% to 0.5%** by weight.
* **Salad Dressings and Sauces**: **0.1% to 0.3%** by weight.
* **Miscellaneous Applications (Instant Foods, Spreads)**: **0.1% to 0.3%** by weight.

Regulatory Considerations:

* **Glycerin Esters of Fatty Acids** are generally recognized as safe (**GRAS**) by regulatory agencies like the **FDA** and **EFSA**, when used in accordance with established usage limits. They have been assessed for their safety in food applications and are approved for use in various food products.
* Usage must comply with **local food safety regulations** and **food labeling laws**.

Conclusion:  
**Glycerin Esters of Fatty Acids** are widely used in **commercial food products** as **emulsifiers**, **stabilizers**, and **texture enhancers**. They are typically used at **low concentrations** (usually **0.1% to 0.5%** by weight) across a wide range of food categories, including **baked goods**, **dairy products**, **confectionery**, **beverages**, **salad dressings**, and **low-fat products**. These esters help maintain **emulsion stability**, improve **texture**, and ensure **consistent product quality** throughout their shelf life.

[12:42](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732034524206829)

BeeChoo Liang

**Glycerin Fatty Acid Esters** (often referred to as **glycerol esters of fatty acids** or **Glycerol Fatty Acid Esters**) are commonly used in food processing as **emulsifiers**, **stabilizers**, and **texture modifiers**. These esters are created by reacting **glycerol (glycerin)** with **fatty acids** derived from plant oils, animal fats, or other sources.  
The typical amount of **Glycerin Fatty Acid Esters** used in commercial food products varies depending on the specific type of product and the desired function, but they are generally used at low concentrations due to their effectiveness. Their primary role is to help in the **emulsification** of oil and water phases, improve the **texture**, and prevent **separation** in food products.  
Typical Amount of **Glycerin Fatty Acid Esters** Used in Commercial Food Products  
The typical usage levels of **Glycerin Fatty Acid Esters** in food products typically range from **0.05% to 1%** by weight, depending on the type of food product and its intended functionality. Below are some common food categories and the typical usage levels for these esters:  
1. **Baked Goods (Cakes, Pastries, Bread)**

* **Purpose**: They are used to improve the **texture**, **moisture retention**, and **volume** of baked goods, and they help prevent staling.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For example, in a **500-gram batch of cake batter**, the amount used would typically range from **0.5 grams to 2.5 grams**.
  + In **bread** or **pastries**, it might be used at **0.1% to 0.3%** to improve **crumb texture** and **softness**.

2. **Dairy Products (Ice Cream, Margarine, Butter, Processed Cheese)**

* **Purpose**: Glycerin fatty acid esters are used to stabilize **emulsions** and improve **smoothness** and **mouthfeel** in dairy products like **ice cream**, **margarine**, and **processed cheese**.
* **Typical usage**:
* **Ice Cream**: **0.1% to 0.3%** by weight.
  + In a **1-liter tub of ice cream**, it could be used in the range of **1 gram to 3 grams**.
* **Margarine**: **0.2% to 0.5%** by weight.
  + In a **200-gram batch of margarine**, this would be about **0.4 grams to 1 gram**.
  + **Processed Cheese**: **0.1% to 0.3%** by weight.

3. **Confectionery (Candy, Chocolate, Chewing Gum)**

* **Purpose**: Glycerin fatty acid esters improve the **smoothness**, prevent fat separation, and enhance the **texture** of confectionery products.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + In a **100-gram batch of chocolate**, the amount used would typically be **0.1 grams to 0.3 grams**.
  + In **chewing gum**, the typical concentration is around **0.1% to 0.2%** by weight.

4. **Beverages (Emulsified Beverages, Milk Drinks, Smoothies)**

* **Purpose**: These esters are used in **beverages** that require oil-water emulsions, such as **flavored milk**, **smoothies**, or beverages with added oils (e.g., coconut oil or fruit oils). They help stabilize emulsions and prevent phase separation.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + For example, in a **500 ml bottle of milk or smoothie**, glycerin fatty acid esters might be used at **0.25 grams to 1 gram** to stabilize the mixture.

5. **Frozen Foods (Vegetables, Ready Meals, Sauces)**

* **Purpose**: Glycerin fatty acid esters help to maintain **texture** and **stability** in frozen products, preventing separation of sauces or emulsified ingredients.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **200-gram portion of frozen vegetables or sauces**, the amount would typically be **0.2 grams to 0.6 grams**.

6. **Fat Replacers and Low-Fat Products**

* **Purpose**: Glycerin fatty acid esters are often used in **low-fat** or **fat-free products** to replicate the **mouthfeel** and **texture** of fats without the associated calories.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For a **200-gram low-fat snack**, glycerin fatty acid esters could be used at **0.2 grams to 1 gram** to mimic the creamy texture that fat would provide.

7. **Salad Dressings and Sauces**

* **Purpose**: These esters are used in **salad dressings** and **mayonnaise** to stabilize the emulsions, ensuring the sauce remains smooth and homogenous without separation.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + In a **200-gram bottle of salad dressing**, glycerin fatty acid esters would typically be used in the range of **0.2 grams to 0.6 grams**.

8. **Miscellaneous Applications (Instant Foods, Spreads)**

* **Purpose**: Glycerin fatty acid esters are used in various **processed foods** (such as **instant noodles**, **spreads**, etc.) to improve texture, stability, and mouthfeel.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **100-gram pack of instant noodles**, glycerin fatty acid esters might be used at **0.1 grams to 0.3 grams** to improve the texture and prevent clumping.

Summary of Typical Usage:

* **Baked Goods (Cakes, Pastries, Bread)**: **0.1% to 0.5%** by weight.
* **Dairy Products (Ice Cream, Margarine, Processed Cheese)**: **0.1% to 0.5%** by weight.
* **Confectionery (Candy, Chocolate, Chewing Gum)**: **0.1% to 0.3%** by weight.
* **Beverages (Emulsified Beverages, Milk Drinks, Smoothies)**: **0.05% to 0.2%** by weight.
* **Frozen Foods (Vegetables, Ready Meals, Sauces)**: **0.1% to 0.3%** by weight.
* **Fat Replacers and Low-Fat Products**: **0.1% to 0.5%** by weight.
* **Salad Dressings and Sauces**: **0.1% to 0.3%** by weight.
* **Miscellaneous Applications (Instant Foods, Spreads)**: **0.1% to 0.3%** by weight.

Regulatory Considerations:

* **Glycerin Fatty Acid Esters** are generally **recognized as safe (GRAS)** by the **FDA** and **EFSA**, when used according to recommended levels. They are widely approved for use in food applications across a variety of product types.
* The **maximum allowable concentrations** may vary by country or region, so it is important to comply with local **food safety regulations** and **labeling requirements**.

Conclusion:  
**Glycerin Fatty Acid Esters** are widely used in commercial food production, typically at low concentrations, generally ranging from **0.1% to 0.5%** by weight. These esters are essential in **emulsifying**, **stabilizing**, and enhancing the **texture** of a broad range of food products, including **baked goods**, **dairy**, **confectionery**, **beverages**, and **frozen foods**. They help maintain **emulsion stability**, improve **mouthfeel**, and prevent separation in products where oil and water phases are combined.

[12:42](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732034572832379)

BeeChoo Liang

**Glycerin Monostearate (GMS)**, also known as **Glyceryl Monostearate**, is a widely used **emulsifier** and **stabilizer** in food products. It is derived from the esterification of **glycerin** with **stearic acid**, a type of fatty acid commonly found in animal fats and plant oils. GMS is effective in **forming stable emulsions**, improving the **texture** and **consistency** of food products, and preventing the separation of ingredients, especially in **oil-water mixtures**.  
The typical amount of **Glycerin Monostearate** used in commercial food products is generally low due to its high efficiency as an emulsifier, and its concentration varies depending on the type of product and the desired functional properties.  
Typical Amount of **Glycerin Monostearate** Used in Commercial Food Products  
The amount of **Glycerin Monostearate** used in food products typically ranges from **0.1% to 0.5%** by weight. Below is a breakdown of usage in various food categories:  
1. **Baked Goods (Cakes, Pastries, Bread)**

* **Purpose**: GMS helps improve the **texture**, **moisture retention**, and **volume** of baked goods. It also helps reduce **crumb staling** and enhances the **softness** of bread.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + In a **500-gram batch of cake batter**, this would equate to **0.5 grams to 2.5 grams**.
  + For **bread** or **pastries**, GMS is typically used at **0.1% to 0.3%** to improve texture and mouthfeel.

2. **Dairy Products (Ice Cream, Margarine, Butter, Processed Cheese)**

* **Purpose**: In **dairy products**, GMS helps to stabilize emulsions (such as in **margarine**, **processed cheese**, and **ice cream**) and improve the **smoothness** and **mouthfeel**.
* **Typical usage**:
* **Ice Cream**: **0.1% to 0.3%** by weight.
  + For a **1-liter tub of ice cream**, this would be about **1 gram to 3 grams** of GMS.
* **Margarine**: **0.2% to 0.5%** by weight.
  + In a **200-gram batch of margarine**, this would range from **0.4 grams to 1 gram**.
  + **Processed Cheese**: **0.1% to 0.3%** by weight.

3. **Confectionery (Candy, Chocolate, Chewing Gum)**

* **Purpose**: GMS is used in **confectionery** to improve the **smoothness** of chocolate, prevent fat separation, and enhance the **texture** of products such as **gum** and **candy**.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **100-gram batch of chocolate**, GMS might be used at **0.1 grams to 0.3 grams** to improve the texture and **creaminess**.
  + In **chewing gum**, the typical amount is around **0.1% to 0.2%** by weight.

4. **Beverages (Emulsified Beverages, Milk Drinks, Smoothies)**

* **Purpose**: GMS is used to stabilize emulsions in beverages, such as **flavored milk** or **smoothies**, where oil droplets are dispersed in water to improve mouthfeel and consistency.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + For example, in a **500 ml bottle of flavored milk** or **smoothie**, GMS might be used at **0.25 grams to 1 gram** to help keep oil and water from separating.

5. **Frozen Foods (Vegetables, Ready Meals, Sauces)**

* **Purpose**: In **frozen foods**, GMS is used to maintain **texture**, **smoothness**, and prevent separation in **sauces**, **gravies**, and **vegetable preparations**.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **200-gram portion of frozen meal or sauce**, the amount of GMS could be between **0.2 grams and 0.6 grams**.

6. **Salad Dressings, Sauces, and Mayonnaise**

* **Purpose**: GMS helps in the **emulsification** and **stabilization** of oil and vinegar or oil and water in products like **mayonnaise**, **salad dressings**, and **sauces**.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + In a **200-gram bottle of salad dressing**, GMS would be used in the range of **0.2 grams to 0.6 grams** to ensure smooth emulsification.

7. **Fat Replacers and Low-Fat Products**

* **Purpose**: In **low-fat** or **fat-free products**, GMS acts as a **fat replacer**, helping to provide a creamy mouthfeel and improving the **texture** of the product without the use of traditional fats.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For example, in a **200-gram low-fat spread**, GMS might be used at **0.2 grams to 1 gram**.

8. **Instant Foods (Noodles, Soups, and Pre-packaged Meals)**

* **Purpose**: GMS is used to improve the **texture** and **mouthfeel** of instant foods, such as **instant noodles** and **pre-packaged soups**. It also helps prevent **clumping** in noodle cakes.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + In a **100-gram pack of instant noodles**, GMS might be used at **0.1 grams to 0.3 grams**.

Summary of Typical Usage:

* **Baked Goods (Cakes, Pastries, Bread)**: **0.1% to 0.5%** by weight.
* **Dairy Products (Ice Cream, Margarine, Processed Cheese)**: **0.1% to 0.5%** by weight.
* **Confectionery (Candy, Chocolate, Chewing Gum)**: **0.1% to 0.3%** by weight.
* **Beverages (Emulsified Beverages, Milk Drinks, Smoothies)**: **0.05% to 0.2%** by weight.
* **Frozen Foods (Vegetables, Ready Meals, Sauces)**: **0.1% to 0.3%** by weight.
* **Salad Dressings, Sauces, and Mayonnaise**: **0.1% to 0.3%** by weight.
* **Fat Replacers and Low-Fat Products**: **0.1% to 0.5%** by weight.
* **Instant Foods (Noodles, Soups, Pre-packaged Meals)**: **0.1% to 0.3%** by weight.

Regulatory Considerations:

* **Glycerin Monostearate** is **GRAS** (Generally Recognized as Safe) by the **FDA** and **EFSA** for use in food products, subject to recommended usage levels.
* **Maximum usage levels** may be regulated depending on the country and type of food product, so it is essential to comply with **local regulations** regarding food additives and emulsifiers.

Conclusion:  
**Glycerin Monostearate** is a versatile **emulsifier** and **stabilizer** used in a variety of food products, with typical usage levels ranging from **0.1% to 0.5%** by weight. It is particularly useful in **baked goods**, **dairy products**, **confectionery**, **beverages**, and **frozen foods**, where it helps to improve texture, stability, and prevent phase separation. It is effective in **emulsions**, especially in oil-water mixtures, and can enhance the **mouthfeel** and **smoothness** of products.

[12:43](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732034619732069)

BeeChoo Liang

**Glycerin Triacetate** (also known as **Glycerol Triacetate** or **Triacetin**) is an ester of **glycerin** and **acetic acid**. It is commonly used in food products primarily as a **solvent**, **humectant**, and **plasticizer**. It can also serve as a **flavoring agent carrier** or **emulsifier** in some food applications, particularly in **flavored products** or in foods that require moisture retention.  
Typical Uses of **Glycerin Triacetate** in Food Products

1. **Flavoring Agent**: Glycerin triacetate is sometimes used to **dissolve and carry flavors** in products such as **confectionery**, **beverages**, and **flavored oils**. It can enhance the **stability** and **delivery** of flavors.
2. **Humectant**: As a humectant, it helps in **moisture retention** in food products, ensuring that the product remains soft and does not dry out. This is particularly useful in **confectionery** (e.g., hard candies and gummies) and **baked goods**.
3. **Plasticizer**: In **processed foods** that require specific textures or consistencies, glycerin triacetate can act as a **plasticizer** to improve the **flexibility** or **mouthfeel** of the food.
4. **Emulsifier and Stabilizer**: It may also be used to stabilize oil-water emulsions, such as in **salad dressings** or certain sauces.

Typical Amount of **Glycerin Triacetate** in Commercial Food Products  
The typical amount of **Glycerin Triacetate** used in food products generally falls in the range of **0.05% to 0.5%** by weight, depending on the specific application and product requirements. Below are some typical food categories and their common usage levels:  
1. **Confectionery (Candies, Gummies, Chewing Gum)**

* **Purpose**: Glycerin triacetate helps improve **texture**, **moisture retention**, and **mouthfeel** in chewy or hard candies and gummy products. It is also used in the **flavor carrier** for candies that need enhanced flavor delivery.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **100-gram batch of gummies**, this would be about **0.1 grams to 0.3 grams**.

2. **Beverages (Flavored Beverages, Soft Drinks, Alcoholic Drinks)**

* **Purpose**: In beverages, glycerin triacetate may be used as a **solvent** for certain flavors and aromas, helping to stabilize and carry **flavor compounds** that are not very water-soluble.
* **Typical usage**: **0.05% to 0.2%** by weight.
  + In a **1-liter bottle of flavored drink**, this could be about **0.5 grams to 2 grams** of glycerin triacetate.

3. **Baked Goods (Cake, Pastry, Cookies)**

* **Purpose**: It is used to **retain moisture** in baked goods, improving **softness** and extending shelf life, particularly in products that are prone to becoming dry or stale.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **500-gram batch of cake batter**, this would be around **0.5 grams to 1.5 grams** of glycerin triacetate.

4. **Salad Dressings, Sauces, and Mayonnaise**

* **Purpose**: Glycerin triacetate may be used as a **stabilizer** or **emulsifier** in salad dressings and sauces, preventing separation of oil and water phases. It can also be used to help **retain moisture** in creamy sauces.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For a **200-gram bottle of salad dressing**, the amount would range from **0.2 grams to 0.6 grams**.

5. **Processed Foods (Instant Noodles, Ready-to-Eat Meals, Snack Foods)**

* **Purpose**: Glycerin triacetate can be used as a **plasticizer** to enhance the **texture** of snack foods or processed meals. It also helps with **moisture retention** in products like **instant noodles** and **meal kits**.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + In a **100-gram portion of instant noodles**, this would be about **0.1 grams to 0.3 grams**.

6. **Flavoring Systems and Flavor Carriers**

* **Purpose**: Glycerin triacetate is a common **carrier** for essential oils and flavor extracts, helping to **stabilize** volatile flavors and deliver them effectively in food products.
* **Typical usage**: **0.1% to 0.5%** by weight.
  + For example, in a **50-gram flavoring blend**, glycerin triacetate might make up **0.05 grams to 0.25 grams**.

7. **Other Food Applications (Cheese, Dairy, Ice Cream)**

* **Purpose**: It can be used in dairy products and **ice cream** to help stabilize the **emulsions** and improve **texture** by enhancing the **creaminess** and **mouthfeel** of these products.
* **Typical usage**: **0.1% to 0.3%** by weight.
  + For example, in a **1-liter batch of ice cream**, this would be approximately **1 gram to 3 grams** of glycerin triacetate.

Summary of Typical Usage:

* **Confectionery (Candies, Gummies, Chewing Gum)**: **0.1% to 0.3%** by weight.
* **Beverages (Flavored Beverages, Soft Drinks, Alcoholic Drinks)**: **0.05% to 0.2%** by weight.
* **Baked Goods (Cake, Pastry, Cookies)**: **0.1% to 0.3%** by weight.
* **Salad Dressings, Sauces, Mayonnaise**: **0.1% to 0.3%** by weight.
* **Processed Foods (Instant Noodles, Ready Meals, Snacks)**: **0.1% to 0.3%** by weight.
* **Flavoring Systems and Flavor Carriers**: **0.1% to 0.5%** by weight.
* **Cheese, Dairy, Ice Cream**: **0.1% to 0.3%** by weight.

Regulatory Considerations:

* **Glycerin Triacetate** is **generally recognized as safe (GRAS)** by the **FDA** and **EFSA** when used according to the prescribed amounts in food products.
* As a **food additive**, it is approved for use in many countries, but usage levels may be regulated by local food safety authorities. It’s important to follow the recommended concentrations and consult local regulations when formulating products containing **Glycerin Triacetate**.

Conclusion:  
**Glycerin Triacetate** is used at low levels in a wide range of commercial food products, typically ranging from **0.05% to 0.5%** by weight. Its primary functions include acting as a **solvent**, **humectant**, **plasticizer**, and **emulsifier**. It helps to improve **moisture retention**, **texture**, and **stability** in food products such as **confectionery**, **beverages**, **baked goods**, and **salad dressings**.

[12:54](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732035259637529)

BeeChoo Liang

Black caraway seeds, also known as **kalonji** (Nigella sativa), are commonly used in both savory and sweet commercial food products, often for their slightly bitter, nutty, and aromatic flavor. The amount of black caraway used in commercial food products varies based on the product type, the desired intensity of flavor, and its role in the overall seasoning blend. Here’s a breakdown of typical usage:  
1. **Spice Blends**  
In commercial spice blends (such as curry powders, garam masala, or Middle Eastern spice mixes), black caraway seeds might make up about **0.5% to 2%** of the total weight of the blend. The seeds are often ground or toasted, but their inclusion is usually in smaller quantities due to their strong and distinctive flavor.  
2. **Bakery Products**  
In products like **flatbreads** (e.g., naan, pita, or focaccia), **bagels**, or **bread rolls**, black caraway seeds are often sprinkled on top or mixed into the dough. The usage can vary, but typically, black caraway makes up **0.1% to 1%** of the total weight of the dough or batter. This amount provides a subtle flavor without overwhelming the product.  
3. **Prepared Foods (e.g., Curries, Stews, and Sauces)**  
For savory dishes like curries, soups, stews, and sauces, black caraway seeds might be used at **less than 0.1%** of the total product weight, typically in a ground form or used whole for tempering. The seeds often play a background role, complementing other spices.  
4. **Pickles and Condiments**  
Black caraway seeds are sometimes used in pickling brines or as a flavoring in condiments. In these products, black caraway might be used in **trace amounts** (e.g., **0.05% to 0.2%**), as the seeds are typically added to the brine or sauce to provide a subtle, herbal note.  
5. **Snack Foods**  
In snack foods, especially in savory items like chips, crackers, or spiced nuts, black caraway seeds may be used as part of the seasoning at **0.1% to 0.5%** of the total product weight. This amount imparts a slightly bitter and aromatic note, which balances well with other spices or ingredients.  
6. **Beverages**  
In certain herbal teas, flavored drinks, or even some alcoholic beverages, black caraway might be included in very small quantities, often **less than 0.1%** of the total product weight. The seeds may be infused to add a slight herbal or bitter flavor.  
7. **Sweets and Confectionery**  
Though less common, black caraway is sometimes used in sweet products, especially in traditional or regional sweets. In these cases, it might make up around **0.05% to 0.1%** of the product’s total weight, contributing a hint of complexity to the sweetness.Summary  
In commercial food production, black caraway seeds are generally used in **small amounts** — typically ranging from **0.05% to 2%** of the total product weight, depending on the product type and desired flavor profile. Their unique, slightly bitter and aromatic taste makes them a complementary spice in blends, baked goods, and savory dishes, often contributing a subtle but important background flavor rather than a dominant one.

[12:57](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732035465790049)

BeeChoo Liang

Bee pollen is considered a functional ingredient with a distinct nutritional profile, often marketed for its health benefits. In commercial food products, it is typically used in small quantities due to its potent flavor, potential allergenic properties, and high nutrient content. The exact amount of bee pollen used can vary depending on the type of product and its intended function. Here are typical usage guidelines for bee pollen in various food products:  
1. **Health Supplements**  
In health supplements like capsules, powders, or energy bars, **bee pollen** can make up a significant portion, especially in products aimed at providing nutritional benefits. In these contexts, it might be used in the range of **200 mg to 2,000 mg per serving** (approximately **0.02% to 1%** of the total product weight), depending on the formulation and dosage.  
2. **Granola and Protein Bars**  
For products like **granola bars** or **protein bars**, bee pollen is typically used in smaller quantities to enhance nutritional value and add a mild floral or honey-like flavor. It is common to see bee pollen included at **0.1% to 1%** of the total product weight, often in combination with other functional ingredients like nuts, seeds, or dried fruits.  
3. **Smoothie Powders and Beverages**  
In smoothie mixes, meal replacement drinks, or nutritional beverages, bee pollen may be used at around **0.1% to 1%** of the total product weight, contributing a subtle floral note while providing an extra boost of vitamins, minerals, and antioxidants. In liquid beverages (like energy drinks or wellness shots), bee pollen could be included at **less than 0.1%** of the total weight, as it is usually incorporated in a concentrated form.  
4. **Honey, Jams, and Spreads**  
Bee pollen is sometimes added to **honey**, **jams**, or **nut butters** as a health-boosting ingredient. The amount used in these products is typically small, often in the range of **0.1% to 1%** of the total weight. In honey, the pollen may be blended to enhance both the nutritional profile and texture.  
5. **Baked Goods**  
In **baked goods** like muffins, cookies, or breads, bee pollen is less commonly used but can be found in health-conscious or specialty items. If included, bee pollen might be used at **0.05% to 0.3%** of the total weight, often for its added nutritional benefits rather than as a primary flavoring ingredient.  
6. **Cosmetic and Personal Care Products**  
In some commercial cosmetic or skincare products (e.g., facial creams, balms, or masks), bee pollen is included for its purported antioxidant, anti-inflammatory, and skin-nourishing properties. The amount used can vary widely depending on the formulation, but it is typically in the **0.1% to 5%** range of the product’s weight.  
7. **Sweets and Confectionery**  
In sweets like chocolate, candies, or other confectioneries, bee pollen might be included at very small quantities, generally around **0.1% to 0.5%** of the total weight. It is often used for its health halo and as a novel ingredient rather than for its flavor, which can be quite subtle.Summary  
Bee pollen is typically used in **small amounts** in commercial food products, often ranging from **0.05% to 2%** of the total product weight, depending on the product and its intended function (flavor, nutrition, or marketing purposes). In health-focused products, the amount can be higher to deliver specific nutritional benefits, while in other products like snacks, beverages, and baked goods, it’s usually added in trace amounts. The main reasons for using bee pollen are its purported health benefits, including being a source of vitamins, minerals, antioxidants, and amino acids, rather than for its flavor.

[1:00](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732035621716739)

BeeChoo Liang

Baking powder is a leavening agent commonly used in commercial food products to help baked goods rise by producing carbon dioxide when combined with moisture and heat. The typical amount of **baking powder** used in commercial food products varies depending on the specific application, product type, and desired texture. Here are some general guidelines for its usage:  
1. **Baked Goods (Cakes, Muffins, Biscuits, etc.)**  
In most baked goods, baking powder is used at a concentration of about **1 to 1.5 teaspoons per cup of flour** (approximately **3 to 5 grams of baking powder per 100 grams of flour**). This translates to roughly **0.5% to 1.5% of the total weight of the batter or dough**.

* **Cakes, Muffins, and Cupcakes**: These products typically use around **0.5% to 1%** baking powder based on the weight of the flour in the recipe. For example, in a typical commercial cake mix, you might find around **3 to 5 grams of baking powder per 100 grams of flour**.
* **Biscuits and Scones**: Similar amounts are used here, typically **0.5% to 1%** of the total dough weight.

2. **Cookies**  
Cookies generally require less leavening agent than cakes or muffins. Commercial cookie recipes often use **0.3% to 0.5%** of the total weight of the dough as baking powder, since the dough is usually thicker and doesn’t require as much rise.

* For example, in commercial cookie mixes, baking powder might be used in the range of **1 to 2 grams per 100 grams of flour**.

3. **Pancakes and Waffles**  
In pancake and waffle batter, baking powder is typically used in **1 to 1.5 teaspoons per cup of flour**, or about **0.5% to 1%** of the total weight of the batter. Commercial pancake or waffle mixes tend to have slightly higher proportions of leavening agents to ensure a light and fluffy texture, often in the range of **1.5 to 2% of the total dry ingredients**.  
4. **Quick Breads (Banana Bread, Zucchini Bread, etc.)**  
In quick breads, which don’t use yeast as a leavening agent, baking powder is used in similar amounts as for cakes or muffins — typically **1 to 1.5 teaspoons per cup of flour** (about **0.5% to 1%** of the total weight of the batter).  
5. **Commercial Cake Mixes**  
In pre-packaged or commercial cake mixes, the amount of baking powder can vary, but it generally falls in the range of **0.5% to 1.5% of the total mix weight**. Some mixes may also contain a combination of baking powder and baking soda to ensure proper leavening during baking.  
6. **Biscuits and Rolls**  
In **biscuits, rolls**, or other products where a slightly more structured rise is needed, baking powder might make up **1% to 1.5% of the total flour weight** (around **3 to 5 grams per 100 grams of flour**).  
7. **Gluten-Free Products**  
In gluten-free baked goods, the proportion of baking powder can be higher because gluten-free flours generally require more help to rise properly. The amount may range from **1.5% to 3%** of the total dry ingredient weight, depending on the specific recipe and other leavening agents used (such as baking soda).  
8. **Doughnuts and Other Fried Goods**  
For products like doughnuts or fried cakes, baking powder is used in amounts of around **0.5% to 1%** of the total weight of the dough, though some recipes may use even slightly less, depending on the desired texture.Summary  
In commercial food products, baking powder is typically used in the range of **0.5% to 1.5%** of the total weight of the product, depending on the type of baked good or food. For example, in cakes, muffins, and quick breads, it's commonly around **0.5% to 1%** of the total batter or dough weight. The amount may be slightly higher in lighter, fluffier products like pancakes and waffles. Adjustments may also be made in gluten-free products to ensure adequate rising. Baking powder is a key ingredient in helping products rise and achieve a light texture, and its exact quantity is carefully balanced based on the other ingredients and desired outcome.



BeeChoo LiangBeeChoo Liang  [1:06 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732036007346609)

Anti-caking agents are substances added to food products to prevent clumping or the formation of lumps, ensuring that powdered or granular products remain free-flowing. The typical amount of **anti-caking agents** used in commercial food products depends on the type of product, the properties of the ingredient being treated, and the specific anti-caking agent in use. These agents are generally used in very small amounts, as their primary function is to be effective in preventing clumping without altering the texture, flavor, or appearance of the food.  
Here are some typical amounts of anti-caking agents used in various commercial food products:  
1. **Salt**  
Anti-caking agents are commonly used in **table salt** and **industrial salt** to keep the crystals from clumping, especially in humid conditions. Common anti-caking agents for salt include **silicon dioxide (SiO₂)**, **calcium silicate**, or **magnesium carbonate**.

* **Typical Amount**: The amount of anti-caking agent in salt is typically around **0.1% to 2%** of the total weight of the salt. For example, a product with **0.5%** anti-caking agent would have **5 grams of anti-caking agent per kilogram of salt**.

2. **Powdered Sugar**  
In products like **powdered sugar** or **confectioner's sugar**, anti-caking agents such as **cornstarch** or **tricalcium phosphate** are often added to prevent moisture from causing the sugar to form lumps.

* **Typical Amount**: Anti-caking agents in powdered sugar are typically used at **1% to 3%** of the total product weight. For example, in a 100g packet of powdered sugar, you might find around **1g to 3g of anti-caking agent**.

3. **Spice Blends and Seasonings**  
In spice mixes, powdered herbs, or seasoning blends, anti-caking agents such as **silicon dioxide**, **calcium silicate**, or **magnesium carbonate** are often added to prevent clumping due to humidity or moisture.

* **Typical Amount**: Anti-caking agents are used at **0.1% to 1%** of the total spice blend weight. For instance, a typical seasoning mix might contain **0.5%** anti-caking agent, which helps maintain flowability without affecting flavor.

4. **Instant Drink Mixes (e.g., powdered coffee or tea)**  
Powdered beverage mixes (e.g., powdered coffee, hot chocolate, instant tea) often contain anti-caking agents to maintain smooth flowability and prevent clumping due to moisture.

* **Typical Amount**: In these products, the amount of anti-caking agent is generally **0.1% to 0.5%** of the total weight, though it may be higher in formulations designed to dissolve more easily.

5. **Flour and Baking Powders**  
In some **flour** or **baking powders**, anti-caking agents are used to ensure the product remains free-flowing and doesn't form lumps, especially in environments with high humidity.

* **Typical Amount**: For products like baking powder, anti-caking agents like **calcium phosphate** or **silicon dioxide** are often used at levels of about **1% to 2%** of the total weight. In flour, the amount is usually lower — around **0.1% to 0.5%**.

6. **Cheese Powders (e.g., for snacks or seasonings)**  
In **cheese powders** used for flavoring snacks like cheese-flavored chips or popcorn, anti-caking agents are used to prevent the powder from sticking together or becoming damp.

* **Typical Amount**: Anti-caking agents in cheese powders are often used in **1% to 5%** of the total weight. The amount may vary based on the moisture content of the cheese powder and the product's intended shelf life.

7. **Cocoa Powder and Other Powdered Ingredients**  
In **cocoa powder** and other powdered products (like dried milk or protein powders), anti-caking agents are used to prevent clumping and improve flow.

* **Typical Amount**: Anti-caking agents in cocoa powder are typically used at around **0.5% to 1%** of the total weight. Similarly, powdered milk or other dry food ingredients may contain **0.1% to 1%** of anti-caking agents.

8. **Grains (e.g., rice, quinoa)**  
Some commercial rice or quinoa products are treated with anti-caking agents (such as **silicon dioxide**) to keep grains from sticking together during packaging and storage.

* **Typical Amount**: The concentration of anti-caking agents in packaged grains is usually quite low, typically around **0.1% to 0.5%** of the total product weight.

Summary  
In commercial food products, **anti-caking agents** are typically used in very small amounts, usually ranging from **0.1% to 2%** of the total product weight, depending on the product type. Here are some examples:

* **Salt**: 0.1% to 2%
* **Powdered sugar**: 1% to 3%
* **Spice blends**: 0.1% to 1%
* **Instant drink mixes**: 0.1% to 0.5%
* **Baking powder**: 1% to 2%
* **Cheese powders**: 1% to 5%
* **Cocoa powder**: 0.5% to 1%

The exact amount used depends on the moisture content of the product, its tendency to clump, and how important flowability is for the product’s packaging, storage, and use. Anti-caking agents are highly effective in these low concentrations and play a crucial role in maintaining the texture and usability of powdered, granular, or dry products.

[1:11](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732036289321479)

BeeChoo Liang

**Amchur powder** (or **dried mango powder**) is a tangy, sour spice made from green mangoes and commonly used in Indian and South Asian cuisine. Its flavor profile is citrusy and tart, adding a pleasant acidity to dishes without the moisture of fresh fruit. In commercial food products, amchur powder is often used in spice blends, snack foods, sauces, and ready-to-eat dishes to provide a sour, tangy note.  
The typical amount of **amchur powder** used in commercial food products varies depending on the type of product, the role it plays in flavor, and the overall recipe. Here are some general guidelines for its usage:  
1. **Spice Blends and Seasoning Mixes**  
Amchur powder is commonly included in **spice blends** such as **chaat masala**, **garam masala**, and **curry powders**, where it contributes a sour note to balance the richness of other spices.

* **Typical Amount**: In spice blends, amchur powder is typically used at **0.5% to 2%** of the total weight of the spice mix. For instance, in a **100g** packet of spice mix, you might find **0.5g to 2g** of amchur powder.

2. **Ready-to-Eat or Prepared Foods**  
In ready-to-eat meals or commercial curries, soups, and sauces, amchur powder is used sparingly to add a mild tanginess without overwhelming the dish.

* **Typical Amount**: In these types of products, amchur powder is generally used at levels of **0.1% to 0.5%** of the total product weight. For example, in a **500g jar of curry sauce**, you might find around **0.5g to 2.5g** of amchur powder.

3. **Snacks and Savory Items (Chips, Crackers, etc.)**  
Amchur powder is sometimes added to **savory snacks** like chips, crisps, or spiced nuts for a tangy flavor that complements other spices like chili powder, cumin, or salt. In some cases, it can also be used in **coating mixtures** for products like fried snacks or seasoned nuts.

* **Typical Amount**: In snack products, amchur powder is usually included at **0.1% to 1%** of the total weight. For instance, a packet of **100g** flavored chips might contain **0.1g to 1g** of amchur powder.

4. **Beverages (e.g., Flavored Teas, Drinks)**  
Amchur powder is occasionally used in **beverages** like spiced teas, wellness drinks, or fruit punches, particularly in products marketed with a tangy or citrus-inspired flavor.

* **Typical Amount**: In commercial beverage formulations, amchur powder is typically used at very low concentrations, around **0.01% to 0.05%** of the total beverage weight, since the powder's sour flavor can be quite potent in liquid form.

5. **Pickles and Sauces**  
Amchur powder is sometimes included in **pickles** and **sauces** (especially Indian-style chutneys and condiments) to add tartness and complexity. It enhances the acidic profile and works well with the rich, spiced flavors of the products.

* **Typical Amount**: In pickles and sauces, amchur powder is generally used at **0.5% to 1.5%** of the total weight, depending on the desired sourness level. In a **200g jar of chutney**, you might find between **1g to 3g** of amchur powder.

6. **Frozen and Packaged Foods**  
In **frozen** or **packaged ethnic foods** (like frozen samosas, dumplings, or rice mixes), amchur powder may be added for its tangy flavor to enhance the overall taste.

* **Typical Amount**: Amchur powder in these products is usually included at **0.1% to 0.5%** of the total weight.

7. **Salads and Salad Dressings**  
In some **salad dressings** or **dry salad mixes**, amchur powder is used to provide a citrusy tang that pairs well with other vinaigrette ingredients like mustard, lemon juice, or vinegar.

* **Typical Amount**: In dressings, amchur powder might be used at **0.1% to 0.3%** of the total product weight, depending on the formulation.

Summary  
In commercial food products, **amchur powder** is typically used in small quantities, usually ranging from **0.1% to 2%** of the total product weight, depending on the type of food and its intended flavor profile. Here's a quick summary of typical usage:

* **Spice Blends**: 0.5% to 2% of the blend weight
* **Prepared Foods (Curries, Sauces, etc.)**: 0.1% to 0.5% of the total product weight
* **Snacks**: 0.1% to 1% of the total snack weight
* **Pickles and Sauces**: 0.5% to 1.5% of the total product weight
* **Beverages**: 0.01% to 0.05% of the total beverage weight

Amchur powder is used to provide a mild tanginess or sourness, and since it is quite potent, it is added in small amounts to avoid overpowering other flavors.



BeeChoo LiangBeeChoo Liang  [1:17 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732036644813109)

**Aluminium free baking powder** is commonly used in commercial food products as a leavening agent, providing the same function as traditional baking powder without the presence of aluminum-based compounds (such as **sodium aluminum sulfate**) that some consumers prefer to avoid. The typical amount of **aluminum-free baking powder** used in commercial food products is generally similar to that of regular baking powder, as the leavening properties are comparable. However, the exact amount depends on the type of product and its desired texture or rise.  
Here’s a breakdown of typical usage in different commercial food products:  
1. **Baked Goods (Cakes, Muffins, Biscuits, etc.)**  
In most baked goods such as cakes, muffins, biscuits, and scones, aluminum-free baking powder is used to help the batter rise and achieve a light, fluffy texture. These products typically require a moderate amount of leavening.

* **Typical Amount**: **1 to 1.5 teaspoons per cup of flour** (approximately **3 to 5 grams of baking powder per 100 grams of flour**). This is generally **0.5% to 1.5%** of the total weight of the batter or dough. For example, a commercial muffin mix might use about **3g to 5g** of aluminum-free baking powder per **100g** of flour.

2. **Cookies**  
In cookies, where a denser texture is often desired, the amount of baking powder is typically lower than in cakes or muffins, as cookies generally rely on other leavening agents (such as baking soda) for rise.

* **Typical Amount**: **0.3% to 0.5%** of the total weight of the dough, which translates to about **1 to 2 grams of baking powder per 100 grams of flour**. For example, a typical commercial cookie mix might contain **1g to 2g** of aluminum-free baking powder per **100g** of flour.

3. **Pancakes and Waffles**  
Pancakes and waffles require a more significant amount of leavening to achieve a light, fluffy texture. Aluminum-free baking powder is often included at higher proportions than in other baked goods.

* **Typical Amount**: **1 to 1.5 teaspoons per cup of flour** (approximately **0.5% to 1%** of the total weight of the batter). In commercial pancake or waffle mixes, the ratio may be closer to **1.5% to 2%** of the total dry ingredients to ensure a soft, fluffy texture.

4. **Quick Breads (Banana Bread, Zucchini Bread, etc.)**  
Quick breads like banana bread, zucchini bread, or pumpkin bread also rely on baking powder to rise. The amount used is similar to that of cakes or muffins, though quick breads often contain more moisture, which can influence the leavening needs.

* **Typical Amount**: **1 to 1.5 teaspoons per cup of flour** (approximately **0.5% to 1%** of the total batter or dough weight).

5. **Doughnuts and Fried Baked Goods**  
Fried goods like doughnuts or other fried cakes often require baking powder for a light texture while still achieving the desired crumb.

* **Typical Amount**: Similar to that for cakes and muffins, usually **0.5% to 1%** of the total weight of the dough, which is approximately **3 to 5 grams of aluminum-free baking powder per 100 grams of flour**.

6. **Gluten-Free Products**  
Gluten-free products, such as gluten-free cakes, muffins, or biscuits, often require slightly more leavening to help the structure rise, as gluten-free flours do not have the same elasticity and structure as wheat flour.

* **Typical Amount**: In gluten-free products, the amount of baking powder may range from **1% to 3%** of the total weight of the dry ingredients, depending on the formulation and other leavening agents used (such as baking soda or cream of tartar).

7. **Commercial Cake Mixes and Prepackaged Baked Goods**  
In prepackaged commercial cake mixes, baking powder is a key ingredient that helps provide the desired rise during baking. The amount used in these mixes is usually carefully balanced to ensure the proper texture and consistency.

* **Typical Amount**: **0.5% to 1.5%** of the total weight of the dry ingredients, which translates to approximately **3 to 5 grams of aluminum-free baking powder per 100 grams of flour**.

8. **Savory Baked Goods (e.g., Biscuits, Savory Scones)**  
For savory baked goods such as biscuits, savory scones, or crackers, aluminum-free baking powder is used in much the same way as in sweet baked goods, but the flavor profile is adjusted to complement the savory seasonings.

* **Typical Amount**: **0.5% to 1%** of the total dough weight, which would be around **3 to 5 grams per 100 grams of flour**.

Summary of Typical Amounts of Aluminum-Free Baking Powder:

* **Cakes, Muffins, Biscuits**: **0.5% to 1.5%** of the total weight of the batter or dough (about **3 to 5 grams per 100 grams of flour**).
* **Cookies**: **0.3% to 0.5%** of the total weight of the dough (about **1 to 2 grams per 100 grams of flour**).
* **Pancakes, Waffles**: **1.5% to 2%** of the total dry ingredients weight.
* **Quick Breads**: **0.5% to 1%** of the total batter or dough weight.
* **Gluten-Free Products**: **1% to 3%** of the total dry ingredients weight.
* **Prepackaged Cake Mixes**: **0.5% to 1.5%** of the total dry ingredients weight.
* **Savory Baked Goods**: **0.5% to 1%** of the total dough weight.

Key Points:

* The amount of **aluminum-free baking powder** used in commercial food products is generally **0.5% to 2%** of the total weight of dry ingredients, depending on the product type.
* Aluminum-free baking powder works the same as regular baking powder, but without the aluminum salts, which is especially important for those who avoid aluminum in their diets.
* The primary role is to provide lift and achieve the desired texture in products like cakes, biscuits, pancakes, and cookies, with slight adjustments made depending on the moisture and structure of the product.

[1:20](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732036830434539)

BeeChoo Liang

**Aluminium free double acting baking powder** is commonly used in commercial food products as a leavening agent. Double-acting baking powder contains two types of acids: one that reacts at room temperature when mixed with liquid (such as monocalcium phosphate), and another that reacts at higher temperatures during baking (usually sodium aluminum sulfate or similar). The "double-acting" nature of the baking powder ensures a sustained release of carbon dioxide, resulting in a better rise and texture in baked goods.  
When it comes to **aluminum-free double-acting baking powder**, the typical amounts used in commercial food products are similar to those of regular double-acting baking powders, but with the assurance that no aluminum compounds are present (like **sodium aluminum sulfate**). The use of aluminum-free variants is a response to consumer preference, as some prefer to avoid aluminum-based leavening agents.  
Typical Amount of Aluminum-Free Double-Acting Baking Powder in Commercial Food Products:  
1. **Cakes, Muffins, and Cupcakes**  
For cakes, muffins, and cupcakes, aluminum-free double-acting baking powder is used to provide a light, airy texture. Since these items require a significant rise but not too much leavening, the amount used is generally moderate.

* **Typical Amount**: **1 to 1.5 teaspoons per cup of flour** (about **3 to 5 grams of baking powder per 100 grams of flour**). This corresponds to approximately **0.5% to 1.5%** of the total weight of the batter or dough.

2. **Biscuits, Scones, and Other Quick Breads**  
In biscuits, scones, and quick breads, aluminum-free double-acting baking powder is often used in slightly higher amounts than in cakes because these products benefit from a more pronounced rise to achieve a fluffy texture.

* **Typical Amount**: **0.5% to 1.5%** of the total weight of the dough (approximately **3 to 5 grams per 100 grams of flour**). This helps achieve a light, flaky texture.

3. **Cookies**  
For cookies, where a more dense and chewy texture is often desired, aluminum-free double-acting baking powder is used in smaller amounts compared to other baked goods.

* **Typical Amount**: **0.3% to 0.5%** of the total weight of the dough, or about **1 to 2 grams per 100 grams of flour**. Cookies typically rely more on baking soda and less on baking powder for their leavening.

4. **Pancakes and Waffles**  
In pancakes and waffles, the goal is to create a light, fluffy batter. Double-acting baking powder is used at higher concentrations to ensure the desired texture.

* **Typical Amount**: **1 to 1.5 teaspoons per cup of flour** (about **0.5% to 1%** of the total batter weight). In commercial pancake and waffle mixes, the amount may be closer to **1.5% to 2%** of the total dry ingredients.

5. **Gluten-Free Baked Goods**  
Gluten-free products typically require more leavening to compensate for the lack of gluten, which provides structure and elasticity. Aluminum-free double-acting baking powder is used more liberally in these products.

* **Typical Amount**: **1% to 3%** of the total weight of the dry ingredients, depending on the formulation and the other leavening agents used (e.g., baking soda, cream of tartar).

6. **Doughnuts and Fried Baked Goods**  
Doughnuts and other fried baked goods (such as fried cakes or crullers) also use aluminum-free double-acting baking powder to achieve a soft, airy texture without being too dense.

* **Typical Amount**: Similar to cakes and muffins, around **0.5% to 1%** of the total dough weight (approximately **3 to 5 grams per 100 grams of flour**).

7. **Commercial Cake Mixes and Prepackaged Baked Goods**  
In commercial cake mixes or prepackaged baked goods, aluminum-free double-acting baking powder is often included at a carefully balanced level to ensure the cake rises properly without being too dense or too airy.

* **Typical Amount**: **0.5% to 1.5%** of the total weight of the dry ingredients. This translates to approximately **3 to 5 grams of aluminum-free baking powder per 100 grams of flour**.

8. **Pickles, Sauces, and Other Processed Foods**  
Although less common, aluminum-free double-acting baking powder can sometimes be found in pickles, sauces, or other processed foods, where it may serve as a pH regulator or as a stabilizer.

* **Typical Amount**: For such products, the use of baking powder is typically very low, usually in the range of **0.1% to 0.5%** of the total product weight.

Summary of Typical Amounts of Aluminum-Free Double-Acting Baking Powder:

* **Cakes, Muffins, Cupcakes**: **0.5% to 1.5%** of the total batter weight (about **3 to 5 grams per 100 grams of flour**).
* **Biscuits, Scones, Quick Breads**: **0.5% to 1.5%** of the total dough weight.
* **Cookies**: **0.3% to 0.5%** of the total dough weight.
* **Pancakes and Waffles**: **1.5% to 2%** of the total dry ingredients weight.
* **Gluten-Free Products**: **1% to 3%** of the total dry ingredients weight.
* **Doughnuts and Fried Goods**: **0.5% to 1%** of the total dough weight.
* **Prepackaged Cake Mixes**: **0.5% to 1.5%** of the total dry ingredients weight.

Key Points:

* The amount of **aluminum-free double-acting baking powder** used in commercial food products is typically around **0.5% to 2%** of the total dry ingredient weight, depending on the type of baked product.
* Double-acting baking powders release carbon dioxide twice—once when mixed with liquid and again when heated, making them ideal for a wide range of baked goods.
* The **aluminum-free** variant is often preferred by consumers who wish to avoid aluminum-based additives, and it can be used in essentially the same proportions as regular double-acting baking powder, with no significant change in the final product's texture or rise.

[1:37](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732037877582569)

BeeChoo Liang

**Acetylated Distarch Adipate** (ADA) is a modified starch, created by the esterification of starch with adipic acid and acetic anhydride. It is used primarily as a **food stabilizer, thickener, and texturizer** in a variety of processed food products. Its unique chemical structure helps it maintain its properties under a wide range of conditions, including heat, acid, and freezing, making it particularly useful in foods that require stability during processing, storage, or handling.  
ADA is commonly used in the following types of commercial food products:  
1. **Processed Cheese**  
Acetylated distarch adipate is often used in processed cheeses to improve texture, prevent separation, and stabilize the product, especially in shredded or melted cheeses.

* **Typical Amount**: In processed cheese, the amount used is typically between **0.5% and 2%** of the total product weight. For example, in **100g** of processed cheese, ADA might be used at **0.5g to 2g**.

2. **Puddings and Custards**  
ADA is commonly added to **puddings** and **custards** to improve texture, ensure a smooth mouthfeel, and prevent syneresis (the separation of liquid from the gel structure).

* **Typical Amount**: In puddings and custards, ADA is typically used at **0.1% to 1%** of the total weight of the product. For example, in a **500g** batch of pudding, **0.5g to 5g** of ADA might be used.

3. **Canned or Frozen Vegetables**  
ADA is used in **canned or frozen vegetable products**, particularly in the sauces or gravies that accompany the vegetables, to improve consistency and prevent the separation of water and solids during storage.

* **Typical Amount**: In sauces and gravies for canned or frozen vegetables, ADA is generally used at **0.1% to 0.5%** of the total weight. For example, a **500g** can of mixed vegetables in sauce might contain **0.5g to 2.5g** of ADA.

4. **Beverages (e.g., Fruit Juices, Drink Mixes)**  
In **fruit beverages**, **drink mixes**, or **liquid dairy products**, ADA can help improve the consistency and prevent phase separation. It also helps control viscosity.

* **Typical Amount**: In beverages, ADA is typically used at **0.1% to 0.3%** of the total weight of the liquid. For example, in a **1 liter** fruit juice, you might find around **1g to 3g** of ADA.

5. **Instant Soups and Sauces**  
In **instant soups**, **sauces**, or **gravy mixes**, ADA is used to improve texture, create a smooth consistency, and ensure that the product maintains its desired thickness when rehydrated or reheated.

* **Typical Amount**: In dry mixes for soups or sauces, ADA is typically used at **0.1% to 0.5%** of the total weight. For example, in **100g** of powdered soup mix, **0.1g to 0.5g** of ADA might be used.

6. **Baked Goods (e.g., Cakes, Pies, and Fillings)**  
Acetylated distarch adipate is sometimes used in **baked goods** (especially in fillings or frostings) to help maintain the desired texture and prevent syneresis.

* **Typical Amount**: In baked goods, ADA is typically used at **0.1% to 0.5%** of the total weight. For example, in a **500g** batch of pie filling, **0.5g to 2.5g** of ADA might be used.

7. **Ice Cream and Frozen Desserts**  
In **ice cream** and **frozen desserts**, ADA is used to improve texture, prevent ice crystal formation, and provide a smoother, creamier consistency.

* **Typical Amount**: In ice cream and frozen desserts, ADA is typically used at **0.1% to 0.3%** of the total product weight. For example, in **1 liter** of ice cream mix, **1g to 3g** of ADA might be used.

8. **Meat and Poultry Products (e.g., Sausages, Processed Meats)**  
ADA is sometimes used in **meat products** (like sausages and other processed meats) as a binder and to improve texture and moisture retention.

* **Typical Amount**: In processed meats, ADA is generally used at **0.1% to 0.5%** of the total weight. For example, in **100g** of sausage or processed meat product, **0.1g to 0.5g** of ADA might be used.

Summary of Typical Amounts of Acetylated Distarch Adipate in Commercial Food Products:

* **Processed Cheese**: **0.5% to 2%** of the total product weight (e.g., **0.5g to 2g per 100g**).
* **Puddings and Custards**: **0.1% to 1%** of the total product weight (e.g., **0.5g to 5g per 500g**).
* **Canned or Frozen Vegetables**: **0.1% to 0.5%** of the total product weight (e.g., **0.5g to 2.5g per 500g**).
* **Beverages (Fruit Juices, Drink Mixes)**: **0.1% to 0.3%** of the total weight (e.g., **1g to 3g per 1 liter**).
* **Instant Soups and Sauces**: **0.1% to 0.5%** of the total weight (e.g., **0.1g to 0.5g per 100g soup mix**).
* **Baked Goods (Fillings, Frostings)**: **0.1% to 0.5%** of the total weight (e.g., **0.5g to 2.5g per 500g filling**).
* **Ice Cream and Frozen Desserts**: **0.1% to 0.3%** of the total product weight (e.g., **1g to 3g per 1 liter**).
* **Meat Products (Sausages, Processed Meats)**: **0.1% to 0.5%** of the total weight (e.g., **0.1g to 0.5g per 100g**).

Key Points:

* The amount of **acetylated distarch adipate** (ADA) used in commercial food products typically ranges from **0.1% to 2%** of the total product weight, depending on the application and the product type.
* ADA is most commonly used in products that require **stabilization**, **thickening**, or **improved texture** under various conditions (e.g., heat, acid, freezing).
* ADA is a **versatile ingredient** that can be used in a wide range of food categories, including **dairy**, **meat**, **bakery**, **beverages**, and **processed foods**.

[1:41](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732038081211009)

BeeChoo Liang

**Acetylated Distarch Phosphate** (ADP) is a modified starch that is commonly used in commercial food products as a **stabilizer**, **thickener**, and **texturizer**. It is produced by esterifying starch with **phosphoric acid** and **acetylating** the starch molecules, giving it properties that enhance stability, improve viscosity control, and resist breakdown under high temperature, acidic conditions, or during freezing and thawing.  
Due to its functional properties, acetylated distarch phosphate is widely used in various food applications. Here are typical amounts used in commercial food products:  
1. **Processed Foods and Sauces (e.g., Gravies, Dressings, Condiments)**  
Acetylated distarch phosphate is often used in **sauces**, **gravy mixes**, **dressings**, and other prepared foods to maintain the desired texture, prevent syneresis (separation of water), and improve the stability of emulsions.

* **Typical Amount**: In processed foods like sauces and gravies, ADP is typically used at **0.1% to 1%** of the total product weight. For example, in a **500g** jar of prepared sauce or dressing, you might find about **0.5g to 5g** of acetylated distarch phosphate.

2. **Instant Soups and Soup Mixes**  
Acetylated distarch phosphate is often included in **instant soups** and **soup mixes** to enhance the texture and improve the ease of rehydration when the product is prepared.

* **Typical Amount**: In **instant soups** or dry **soup mixes**, the amount of ADP typically ranges from **0.2% to 1%** of the total weight. For example, a **100g** packet of instant soup mix might contain **0.2g to 1g** of acetylated distarch phosphate.

3. **Canned or Frozen Vegetables (with Sauces or Gravies)**  
In canned or frozen vegetable products, acetylated distarch phosphate is used to stabilize the sauces or gravies and to improve the texture of the overall dish. It helps prevent the separation of water and maintains the desired thickness, even when the product is frozen and thawed.

* **Typical Amount**: For canned or frozen vegetables with sauces, ADP is typically used at **0.1% to 0.5%** of the total weight. In a **500g** container of canned vegetables with sauce, you might find **0.5g to 2.5g** of acetylated distarch phosphate.

4. **Processed Cheese and Cheese Products**  
Acetylated distarch phosphate is commonly used in **processed cheeses** (e.g., cheese spreads, cheese slices) to improve texture, prevent oiling off, and ensure a smooth, stable product.

* **Typical Amount**: In processed cheese, ADP is typically used at **0.5% to 1.5%** of the total product weight. For example, in **100g** of processed cheese, about **0.5g to 1.5g** of acetylated distarch phosphate might be used.

5. **Baked Goods (e.g., Cake Mixes, Fillings)**  
In **baked goods**, especially in **cake mixes**, **fillings**, or **frostings**, acetylated distarch phosphate can help improve moisture retention, texture, and consistency, and prevent the products from becoming too dry or crumbly.

* **Typical Amount**: In cake mixes or fillings, ADP is typically used at **0.1% to 0.5%** of the total weight of the dry ingredients. For example, in a **100g** cake mix, you might find **0.1g to 0.5g** of acetylated distarch phosphate.

6. **Ice Cream and Frozen Desserts**  
In **ice cream** and **frozen desserts**, ADP is used to improve texture, reduce ice crystal formation, and enhance the smoothness of the product. It helps maintain a consistent texture during freezing and storage.

* **Typical Amount**: In ice cream and frozen desserts, acetylated distarch phosphate is typically used at **0.1% to 0.5%** of the total weight. For example, in **1 liter** of ice cream mix, you might find about **1g to 5g** of ADP.

7. **Fruit Fillings (e.g., for Pies or Pastries)**  
Acetylated distarch phosphate is often added to **fruit fillings** (e.g., for pies, pastries, or fruit tarts) to enhance the stability of the filling, prevent syneresis, and maintain a thick, smooth texture after baking or freezing.

* **Typical Amount**: In fruit fillings, ADP is typically used at **0.3% to 1%** of the total product weight. For example, in **500g** of fruit filling, you might find **1.5g to 5g** of acetylated distarch phosphate.

8. **Meat and Poultry Products (e.g., Sausages, Processed Meats)**  
Acetylated distarch phosphate can also be used in **processed meats**, such as sausages or other meat products, as a binder and to improve moisture retention and texture.

* **Typical Amount**: In processed meat products, the amount of ADP used is typically **0.1% to 0.5%** of the total weight. For example, in **100g** of sausage or processed meat, you might find **0.1g to 0.5g** of acetylated distarch phosphate.

Summary of Typical Amounts of Acetylated Distarch Phosphate in Commercial Food Products:

* **Processed Foods and Sauces (e.g., Gravies, Dressings)**: **0.1% to 1%** of the total product weight (e.g., **0.5g to 5g per 500g**).
* **Instant Soups and Soup Mixes**: **0.2% to 1%** of the total weight (e.g., **0.2g to 1g per 100g**).
* **Canned or Frozen Vegetables with Sauces**: **0.1% to 0.5%** of the total weight (e.g., **0.5g to 2.5g per 500g**).
* **Processed Cheese and Cheese Products**: **0.5% to 1.5%** of the total product weight (e.g., **0.5g to 1.5g per 100g**).
* **Baked Goods (Cake Mixes, Fillings)**: **0.1% to 0.5%** of the total dry ingredient weight (e.g., **0.1g to 0.5g per 100g cake mix**).
* **Ice Cream and Frozen Desserts**: **0.1% to 0.5%** of the total product weight (e.g., **1g to 5g per 1 liter**).
* **Fruit Fillings (for Pies or Pastries)**: **0.3% to 1%** of the total product weight (e.g., **1.5g to 5g per 500g**).
* **Processed Meats (Sausages, Processed Meats)**: **0.1% to 0.5%** of the total weight (e.g., **0.1g to 0.5g per 100g**).

Key Points:

* **Acetylated distarch phosphate (ADP)** is typically used in **small quantities**, usually ranging from **0.1% to 1%** of the total product weight in most applications, although it can go higher in specific products like processed cheese or fruit fillings.
* ADP is mainly used for its **stabilizing, thickening**, and **texture-improving** properties, making it useful in products that require consistency, smoothness, and resistance to changes during storage, freezing, or reheating.
* The exact usage level depends on the type of food product and the functional requirements, such as **texture**, **viscosity**, and **resistance to syneresis**.

[1:44](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732038287456069)

BeeChoo Liang

**American Ginseng** (*Panax quinquefolius*) is a popular herbal ingredient used in dietary supplements, teas, functional beverages, and certain food products, primarily for its **adaptogenic** properties, which are believed to help with energy, stress reduction, and overall wellness. However, its use in commercial food products tends to be more limited compared to other common herbs or spices, as it is relatively expensive and has a distinct, slightly bitter taste.  
When used in commercial food products, **American ginseng** is typically added in small amounts, as its active compounds (ginsenosides) are potent, and the flavor can be quite strong. The precise amount used depends on the type of product and the desired effect (e.g., health benefits or flavor profile).  
Here’s a breakdown of **typical amounts of American ginseng** in various types of commercial food products:  
1. **Beverages (e.g., Teas, Energy Drinks, and Functional Drinks)**  
American ginseng is commonly used in **herbal teas**, **energy drinks**, and other **functional beverages**. It may be included for its potential health benefits, such as boosting energy, improving mental clarity, or reducing stress. In these beverages, it is typically used in **extract form** (often as a liquid or powder), as this is easier to incorporate into drinks.

* **Typical Amount**: In beverages, the typical amount of American ginseng extract used is around **0.1% to 1%** of the total weight of the product. For example, in a **500ml** bottle of functional drink, you might find **50mg to 500mg** of American ginseng extract (often standardized to a certain level of ginsenosides).

2. **Dietary Supplements and Capsules**  
In dietary supplements, American ginseng is often sold in the form of **capsules**, **tablets**, or **pills**, and the amount of the herb can vary based on the concentration of ginsenosides in the extract. Standard doses typically range from **100mg to 500mg** per serving. In supplements, the use of **ginseng extract** is more common than whole roots, as extracts are more concentrated.

* **Typical Amount**: The typical amount in dietary supplements ranges from **100mg to 500mg per capsule or serving**, depending on the concentration and the product’s purpose. The ginseng extract used is often standardized to contain a certain percentage of **ginsenosides** (e.g., 4%, 10%, etc.).

3. **Herbal and Functional Teas**  
American ginseng is often blended with other herbs in **herbal teas** for its potential health benefits. In these products, it is used either in **dried root form**, **powder**, or **extract**. The exact amount used depends on the formulation and the desired potency of the tea.

* **Typical Amount**: In a **tea blend**, American ginseng might be used at a level of around **0.5% to 1%** of the total blend weight. For example, in a **30g** package of herbal tea blend, you might find about **150mg to 300mg** of American ginseng (depending on whether the root is in whole or powdered form).

4. **Energy Bars and Functional Foods**  
In **energy bars**, **granola bars**, and other **functional foods**, American ginseng may be included to provide an extra boost of energy and focus, as well as other adaptogenic benefits. The amounts used are typically lower than in beverages and supplements because of the need to balance with other ingredients.

* **Typical Amount**: In energy bars or functional foods, American ginseng is usually included at **0.1% to 0.5%** of the total product weight. For example, in a **100g** energy bar, this would be approximately **100mg to 500mg** of ginseng extract or powder.

5. **Snacks (e.g., Ginseng-infused Chocolates, Chewing Gum)**  
In **snacks** such as **chocolates**, **ginseng-infused chewing gum**, or **candies**, American ginseng is used for its health benefits as well as for flavor. These products often use **ginseng extract** or **powder** to avoid the strong, bitter taste of the whole root.

* **Typical Amount**: In snacks, the amount of American ginseng is typically quite low, ranging from **0.1% to 0.5%** of the total product weight. For instance, a **50g** chocolate bar might contain around **50mg to 250mg** of ginseng extract.

6. **Smoothies and Ready-to-Drink Health Drinks**  
Some **smoothie mixes** or **ready-to-drink health beverages** include American ginseng as a functional ingredient. These products typically focus on providing a boost of energy, mental clarity, or stress relief, with ginseng as one of the key ingredients.

* **Typical Amount**: In smoothie mixes or health drinks, the typical amount of ginseng extract is around **0.1% to 0.5%** of the total product weight. For example, a **250ml** ready-to-drink health beverage may contain **50mg to 250mg** of ginseng extract.

Summary of Typical Amounts of American Ginseng in Commercial Food Products:

* **Beverages (e.g., Teas, Energy Drinks, Functional Drinks)**: **0.1% to 1%** of total product weight (e.g., **50mg to 500mg** per 500ml bottle).
* **Dietary Supplements**: **100mg to 500mg per serving** (depending on the concentration of ginsenosides).
* **Herbal and Functional Teas**: **0.5% to 1%** of total tea blend weight (e.g., **150mg to 300mg** per 30g package).
* **Energy Bars and Functional Foods**: **0.1% to 0.5%** of total product weight (e.g., **100mg to 500mg** per 100g bar).
* **Snacks (e.g., Chocolates, Chewing Gum)**: **0.1% to 0.5%** of total product weight (e.g., **50mg to 250mg** per 50g bar).
* **Smoothies and Ready-to-Drink Health Drinks**: **0.1% to 0.5%** of total product weight (e.g., **50mg to 250mg** per 250ml drink).

Key Points:

* The amount of **American ginseng** used in commercial food products typically ranges from **100mg to 500mg per serving** in beverages, dietary supplements, and functional foods.
* Ginseng is often used in **extract form** or as **powder** in food products, as it is more potent and easier to incorporate than whole roots.
* The **ginsenosides** (active compounds) in American ginseng are potent, so even small amounts are often enough to achieve the desired functional or health benefits.

[1:46](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732038398498879)

BeeChoo Liang

**Amla** (*Phyllanthus emblica*), also known as **Indian gooseberry**, is widely used in traditional medicine and food products due to its high vitamin C content and antioxidant properties. In commercial food products, **amla** is typically used in its **dried, powdered**, or **extract** form, but it may also be included as fresh fruit or juice in some products. Its primary benefits in food products are related to **immune support**, **digestive health**, and its **antioxidant effects**.  
Here’s an overview of the typical amounts of **amla** used in various types of commercial food products:  
1. **Beverages (e.g., Juices, Smoothies, Functional Drinks)**  
Amla is often included in **health drinks**, **smoothies**, and **fruit juices** due to its high vitamin C content, which is a key selling point for immune-boosting or antioxidant-focused beverages. In these types of products, amla is usually used in the form of **extracts**, **powders**, or **juices**.

* **Typical Amount**: Amla extract or powder is commonly used at around **0.1% to 1%** of the total product weight. For example, in a **500ml** bottle of functional drink or juice, you might find around **500mg to 5g** of amla extract or juice.

2. **Dietary Supplements (e.g., Capsules, Tablets, Powder)**  
Amla is frequently included in **dietary supplements** due to its high vitamin C content and antioxidant properties. These supplements typically use **amla powder**, **extract**, or **standardized extracts** that contain a specific percentage of active compounds like **vitamin C** or **polyphenols**.

* **Typical Amount**: In dietary supplements, amla is usually dosed at **500mg to 2,000mg** per serving, depending on the formulation. For example, a **500mg capsule** might contain **500mg** of amla powder or extract, and higher-dose supplements can contain up to **1g or 2g** of amla per serving.

3. **Herbal and Functional Teas**  
Amla is sometimes blended with other herbs in **herbal teas** or **functional teas** to provide additional health benefits, particularly for **immune support** and **digestion**.

* **Typical Amount**: In herbal tea blends, amla powder is typically used at around **0.5% to 2%** of the total blend weight. For example, in a **30g** package of tea blend, you might find about **150mg to 600mg** of amla powder, depending on the strength of the infusion and the desired potency.

4. **Energy Bars, Granola Bars, and Snacks**  
Amla is sometimes used in **energy bars**, **granola bars**, or **other functional snacks** for its **antioxidant properties** and its ability to support **digestive health**. In these products, amla is usually included in the form of **powder** or **extract**.

* **Typical Amount**: In energy bars or snacks, amla is typically included at **0.1% to 1%** of the total product weight. For example, in a **100g** energy bar, you might find about **100mg to 1g** of amla powder or extract.

5. **Confectionery (e.g., Candies, Gummies)**  
Amla is used in **candies** and **gummies** in some regions, often marketed for its health benefits such as **immune support** and **antioxidant properties**. In these products, amla is usually incorporated as **powder**, **extract**, or **juice concentrate**.

* **Typical Amount**: In confectionery products like candies or gummies, amla is typically used at **0.1% to 1%** of the total product weight. For example, in a **50g** package of gummies, you might find about **50mg to 500mg** of amla extract or powder.

6. **Ayurvedic or Traditional Foods (e.g., Chyawanprash, Pickles)**  
Amla is a common ingredient in traditional **Ayurvedic formulations**, such as **chyawanprash** (a herbal tonic), or in **pickles** and other fermented foods. These products often feature amla for its digestive and rejuvenating properties.

* **Typical Amount**: In products like **chyawanprash**, amla may make up around **10% to 30%** of the total product weight, depending on the formulation. For example, in a **100g** jar of chyawanprash, **10g to 30g** of amla extract, powder, or juice might be used.

7. **Baked Goods (e.g., Cakes, Cookies, Muffins)**  
While less common, amla powder can sometimes be used in **baked goods** for its **antioxidant properties** and as a natural source of vitamin C. It is more likely to be found in **functional baked goods** targeting health-conscious consumers.

* **Typical Amount**: In baked goods like cakes or muffins, amla powder is typically used at **0.1% to 1%** of the total product weight. For example, in a **100g** cake mix or batter, about **100mg to 1g** of amla powder might be used.

Summary of Typical Amounts of Amla in Commercial Food Products:

* **Beverages (Juices, Smoothies, Functional Drinks)**: **0.1% to 1%** of total product weight (e.g., **500mg to 5g** per 500ml bottle).
* **Dietary Supplements (Capsules, Tablets, Powder)**: **500mg to 2,000mg per serving** (e.g., **500mg per capsule**).
* **Herbal and Functional Teas**: **0.5% to 2%** of total blend weight (e.g., **150mg to 600mg** per 30g package).
* **Energy Bars and Snacks**: **0.1% to 1%** of total product weight (e.g., **100mg to 1g** per 100g bar).
* **Confectionery (Candies, Gummies)**: **0.1% to 1%** of total product weight (e.g., **50mg to 500mg** per 50g package).
* **Ayurvedic Foods (Chyawanprash, Pickles)**: **10% to 30%** of total product weight (e.g., **10g to 30g** per 100g of chyawanprash).
* **Baked Goods (Cakes, Muffins)**: **0.1% to 1%** of total product weight (e.g., **100mg to 1g** per 100g).

Key Points:

* Amla is typically used in **small quantities** in food products due to its potent health benefits, particularly its **vitamin C** and **antioxidant content**.
* The exact amount of **amla** in commercial food products will depend on the product’s function (e.g., immune support, antioxidant, digestive aid) and the form used (e.g., powder, extract, juice).
* **Extracts and powders** are the most common forms of amla used in processed foods, as they are easier to incorporate and provide a concentrated dose of active compounds.

[1:49](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732038597264989)

BeeChoo Liang

**Anaheim peppers** (*Capsicum annuum*) are a variety of mild chili peppers commonly used in a variety of **commercial food products**, especially in salsas, sauces, soups, and other processed foods where a mild, tangy heat is desired without overwhelming spiciness. They have a distinctive, slightly sweet flavor and a **moderate heat level**, typically ranging from **500 to 2,500 Scoville Heat Units (SHU)**. Anaheim peppers are typically used in their **fresh, roasted, dried**, or **powdered** forms in commercial food products.  
Here’s a breakdown of the typical amounts of **Anaheim peppers** used in various commercial food products:  
1. **Salsas and Sauces**  
Anaheim peppers are often used in **salsas**, **hot sauces**, and **simmer sauces** for their mild heat and distinctive flavor. In these products, they are usually used fresh or roasted, sometimes in combination with other peppers for flavor balance.

* **Typical Amount**: In **salsas** and **hot sauces**, Anaheim peppers are often used at **1% to 5%** of the total weight of the product. For example, in a **500g jar** of salsa, you might find **5g to 25g** of Anaheim peppers, depending on the desired heat and flavor profile.

2. **Soups and Stews**  
In **soups**, **stews**, or **chili** mixes, Anaheim peppers are added to provide **mild heat** and enhance the flavor complexity of the dish. Fresh or roasted Anaheim peppers are commonly incorporated into these types of products.

* **Typical Amount**: In **pre-made soups** or **chili mixes**, Anaheim peppers might be used at **0.5% to 2%** of the total product weight. For example, in a **500g** package of chili mix, you might find **2.5g to 10g** of Anaheim pepper.

3. **Seasoning Blends and Spice Mixes**  
Anaheim peppers are sometimes included in **seasoning blends**, **spice mixes**, and **rubs**, especially in products targeting a mild level of heat. In these cases, the peppers may be dried and ground into powder or used in combination with other dried spices.

* **Typical Amount**: In **seasoning blends** or **spice mixes**, Anaheim pepper powder might make up around **1% to 3%** of the total blend. For example, in a **100g** seasoning mix, there might be **1g to 3g** of Anaheim pepper powder.

4. **Canned or Pickled Products**  
Anaheim peppers are often used in **canned** or **pickled** products like **pickled peppers** or as a component in **canned vegetable mixtures**. They can be used either fresh or roasted, and in pickled products, they provide a **mild tangy heat**.

* **Typical Amount**: In **canned** or **pickled products**, Anaheim peppers are typically used at **2% to 5%** of the total weight. For example, in a **500g** jar of pickled vegetables, you might find **10g to 25g** of Anaheim pepper.

5. **Frozen Foods (e.g., Frozen Dishes, Vegetables)**  
In **frozen foods**, such as **vegetable blends**, **frozen burrito fillings**, or **pre-cooked meals**, Anaheim peppers are used either fresh or frozen to add flavor and a moderate amount of heat.

* **Typical Amount**: In **frozen vegetable blends** or **pre-cooked meals**, Anaheim peppers might be used at **0.5% to 3%** of the total weight. For example, in a **500g** package of frozen vegetable mix, there might be **2.5g to 15g** of Anaheim peppers.

6. **Chili and Hot Pepper Powders**  
When Anaheim peppers are dried and ground into **chili powder**, they are often used in **spice powders** and **chili powders** as part of a blend. These chili powders are frequently used in seasoning mixes for cooking, grilling, or barbecue.

* **Typical Amount**: In **chili powder blends**, dried Anaheim pepper powder is often included at **5% to 20%** of the total weight of the blend. For example, in a **100g** chili powder blend, **5g to 20g** of Anaheim pepper powder might be used, depending on the heat level desired.

7. **Processed Meats (e.g., Sausages, Processed Chicken or Beef)**  
Anaheim peppers are sometimes added to **processed meats** such as **sausages**, **hot dogs**, or **seasoned meat patties** to add mild heat and enhance flavor.

* **Typical Amount**: In **processed meats**, Anaheim peppers are typically used at **0.5% to 2%** of the total weight. For example, in **500g** of sausage mix, you might find **2.5g to 10g** of Anaheim peppers.

Summary of Typical Amounts of Anaheim Peppers in Commercial Food Products:

* **Salsas and Sauces**: **1% to 5%** of total product weight (e.g., **5g to 25g** per 500g of salsa).
* **Soups and Stews**: **0.5% to 2%** of total product weight (e.g., **2.5g to 10g** per 500g of chili mix).
* **Seasoning Blends and Spice Mixes**: **1% to 3%** of total blend weight (e.g., **1g to 3g** per 100g of seasoning mix).
* **Canned or Pickled Products**: **2% to 5%** of total product weight (e.g., **10g to 25g** per 500g of pickled vegetables).
* **Frozen Foods**: **0.5% to 3%** of total product weight (e.g., **2.5g to 15g** per 500g of frozen vegetable mix).
* **Chili and Hot Pepper Powders**: **5% to 20%** of total blend weight (e.g., **5g to 20g** per 100g chili powder blend).
* **Processed Meats**: **0.5% to 2%** of total product weight (e.g., **2.5g to 10g** per 500g of sausage mix).

Key Points:

* **Anaheim peppers** are typically used in **moderate amounts** in food products, due to their mild heat and **distinctive flavor**.
* The form of Anaheim pepper used (e.g., **fresh**, **roasted**, **dried powder**) can impact the amount needed for a specific product.
* **Powdered Anaheim pepper** is most commonly used in spice blends and seasoning mixes, while **fresh or roasted** Anaheim peppers are often used in **salsas**, **soups**, **sauces**, and **pickled products**.



BeeChoo LiangBeeChoo Liang  [2:25 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732040732390969)

The amount of **curcuma** (more commonly known as **turmeric**) used in commercial food products can vary depending on the type of product, its flavor profile, and the intended function of the turmeric. Turmeric is used primarily for its distinct yellow color, its flavor, and its potential health benefits (such as its anti-inflammatory properties). Here are some general guidelines for typical usage in commercial food products:  
1. **In Prepared Meals and Sauces**

* **Usage Amount**: Turmeric is often used in relatively small amounts, typically between **0.5% and 2%** of the total weight of the product. In certain dishes, especially curry-based sauces, soups, and marinades, turmeric might be more prominent, contributing to both flavor and color.
* **Example**: In prepared curry sauces, the amount of turmeric could be closer to the higher end (2%) to give the dish its characteristic color and flavor.

2. **In Spices and Seasoning Blends**

* **Usage Amount**: Turmeric is a common component of spice blends, particularly in curry powders, garam masala, and other regional seasonings. The percentage of turmeric in these blends can vary widely but typically ranges from **10% to 25%** of the total blend by weight, depending on the specific recipe. For example, a commercial curry powder might use around **15-20% turmeric**.
* **Example**: In a spice mix for curry or chili powder, turmeric would be one of the key ingredients, but the amount used in a single serving of a product like a pre-packaged curry kit or spice mix would be much lower.

3. **In Processed Snack Foods**

* **Usage Amount**: Turmeric can be used in snack foods like chips, crackers, or popcorn, typically at a rate of **0.1% to 1%**. In these cases, turmeric is primarily added for color enhancement rather than for its flavor, especially in products like yellow or orange chips.
* **Example**: A bag of turmeric-flavored chips might use a relatively small amount of turmeric powder to create a distinctive color without overpowering the flavor of the base ingredient.

4. **In Beverages**

* **Usage Amount**: In drinks such as turmeric lattes (often called "golden milk"), smoothies, or health drinks, turmeric is usually used in amounts ranging from **0.5% to 2%** by weight. Since turmeric has a strong flavor, it is used sparingly to balance its potency with other ingredients.
* **Example**: A turmeric latte mix might use around **1% to 2%** turmeric powder, depending on the desired flavor strength and the presence of other spices (like ginger or cinnamon).

5. **In Health Supplements (Capsules, Tablets, etc.)**

* **Usage Amount**: In health supplements, the dosage of turmeric (specifically the active compound curcumin) is typically much higher, often around **500 mg to 2,000 mg per serving**. The actual percentage of turmeric powder in a supplement depends on its curcumin concentration. Pure turmeric contains about **3-5% curcumin**, so a 500 mg supplement of turmeric powder might contain **15-25 mg of curcumin**.
* **Example**: A commercial turmeric supplement might provide 1,000 mg of turmeric extract (which is standardized for curcumin content) per capsule.

6. **In Mustard and Condiments**

* **Usage Amount**: Turmeric is a key ingredient in mustard, where it contributes both to flavor and color. In mustard-based products, turmeric can make up about **1% to 3%** of the total weight.
* **Example**: In prepared mustard, turmeric might be used at about **2-3%** to achieve the bright yellow color and contribute to the characteristic flavor profile.

Summary

* **Prepared meals/sauces**: **0.5% to 2%** of the product weight
* **Spice blends**: **10% to 25%** of the blend
* **Snacks**: **0.1% to 1%** (mainly for color)
* **Beverages**: **0.5% to 2%**
* **Health supplements**: **500 mg to 2,000 mg per serving** (with curcumin standardized)
* **Condiments (e.g., mustard)**: **1% to 3%**

In most commercial food products, turmeric is used in small quantities, usually around 1-2%, except in cases where it's a main ingredient like in curry or mustard. The primary reason for using turmeric in commercial food is its vibrant color and distinctive flavor, though it also has health-related marketing appeal in certain products.



BeeChoo LiangBeeChoo Liang  [2:44 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732041894817269)

**Epazote** (Dysphania ambrosioides) is a pungent herb commonly used in Mexican and Central American cuisine, known for its distinct flavor, which is often described as strong, herbal, and somewhat medicinal. It is used to enhance the flavor of beans and other legumes, as well as in soups, stews, and sauces. Additionally, **epazote** has been traditionally used for its digestive benefits, particularly in helping to reduce the gas-producing effects of beans.  
The typical amount of **epazote** used in **commercial food products** depends on the form of the herb (fresh, dried, or as an extract), as well as the type of product and the strength of the flavor desired. Here's a breakdown of how epazote is typically used:  
1. **Spice Blends & Seasoning Mixes**

* **Typical Amount**: Epazote is often included in seasoning blends or spice mixes at relatively low concentrations, usually around **0.5% to 2%** of the total weight of the product. Since it has a potent flavor, it’s used sparingly to avoid overpowering other flavors.
  + **Example**: In a pre-mixed seasoning for beans, chili, or Mexican dishes, epazote might be used at about **1-2%** of the seasoning mix by weight, alongside other spices like cumin, garlic, and chili powder.

2. **Prepared Foods (e.g., Bean-Based Products, Soups, Sauces)**

* **Typical Amount**: In ready-to-eat meals or packaged prepared foods (such as soups, sauces, or canned beans), epazote is typically used in small quantities, often in the range of **0.1% to 0.5%** of the total weight. This ensures that the herb contributes flavor without overwhelming the product.
  + **Example**: In a canned bean dish, epazote might be used at around **0.2%** of the total weight to impart its characteristic flavor, with other spices and seasonings making up the rest of the mix.

3. **Herbal Teas and Infusions**

* **Typical Amount**: When used in **herbal teas** or functional infusions, epazote is generally used at **0.5% to 1%** of the total product weight. Since epazote has a strong flavor, the amount is kept on the lower end to prevent it from becoming overpowering.
  + **Example**: A tea blend designed for digestive health might include **0.5% to 1%** epazote, combined with other herbs like peppermint or ginger.

4. **Frozen or Prepared Ethnic Foods**

* **Typical Amount**: In frozen or prepared ethnic foods, especially those with Mexican, Tex-Mex, or Southwestern flavor profiles, epazote might be used at **0.1% to 0.5%** of the total product weight. As a flavorful herb, it is included to provide a subtle, authentic note without being the dominant flavor.
  + **Example**: In a frozen burrito or prepared enchilada meal, epazote could make up around **0.2%** of the total weight, contributing to the overall flavor profile of the dish.

5. **Epazote Extract or Essential Oil**

* **Typical Amount**: In products that use **epazote extract** or **essential oil**, the concentration is much lower, given the potency of the extract. In these cases, **epazote oil** or **extract** may be used in the range of **0.05% to 0.2%** of the total product weight, especially for flavoring.
  + **Example**: In a salad dressing or sauce where epazote oil is used for flavoring, it might make up **0.1%** of the product weight.

Summary of Typical Amounts of Epazote in Commercial Food Products:

* **Spice blends & seasoning mixes**: **0.5% to 2%** of the total weight
* **Prepared foods (bean-based, soups, sauces)**: **0.1% to 0.5%** of the total weight
* **Herbal teas and infusions**: **0.5% to 1%** of the total weight
* **Frozen or prepared ethnic foods**: **0.1% to 0.5%** of the total weight
* **Epazote extract or essential oil**: **0.05% to 0.2%** of the total weight

Conclusion:  
In most commercial food products, **epazote** is used in small amounts, typically **0.1% to 2%** of the total product weight, depending on the form of the herb and the type of product. It is most commonly found in spice blends, prepared ethnic foods, and herbal teas, where it adds a distinctive flavor, particularly in bean dishes or Mexican-inspired cuisine. Because of its strong, unique flavor, it's generally used sparingly, and in concentrated forms like extracts or essential oils, the concentration is usually lower to avoid overpowering the other ingredients.



BeeChoo LiangBeeChoo Liang  [2:50 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732042235389639)

**Ethoxylated monoglycerides** are a type of emulsifier commonly used in commercial food products. They are derived from monoglycerides (fatty acids) that have been treated with ethylene oxide, resulting in a modified version of the compound that has improved solubility in water and better emulsifying properties. Ethoxylated monoglycerides help to stabilize emulsions, improve texture, and enhance the shelf-life of many processed foods.  
Typical Amounts of Ethoxylated Monoglyceride in Commercial Food Products  
The typical amount of **ethoxylated monoglyceride** used in commercial food products varies depending on the product's formulation, its specific function, and the desired effect. Below are the typical ranges for the use of this emulsifier in different categories of food products:1. **Bakery Products (e.g., Bread, Cakes, Pastries)**

* **Typical Amount**: In **bakery products**, ethoxylated monoglycerides are often used to improve dough handling, texture, and shelf-life. They are typically used at **0.2% to 1.5%** of the total product weight.
  + **Example**: In a bread or cake formulation, **0.5% to 1%** ethoxylated monoglyceride might be used to enhance the texture and prevent staling.

2. **Margarine and Shortenings**

* **Typical Amount**: In **margarine** or **shortenings**, which require stabilization of oil-water emulsions, ethoxylated monoglycerides are often used at **0.5% to 2%** of the total weight to improve the stability and texture.
  + **Example**: A margarine product could contain **0.5% to 1%** ethoxylated monoglycerides to help maintain a smooth texture and prevent separation.

3. **Dairy Products (e.g., Ice Cream, Creamers, Milk Shakes)**

* **Typical Amount**: In **dairy products**, such as ice cream, creamers, and milk shakes, ethoxylated monoglycerides are used to improve texture, creaminess, and prevent ice crystal formation. The typical amount is **0.1% to 0.5%** of the total weight.
  + **Example**: In an ice cream or frozen dessert, **0.2% to 0.5%** of ethoxylated monoglyceride may be used to improve the mouthfeel and prevent ice crystals from forming.

4. **Processed Meats and Sauces**

* **Typical Amount**: In **processed meats** (such as sausages, hot dogs, and deli meats) or **sauces**, ethoxylated monoglycerides may be used to improve emulsification and stabilize fat-water blends. The typical amount used is **0.1% to 0.5%** of the total weight.
  + **Example**: In a processed meat product like a sausage, **0.2% to 0.3%** ethoxylated monoglycerides may be used to enhance texture and improve fat dispersion.

5. **Confectionery Products (e.g., Chocolates, Chewing Gum)**

* **Typical Amount**: In **confectionery** products, such as chocolates, candies, and chewing gum, ethoxylated monoglycerides are used to control viscosity and improve the consistency of the product. The typical amount used is **0.1% to 0.5%** of the total weight.
  + **Example**: In chocolate coatings or fillings, **0.1% to 0.3%** ethoxylated monoglycerides may be used to improve smoothness and stability.

6. **Beverages (e.g., Non-Dairy Creamers, Soft Drinks)**

* **Typical Amount**: In **beverages** like non-dairy creamers, soft drinks, or ready-to-drink coffee, ethoxylated monoglycerides are used to stabilize emulsions and improve texture. The typical amount used is **0.05% to 0.3%** of the total weight.
  + **Example**: In a non-dairy creamer, **0.1% to 0.2%** of ethoxylated monoglycerides may be used to stabilize the emulsions and create a smooth mouthfeel.

7. **Canned and Processed Vegetables**

* **Typical Amount**: In **canned vegetables** or other processed vegetable products, ethoxylated monoglycerides are used to stabilize emulsions and prevent the separation of ingredients (e.g., water and oil). The typical amount used is **0.05% to 0.2%** of the total product weight.
  + **Example**: A canned vegetable product or processed vegetable sauce might contain around **0.1%** ethoxylated monoglycerides to maintain uniform texture and stability.

Summary of Typical Amounts of Ethoxylated Monoglyceride in Commercial Food Products:

* **Bakery products** (e.g., bread, cakes): **0.2% to 1.5%** of the total weight
* **Margarine and shortenings**: **0.5% to 2%** of the total weight
* **Dairy products** (e.g., ice cream, creamers): **0.1% to 0.5%** of the total weight
* **Processed meats and sauces**: **0.1% to 0.5%** of the total weight
* **Confectionery products** (e.g., chocolates, chewing gum): **0.1% to 0.5%** of the total weight
* **Beverages** (e.g., non-dairy creamers): **0.05% to 0.3%** of the total weight
* **Canned and processed vegetables**: **0.05% to 0.2%** of the total weight

Conclusion:  
**Ethoxylated monoglycerides** are used in **small amounts**, typically ranging from **0.05% to 2%** of the total product weight, depending on the specific application and function in the product. The higher end of the range (1-2%) is often seen in products like **margarine** and **shortenings**, where the emulsifier is crucial for texture and stability. In **bakery products**, **dairy products**, and **beverages**, the amount is typically closer to **0.1% to 1%**, contributing to improved emulsification and mouthfeel. This emulsifier plays a key role in maintaining consistency, improving texture, and enhancing shelf-life across a wide variety of food products.

[2:52](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732042372608299)

BeeChoo Liang

**Fatty acid esters** are a group of compounds formed by the esterification of fatty acids with alcohols. These esters are commonly used in commercial food products as emulsifiers, stabilizers, or texturizers. They can help to improve the texture, consistency, and shelf-life of products, as well as to facilitate the mixing of oil and water in emulsions. Fatty acid esters are typically derived from natural sources such as vegetable oils, and their properties can vary based on the specific type of fatty acid and alcohol used.  
The most common types of fatty acid esters used in food products include **monoglycerides**, **diglycerides**, and **polyglycerol esters**, as well as **sucrose esters**. The exact amount used in food products depends on the specific role the fatty acid ester plays in the product and the product type.  
Typical Amounts of Fatty Acid Esters in Commercial Food Products  
1. **Bakery Products (e.g., Bread, Cakes, Pastries)**

* **Typical Amount**: In **bakery products**, fatty acid esters like **monoglycerides** and **diglycerides** are commonly used to improve dough handling, enhance texture, and extend shelf life. The typical amount used is around **0.1% to 1%** of the total product weight.
  + **Example**: In bread or cake formulations, **0.3% to 0.5%** of fatty acid esters (such as monoglycerides) may be used to improve dough consistency and prevent staling.

2. **Margarine, Shortenings, and Fats**

* **Typical Amount**: In **margarine** or **shortenings**, fatty acid esters (e.g., **monoglycerides** and **diglycerides**) are used as emulsifiers to stabilize the fat-water mixture and improve texture. These are used at higher concentrations than in other food categories, typically **0.5% to 2%** of the total weight.
  + **Example**: A margarine product might contain **0.5% to 1%** of fatty acid esters to enhance the stability of the emulsion and improve the smoothness of the product.

3. **Dairy Products (e.g., Ice Cream, Creamers, Milk Shakes)**

* **Typical Amount**: In **dairy products** like ice cream, creamers, and milk shakes, fatty acid esters are often used to stabilize emulsions, control fat crystallization, and improve texture. The typical amount used is around **0.1% to 0.5%** of the total product weight.
  + **Example**: In ice cream, **0.2% to 0.3%** of fatty acid esters (such as monoglycerides or diglycerides) might be used to improve texture and prevent the formation of ice crystals.

4. **Confectionery Products (e.g., Chocolates, Candies)**

* **Typical Amount**: In **confectionery products**, fatty acid esters (such as **monoglycerides**) are used to improve texture, smoothness, and emulsification, especially in chocolate coatings and fillings. They are typically used at **0.1% to 0.5%** of the total product weight.
  + **Example**: In chocolate or candy coatings, **0.1% to 0.3%** fatty acid esters might be used to achieve a smooth and uniform texture.

5. **Sauces, Dressings, and Mayonnaise**

* **Typical Amount**: In **sauces**, **dressings**, and **mayonnaise**, fatty acid esters help to stabilize emulsions and prevent phase separation. They are typically used at **0.2% to 1%** of the total product weight, depending on the specific product and its formulation.
  + **Example**: In mayonnaise or salad dressing, **0.5% to 1%** of fatty acid esters (such as monoglycerides or diglycerides) may be used to maintain the emulsion and smooth texture.

6. **Frozen Foods (e.g., Ready-to-Cook Meals, Vegetables)**

* **Typical Amount**: In **frozen foods**, especially those containing fat-water emulsions (e.g., frozen meals, vegetables in sauce), fatty acid esters are used at **0.1% to 0.5%** of the total product weight to enhance texture, improve consistency, and prevent separation.
  + **Example**: In a frozen meal with a sauce, **0.2% to 0.4%** of fatty acid esters might be used to maintain the sauce's smooth consistency and prevent oil separation.

7. **Beverages (e.g., Non-Dairy Creamers, Soft Drinks)**

* **Typical Amount**: In **beverages** like non-dairy creamers, fatty acid esters are used to improve texture, stabilize emulsions, and control mouthfeel. The typical amount used is **0.05% to 0.2%** of the total product weight.
  + **Example**: In a non-dairy creamer, **0.1%** of fatty acid esters (such as mono- and diglycerides) may be used to improve the smoothness and prevent separation.

Summary of Typical Amounts of Fatty Acid Esters in Commercial Food Products:

* **Bakery products** (e.g., bread, cakes): **0.1% to 1%** of the total weight
* **Margarine and shortenings**: **0.5% to 2%** of the total weight
* **Dairy products** (e.g., ice cream, creamers): **0.1% to 0.5%** of the total weight
* **Confectionery products** (e.g., chocolates, candies): **0.1% to 0.5%** of the total weight
* **Sauces, dressings, and mayonnaise**: **0.2% to 1%** of the total weight
* **Frozen foods** (e.g., frozen meals): **0.1% to 0.5%** of the total weight
* **Beverages** (e.g., non-dairy creamers): **0.05% to 0.2%** of the total weight

Conclusion:  
Fatty acid esters, such as **monoglycerides** and **diglycerides**, are used in **small amounts** in commercial food products, typically ranging from **0.05% to 2%** of the total product weight, depending on the type of product. They are particularly common in **bakery items**, **margarine**, **dairy products**, **confectionery**, **dressings**, and **frozen foods**, where they function primarily as emulsifiers to improve texture, stability, and consistency. These emulsifiers help ensure that ingredients, especially oil and water, remain properly blended in various food products.

[2:56](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732042612755869)

BeeChoo Liang

**Flax lignans** are plant compounds found in flax seeds, particularly in the outer hulls. They are known for their potential health benefits, including antioxidant properties and their role as a source of **phytoestrogens**. Flax lignans are often used in commercial food products for their potential health-promoting effects, particularly for their role in supporting heart health, digestive function, and hormonal balance.  
Flax lignans are typically extracted from flax seeds or flaxseed oil, and are added to food products in the form of **flax lignan powder** or **concentrated flax lignan extracts**. These are used in a variety of products, including nutritional supplements, functional foods, and beverages, to provide health benefits.  
Typical Amounts of Flax Lignan in Commercial Food Products  
The amount of flax lignans used in commercial food products varies depending on the intended use of the product, the target health claims, and the specific formulation. Here are the typical amounts used in various food categories:1. **Nutritional Supplements (e.g., Capsules, Powders)**

* **Typical Amount**: In **nutritional supplements**, flax lignans are often used in concentrated forms. The amount typically ranges from **5 mg to 50 mg** of flax lignan per serving, depending on the product's formulation and the dosage recommendations. Some products may have higher concentrations, especially those marketed for specific health benefits (e.g., hormonal support, heart health).
  + **Example**: A typical flax lignan supplement capsule might contain between **10 mg to 30 mg** of flax lignans per serving.

2. **Beverages (e.g., Smoothies, Functional Drinks)**

* **Typical Amount**: In **beverages** such as smoothies or functional drinks, flax lignans are often used at low levels, typically around **0.1% to 0.5%** of the total product weight, depending on the product's formulation and desired health benefits. The amount will vary if the product claims specific health effects, such as antioxidant or hormonal support.
  + **Example**: In a **flaxseed-based smoothie** or **functional beverage**, the amount of flax lignans might range from **20 mg to 100 mg per serving** (depending on the concentration of flax lignan in the flaxseed ingredient).

3. **Baked Goods (e.g., Bread, Muffins, Granola)**

* **Typical Amount**: In **baked goods**, such as bread, muffins, and granola, flax lignans are typically used in combination with flaxseed meal or flaxseed oil. The concentration of flax lignans can vary, but it is typically around **0.5% to 1%** of the total weight of the product.
  + **Example**: A loaf of **flaxseed bread** or a **flax-enriched muffin** may contain around **0.5% to 1%** of flax lignans (derived from the flaxseed meal or oil used in the recipe).

4. **Cereal and Snack Bars**

* **Typical Amount**: In **cereal bars** or **snack bars**, flax lignans are commonly added for their nutritional benefits, typically at levels of **0.2% to 1%** of the total product weight.
  + **Example**: A **flaxseed energy bar** may contain around **0.5% flax lignans** from the inclusion of flaxseed meal or flax oil in the bar's ingredients.

5. **Dairy Products (e.g., Yogurt, Non-Dairy Milk)**

* **Typical Amount**: In **dairy products**, such as yogurt or non-dairy milk, flax lignans are often added to promote heart health and digestion. The typical amount of flax lignans used in these products is around **0.1% to 0.5%** of the total product weight.
  + **Example**: A **flax-enriched yogurt** or **non-dairy milk** might contain around **10 mg to 50 mg** of flax lignans per serving, depending on the concentration of flaxseed powder or extract used.

6. **Healthy Snacks (e.g., Trail Mix, Granola)**

* **Typical Amount**: In **healthy snacks**, such as trail mix or granola, flax lignans are added in small amounts to boost the nutritional profile of the product. The typical inclusion rate is around **0.5% to 1%** of the total weight of the product.
  + **Example**: A **flaxseed granola** could contain **0.5% to 1% flax lignans**, depending on the amount of flaxseed or flax extract incorporated.

Summary of Typical Amounts of Flax Lignan in Commercial Food Products:

* **Nutritional supplements (e.g., capsules, powders)**: **5 mg to 50 mg** per serving
* **Beverages (e.g., smoothies, functional drinks)**: **0.1% to 0.5%** of the total weight (typically **20 mg to 100 mg per serving**)
* **Baked goods (e.g., bread, muffins, granola)**: **0.5% to 1%** of the total weight
* **Cereal and snack bars**: **0.2% to 1%** of the total weight
* **Dairy products (e.g., yogurt, non-dairy milk)**: **0.1% to 0.5%** of the total weight (typically **10 mg to 50 mg per serving**)
* **Healthy snacks (e.g., trail mix, granola)**: **0.5% to 1%** of the total weight

Conclusion:  
**Flax lignans** are typically used in small amounts in commercial food products, ranging from **0.1% to 1%** of the total weight of the product. The exact amount depends on the product type and its intended health benefits. For **functional foods**, such as **supplements, beverages, and dairy products**, flax lignans are usually added in the range of **10 mg to 50 mg per serving**, but they can be used in higher concentrations in **baked goods** or **snack bars** where flaxseed meal or oil is a primary ingredient. The use of flax lignans in food products is generally intended to provide additional health benefits, particularly for **antioxidant** effects, **hormonal support**, and **digestive health**.

[2:58](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732042710426829)

BeeChoo Liang

**Fleur de Sel** is a premium, hand-harvested sea salt known for its delicate flavor and flaky texture. It is considered a finishing salt, often used to enhance the flavor of food just before serving rather than for cooking or seasoning during preparation. Fleur de Sel is prized for its subtle taste, which can elevate a wide variety of dishes, from baked goods to meats and desserts. Its use in commercial food products is generally limited to high-end or gourmet items, as it is more expensive than regular table salt or sea salt.  
Typical Amount of Fleur de Sel Used in Commercial Food Products  
The amount of **fleur de sel** used in commercial food products depends largely on the type of product, its intended use, and the culinary application. Because it is often used as a **finishing salt**, it is typically applied in smaller amounts compared to other types of salt. Here are some general guidelines on how fleur de sel is used in different commercial food products:1. **Chocolate and Confectionery Products**

* **Typical Amount**: In **chocolates** (especially artisanal or gourmet chocolates) and **confectionery products**, fleur de sel is used as a finishing touch, usually sprinkled on top of the chocolate or caramel to create a contrast between the sweetness and saltiness. The amount typically ranges from **0.05% to 0.2%** of the total weight of the product.
  + **Example**: A **gourmet chocolate bar** might have **0.1% fleur de sel** sprinkled on top, providing a subtle saltiness that enhances the chocolate's flavor.

2. **Baked Goods (e.g., Cookies, Bread, Pretzels)**

* **Typical Amount**: In **baked goods**, fleur de sel is often used as a topping to add texture and a burst of flavor. The amount used varies based on the type of product but typically ranges from **0.1% to 0.5%** of the total weight of the product.
  + **Example**: A **fleur de sel caramel cookie** might contain about **0.2% fleur de sel** on top to balance the sweetness of the caramel with a slight salty note.
  + **Example**: A **sea salt-topped pretzel** might use **0.1% to 0.3% fleur de sel** to create a high-end product with a premium touch.

3. **Snack Foods (e.g., Chips, Popcorn)**

* **Typical Amount**: In **snack foods** such as **chips** or **popcorn**, fleur de sel is typically used as a finishing salt, though it may be blended with other salts. The amount used typically ranges from **0.05% to 0.3%** of the total weight of the product.
  + **Example**: A **gourmet popcorn** might contain **0.1% fleur de sel**, sprinkled lightly to enhance the overall flavor profile.

4. **Seasoned Meats and Seafood**

* **Typical Amount**: In **seasoned meats**, **seafood**, or **charcuterie**, fleur de sel is used as a garnish or finishing touch to provide a burst of flavor. It is typically used sparingly, often at **0.05% to 0.2%** of the total weight of the product.
  + **Example**: A **grilled steak** or **roasted fish** might be finished with a sprinkle of **0.05% to 0.1% fleur de sel** to enhance the natural flavors of the meat or fish.

5. **Salts in Gourmet Salt Blends**

* **Typical Amount**: Fleur de sel is sometimes included in **gourmet salt blends** that are marketed for high-end or specialty cooking. The amount can vary depending on the blend, but it typically constitutes **5% to 20%** of the total weight of the blend, as it is often mixed with other salts (such as sea salt or Himalayan pink salt) and flavoring agents (such as herbs or spices).
  + **Example**: A **gourmet sea salt blend** might contain **10% fleur de sel** mixed with other salts and spices, which would make it a luxury product used in small quantities.

6. **Sauces and Condiments**

* **Typical Amount**: Fleur de sel is sometimes used in **sauces** or **condiments** for a premium flavor finish. The amount used is generally small, typically ranging from **0.05% to 0.1%** of the total weight.
  + **Example**: A **gourmet mustard** or **vinegar-based sauce** might contain a small amount (around **0.1%**) of fleur de sel to enhance the flavor.

Summary of Typical Amounts of Fleur de Sel in Commercial Food Products:

* **Chocolate and confectionery**: **0.05% to 0.2%** of the total weight (used as a topping)
* **Baked goods** (e.g., cookies, bread, pretzels): **0.1% to 0.5%** of the total weight (often used as a topping or finishing salt)
* **Snack foods** (e.g., chips, popcorn): **0.05% to 0.3%** of the total weight (used sparingly as a finishing touch)
* **Meats and seafood**: **0.05% to 0.2%** of the total weight (sprinkled as a garnish or finishing salt)
* **Gourmet salt blends**: **5% to 20%** of the total weight (when included in mixed salt blends)
* **Sauces and condiments**: **0.05% to 0.1%** of the total weight (used for flavor enhancement)

Conclusion:  
**Fleur de sel** is typically used in **small amounts** in commercial food products, generally ranging from **0.05% to 0.5%** of the total product weight, depending on the application. It is most commonly used as a **finishing salt** for premium products such as **chocolates, baked goods, snacks, and gourmet seasonings**. Its role is to enhance the final flavor profile by adding a burst of saltiness that complements the sweetness, richness, or savory elements of the dish. Because it is a high-end ingredient, it is used sparingly and often as a garnish or topping to create a distinctive, luxurious eating experience.

[3:00](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732042821343819)

BeeChoo Liang

**Gentian root** is an herb that has been traditionally used for its bitter flavor and medicinal properties. It is derived from the **Gentiana** plant, and its roots are typically dried and ground to make extracts or powders. Gentian root is known for its strong bitter taste and is used in various applications, primarily for its digestive benefits, as well as in flavoring for certain foods and beverages.  
In commercial food products, **gentian root** is most commonly used in **bitters**, **herbal teas**, **alcoholic beverages** (especially in liqueurs), and sometimes in **digestive aids** or **tonics**. The use of gentian root in food and beverages is typically in small amounts due to its intense bitterness, and it is often used in combination with other flavorings to balance the taste.  
Typical Amounts of Gentian Root Used in Commercial Food Products  
The amount of **gentian root** used in commercial food products can vary widely depending on the product and its intended function. Typically, gentian root is used as a flavoring agent or as part of a formulation for its digestive benefits. Here are some general guidelines for the typical amounts used in various categories of commercial food and beverage products:1. **Bitters (Alcoholic Beverages)**

* **Typical Amount**: In **bitters** (such as **Angostura bitters** or **other cocktail bitters**), gentian root is a key ingredient that imparts a characteristic bitter flavor. In these products, gentian root is used in **very small amounts**, typically ranging from **0.1% to 1%** of the total volume of the product.
  + **Example**: A **cocktail bitters** product might contain **0.2% to 0.5%** gentian root extract, as it is a potent flavoring agent and needs to be used sparingly.

2. **Liqueurs and Digestive Spirits**

* **Typical Amount**: In **liqueurs** such as **Campari**, **Fernet**, and **Aperol**, which are often consumed as digestive aids, gentian root is used to contribute to the bitter flavor profile. In these products, gentian root is typically used in **small amounts** of around **0.1% to 0.5%** of the total volume.
  + **Example**: A **digestive liqueur** may contain **0.1% to 0.3% gentian root** to provide a bitter, digestive quality to the beverage.

3. **Herbal Teas**

* **Typical Amount**: In **herbal teas**, gentian root is sometimes included for its bitter flavor and its traditional use as a digestive aid. The amount of gentian root used in teas typically ranges from **0.05% to 1%** of the total weight of the product, depending on the desired bitterness and the overall formulation.
  + **Example**: A **digestive herbal tea** may contain **0.1% to 0.5% gentian root**, often combined with other herbs like peppermint, ginger, or chamomile to balance the flavor.

4. **Herbal Supplements and Tonics**

* **Typical Amount**: In **herbal supplements** or **tonics** designed to promote digestive health, gentian root is often included as a key ingredient. The typical amount used in these products varies, but it is typically **0.1% to 1%** of the total weight or volume.
  + **Example**: A **digestive tonic** might contain around **0.5% to 1% gentian root** extract, either in liquid or powder form.

5. **Flavoring in Gourmet Foods (e.g., Sauces, Pickles)**

* **Typical Amount**: In **gourmet foods**, particularly those where a subtle bitterness might be desired (such as in certain sauces, pickles, or savory spreads), gentian root may be used in small amounts to impart its bitter flavor. These products typically use gentian root at **0.05% to 0.2%** of the total product weight.
  + **Example**: A **gourmet mustard** or **bitter sauce** might contain **0.1% gentian root** as part of a more complex flavor profile.

Summary of Typical Amounts of Gentian Root in Commercial Food Products:

* **Bitters (alcoholic beverages)**: **0.1% to 1%** of the total volume
* **Liqueurs and digestive spirits**: **0.1% to 0.5%** of the total volume
* **Herbal teas**: **0.05% to 1%** of the total weight
* **Herbal supplements and tonics**: **0.1% to 1%** of the total weight or volume
* **Gourmet foods (e.g., sauces, pickles)**: **0.05% to 0.2%** of the total weight

Conclusion:  
**Gentian root** is typically used in **small amounts** in commercial food products, usually ranging from **0.05% to 1%** of the total weight or volume. It is most commonly found in **bitters**, **liqueurs**, **herbal teas**, and **digestive tonics**, where its intense bitterness is the key functional attribute. The root is often combined with other ingredients to balance its potent flavor, and it is used sparingly due to its strong taste. Gentian root is generally valued in food and beverages for its **digestive benefits** and its ability to enhance flavor profiles with a distinct bitter note.

[3:03](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732042989956839)

BeeChoo Liang

**Geotrichum** is a genus of fungi that is primarily used in the food industry as a **starter culture** or **fermenting agent** in certain dairy products, especially in the production of **cheese** and **fermented dairy products**. The most well-known species in this genus is **Geotrichum candidum**, which plays a role in the fermentation process by breaking down milk proteins and contributing to the development of flavor and texture in cheese.  
Geotrichum is particularly important in the production of **soft cheeses**, **blue cheeses**, and **yogurt-like products**. It is also used in the creation of certain **fermented vegetables** and **fermented soy products**.  
Typical Amounts of Geotrichum Used in Commercial Food Products  
The amount of **Geotrichum** used in commercial food products, particularly in cheese-making and fermentation, varies depending on the product type, its formulation, and the specific fermentation process. Here are some general guidelines for typical usage levels:1. **Cheese Production**

* **Typical Amount**: In **cheese production**, **Geotrichum candidum** is commonly used as part of the **starter culture** in certain types of cheeses, especially in **soft cheeses** (such as **brie**, **camembert**), and in **blue-veined cheeses** (such as **Roquefort** or **Gorgonzola**). The amount of Geotrichum used is generally **a small fraction** of the total microbial culture used in the process.
  + **Typical Range**: Typically, **0.1% to 0.5%** of the total volume or weight of the starter culture.
  + **Example**: In the production of **brie** or **camembert**, a **starter culture** might contain **0.1% to 0.3% Geotrichum candidum**, along with other bacteria and fungi, depending on the specific product and desired characteristics.

2. **Fermented Dairy Products (e.g., Yogurt, Kefir)**

* **Typical Amount**: **Geotrichum** is sometimes used in the fermentation of **dairy products** like **yogurt** or **kefir** to influence texture and flavor. However, its use is less common in these products compared to other bacterial cultures like **Lactobacillus** and **Streptococcus**. When used, Geotrichum is typically incorporated at **very low concentrations**, often as part of a **multi-strain culture**.
  + **Typical Range**: Typically **0.05% to 0.2%** of the total microbial culture.
  + **Example**: In a **fermented yogurt** product, **Geotrichum candidum** may be used as a **secondary culture** to help with the fermentation process, but its presence is usually minor compared to other cultures like **Lactobacillus**.

3. **Fermented Vegetable Products (e.g., Sauerkraut, Kimchi)**

* **Typical Amount**: Geotrichum is sometimes used in the fermentation of **vegetables** like **sauerkraut** or **kimchi**, although it is not as commonly used as in dairy products. When used, it is typically present in **small amounts** to help with the breakdown of plant material and to contribute to the overall fermentation.
  + **Typical Range**: The amount used in **fermented vegetables** can be very small, typically around **0.05% to 0.1%** of the total weight of the vegetables.
  + **Example**: In the production of **fermented sauerkraut**, **Geotrichum** might be added at **less than 0.1%** of the weight of the cabbage, in combination with other lactic acid bacteria for proper fermentation.

4. **Fermented Soy Products (e.g., Tempeh, Miso)**

* **Typical Amount**: **Geotrichum** may be used in **fermented soy products** like **tempeh** or **miso** to help with fermentation and flavor development, although it is not a primary culture. The amount used is typically **very small**, usually as part of a mixed culture with other microbes like **Rhizopus** (for tempeh) or **Aspergillus** (for miso).
  + **Typical Range**: Typically **0.05% to 0.2%** of the total weight of the substrate or microbial culture.
  + **Example**: In the production of **tempeh**, **Geotrichum** might be added in **small amounts** as part of a starter culture (usually **0.05% to 0.1%**).

Summary of Typical Amounts of Geotrichum in Commercial Food Products:

* **Cheese production**: **0.1% to 0.5%** of the total starter culture, depending on the cheese type (soft cheese, blue cheese)
* **Fermented dairy products (e.g., yogurt, kefir)**: **0.05% to 0.2%** of the total microbial culture
* **Fermented vegetables (e.g., sauerkraut, kimchi)**: **0.05% to 0.1%** of the total weight
* **Fermented soy products (e.g., tempeh, miso)**: **0.05% to 0.2%** of the total weight or starter culture

Conclusion:  
**Geotrichum candidum** is typically used in **small amounts** in commercial food products, generally **0.05% to 0.5%** of the total weight or volume, depending on the specific product and its fermentation requirements. It is most commonly used in **cheese production**, where it contributes to the texture, flavor, and ripening of certain types of cheeses, especially soft and blue-veined cheeses. Its use in **fermented dairy products**, **fermented vegetables**, and **fermented soy products** is less common but still significant in certain specialty applications.

[3:05](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732043137252169)

BeeChoo Liang

**Ginkgo biloba** is a well-known herbal supplement that has been used in traditional medicine for its purported benefits on cognitive function, memory, and circulation. The leaves of the **Ginkgo biloba** tree are typically used in supplements, extracts, and sometimes in food and beverages, where they are valued for their potential health benefits as well as their distinctive bitter taste.  
In commercial food products, **Ginkgo** is most commonly used in **functional foods** and **beverages**. Its inclusion is typically aimed at promoting mental clarity, cognitive health, and circulation, although the amounts used in food products are often quite small due to its strong flavor and the potency of its active compounds, particularly **flavonoids** and **terpenoids**.  
Typical Amounts of Ginkgo Used in Commercial Food Products  
The amount of **Ginkgo biloba** used in commercial food products depends on the specific product type and its intended use (e.g., for functional benefits or as a flavoring agent). Ginkgo is most commonly used in **extract form**, often as part of a blend with other herbs or ingredients.  
Here are typical amounts found in different types of commercial products:1. **Functional Beverages (e.g., Energy Drinks, Herbal Teas)**

* **Typical Amount**: In **functional beverages** such as **herbal teas**, **energy drinks**, or **cognitive-enhancement drinks**, ginkgo is typically included at low concentrations. The active ingredients from **Ginkgo biloba extract** are often used in standardized amounts, where the concentration of the extract may range from **0.1% to 1%** of the total product volume.
  + **Example**: A **cognitive-enhancing drink** might contain **50 mg to 100 mg** of ginkgo extract per serving (approximately **0.1% to 0.5%** of the total weight or volume), which is considered an effective dosage for potential health benefits.

2. **Nutritional Supplements (e.g., Capsules, Tablets, Powder)**

* **Typical Amount**: In **nutritional supplements**, ginkgo is typically present in higher concentrations, as these products are specifically designed to deliver its cognitive and circulatory benefits. **Ginkgo biloba extract** is usually standardized to contain **24% to 32%** flavonoids and **6% to 12% terpenoids**.
  + **Typical Range**: **100 mg to 300 mg** of ginkgo extract per serving is common, depending on the product formulation.
  + **Example**: A **Ginkgo biloba supplement** capsule may contain **120 mg to 200 mg** of **Ginkgo biloba extract** per serving.

3. **Functional Snack Foods (e.g., Energy Bars, Granola)**

* **Typical Amount**: Ginkgo is occasionally used in **functional snack foods**, such as **energy bars**, **granola**, or **trail mixes**. In these products, the extract is often blended with other ingredients like herbs, vitamins, and minerals to promote mental clarity or overall wellness.
  + **Typical Range**: The amount of ginkgo used in these types of products is generally around **0.1% to 1%** of the total weight of the product.
  + **Example**: A **ginkgo-infused energy bar** might contain about **20 mg to 50 mg** of ginkgo extract per bar.

4. **Baked Goods (e.g., Muffins, Cookies)**

* **Typical Amount**: In **baked goods**, ginkgo is used in much smaller amounts due to its strong flavor and the baking process. It is typically included as part of a blend of herbs or functional ingredients.
  + **Typical Range**: Ginkgo is usually included at **0.05% to 0.1%** of the total weight of the product.
  + **Example**: A **ginkgo-infused muffin** or **cookie** might contain about **5 mg to 20 mg** of ginkgo extract per serving.

5. **Chewing Gum and Mints**

* **Typical Amount**: Ginkgo is sometimes added to **functional chewing gum** or **mints** designed to promote mental clarity or alertness. These products typically use ginkgo in small amounts, often as a flavoring agent or as part of a cognitive-enhancing blend.
  + **Typical Range**: The concentration of ginkgo in these products is typically around **0.05% to 0.2%** of the total product weight.
  + **Example**: A **mint** or **chewing gum** designed for cognitive benefits might contain **2 mg to 10 mg** of ginkgo extract per piece.

Summary of Typical Amounts of Ginkgo Used in Commercial Food Products:

* **Functional beverages** (e.g., energy drinks, herbal teas): **0.1% to 1%** of the total volume (typically **50 mg to 100 mg** per serving)
* **Nutritional supplements** (e.g., capsules, tablets): **100 mg to 300 mg** per serving (standardized extract)
* **Functional snack foods** (e.g., energy bars, granola): **0.1% to 1%** of the total weight (typically **20 mg to 50 mg** per serving)
* **Baked goods** (e.g., muffins, cookies): **0.05% to 0.1%** of the total weight (typically **5 mg to 20 mg** per serving)
* **Chewing gum and mints**: **0.05% to 0.2%** of the total weight (typically **2 mg to 10 mg** per piece)

Conclusion:  
**Ginkgo biloba** is typically used in **small to moderate amounts** in commercial food products, particularly in **functional foods** like **beverages**, **snack bars**, **supplements**, and **baked goods**. The concentration usually ranges from **0.05% to 1%** of the total weight or volume, depending on the product type and its intended functional benefits. For **cognitive-enhancing drinks**, **energy bars**, or **chewing gum**, ginkgo is often included in doses ranging from **5 mg to 100 mg per serving**.  
Due to the strength of its active compounds, ginkgo is used sparingly in food products, and the amounts found in commercial products are generally designed to deliver its potential benefits without overwhelming the product's flavor profile.



BeeChoo LiangBeeChoo Liang  [3:16 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732043782238499)

**Lactylic Esters of Fatty Acids** are a type of **emulsifier** derived from the esterification of **lactic acid** with **fatty acids**. These esters are primarily used in the food industry to help blend ingredients that don't naturally mix well, such as oil and water, and improve the texture, stability, and shelf-life of food products. They are particularly useful in **baked goods**, **margarines**, **processed cheese**, and **dairy products**, as well as in certain **confectionery** items.  
These emulsifiers are relatively mild and are considered safe for food use by regulatory bodies like the **FDA** and **EFSA**. They help improve the **uniformity** and **consistency** of food products, prevent separation, and maintain the desired texture and structure.  
Typical Amounts of Lactylic Esters of Fatty Acids Used in Commercial Food Products  
The exact concentration of **lactylic esters of fatty acids** in food products can vary depending on the application, but they are typically used in small amounts as emulsifiers or stabilizers. Here are some general guidelines for how they are used in different types of food products:1. **Baked Goods (e.g., Cakes, Cookies, Bread)**

* **Typical Amount**: In **baked goods**, lactylic esters are used as emulsifiers to improve the texture, increase volume, and enhance the uniformity of dough and batter. They are often used in combination with other emulsifiers to achieve the desired effects.
  + **Typical Range**: **0.1% to 0.5%** of the total weight of the product.
  + **Example**: A **commercial cake mix** might contain **0.2% to 0.4%** lactylic esters to help with emulsification and improve the overall texture of the baked product.

2. **Margarine and Spreads**

* **Typical Amount**: In **margarine** and other **spreadable products**, lactylic esters of fatty acids help improve **emulsification** and provide a stable, smooth texture. They help combine water and oil effectively, which is critical for the consistency of these products.
  + **Typical Range**: **0.1% to 1%** of the total weight.
  + **Example**: A **margarine** product might contain **0.3% to 0.5% lactylic esters** to ensure that the oil and water components blend effectively and maintain a smooth texture.

3. **Processed Cheese and Cheese Products**

* **Typical Amount**: In **processed cheese**, **cheese spreads**, and other **cheese-based products**, lactylic esters are used to improve emulsification, maintain a smooth texture, and prevent separation of fat and water. These esters help in achieving the right meltability and consistency in the final product.
  + **Typical Range**: **0.1% to 0.5%** of the total weight.
  + **Example**: A **processed cheese slice** might contain around **0.2% to 0.4% lactylic esters** to ensure proper emulsification and prevent oil separation.

4. **Confectionery (e.g., Chocolate, Candy)**

* **Typical Amount**: In **confectionery products**, lactylic esters help with **texture**, **stability**, and **smoothness**, particularly in products like **chocolate**, **chewing gum**, and **candies**. They are used to improve the uniformity of fat distribution and prevent crystallization.
  + **Typical Range**: **0.1% to 0.3%** of the total weight.
  + **Example**: A **chocolate product** may contain about **0.2%** lactylic esters to ensure smoothness and prevent fat bloom (crystallization of fat on the surface).

5. **Dairy Products (e.g., Ice Cream, Yogurt)**

* **Typical Amount**: In **dairy products** like **ice cream**, **yogurt**, and **custards**, lactylic esters are used to improve the **texture**, **mouthfeel**, and **emulsification** of fat and water. They help achieve a smoother, creamier product by reducing ice crystal formation in frozen desserts.
  + **Typical Range**: **0.1% to 0.5%** of the total weight.
  + **Example**: An **ice cream** product might contain **0.2% to 0.4% lactylic esters** to improve texture and prevent separation of ingredients during freezing.

6. **Frozen Desserts (e.g., Sorbet, Frozen Yogurt)**

* **Typical Amount**: In **frozen desserts**, lactylic esters help to **stabilize emulsions** and improve **texture** during freezing and thawing. They help keep the product smooth and prevent the formation of ice crystals, which is particularly important in sorbets and other non-dairy frozen treats.
  + **Typical Range**: **0.05% to 0.3%** of the total weight.
  + **Example**: A **frozen yogurt** might contain around **0.1% to 0.2% lactylic esters** to enhance creaminess and prevent separation.

Summary of Typical Amounts of Lactylic Esters of Fatty Acids in Commercial Food Products:

* **Baked goods (e.g., cakes, cookies, bread)**: **0.1% to 0.5%** of the total weight
* **Margarine and spreads**: **0.1% to 1%** of the total weight
* **Processed cheese and cheese products**: **0.1% to 0.5%** of the total weight
* **Confectionery (e.g., chocolate, candies)**: **0.1% to 0.3%** of the total weight
* **Dairy products (e.g., ice cream, yogurt)**: **0.1% to 0.5%** of the total weight
* **Frozen desserts (e.g., sorbet, frozen yogurt)**: **0.05% to 0.3%** of the total weight

Conclusion:  
**Lactylic esters of fatty acids** are typically used in **small amounts** in commercial food products, generally ranging from **0.05% to 1%** of the total weight. These emulsifiers are primarily used to improve **texture**, **stability**, and **emulsification** in a wide variety of food products, including **baked goods**, **margarine**, **processed cheese**, **confectionery**, and **dairy products**. Their role is to prevent separation, improve consistency, and provide a smooth mouthfeel, especially in products that require the combination of oil and water-based ingredients.



BeeChoo LiangBeeChoo Liang  [3:41 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732045293745809)

The term **mold** in the context of **commercial food products** can refer to **fungal organisms** that are intentionally used in the production of certain fermented foods, as well as unintentional contamination during food storage. When we talk about **mold used in food production**, we're typically referring to **cultured molds** that play a key role in fermentation processes or in developing the distinctive flavors and textures in products like **cheeses**, **cured meats**, and certain **fermented foods**.  
In this case, the most relevant molds are typically those used to **ferment**, **ripen**, or **develop flavor** in foods, and the **amount** of mold used is highly dependent on the type of food product and the role the mold plays. These molds are generally used in controlled environments, and their presence in food is intentional and regulated to ensure safety and quality.  
Types of Molds Used in Food Production

1. **Penicillium** species (e.g., *Penicillium roqueforti*, *Penicillium camemberti*)
   * **Used in**: **Cheeses** (e.g., blue cheese, camembert, brie), **fermented meats**, and sometimes in the production of **fermented soy products**.
   * **Function**: These molds contribute to the **ripening** process, developing **flavor** and **texture**. Some molds also help create a distinctive **rind** on cheeses or other fermented products.
   * **Amount**: The amount of mold used in these processes is typically very low, in terms of the weight of the finished product, as molds are generally added as **starter cultures** or **spores** during production. The actual mold content is typically around **0.1% to 2%** by weight of the final product.
2. **Aspergillus** species (e.g., *Aspergillus oryzae*, *Aspergillus niger*)
   * **Used in**: **Fermented foods** like **soy sauce**, **miso**, and **sake** (fermented rice or barley), as well as in **tempeh** and other **fermented soy products**.
   * **Function**: These molds are crucial for **breaking down starches** and **proteins** in the fermentation process, converting them into simpler compounds such as **amino acids** and **sugars**, which enhance the **flavor** and **umami** profile of the final product.
   * **Amount**: The mold is used in small quantities during the fermentation stage, typically as **spores** or **starter cultures**. It may account for around **0.1% to 1%** of the total weight in the fermentation mix, though the final amount in the product will be much lower due to the transformation during fermentation.
3. **Rhizopus** species (e.g., *Rhizopus oligosporus*)
   * **Used in**: **Tempeh** and other **fermented soy products**.
   * **Function**: This mold is used to **bind** soybeans together in **tempeh** and aids in **fermentation** to create a flavorful and nutritious product.
   * **Amount**: The mold is introduced as a **starter culture** in very small amounts, typically around **0.1% to 1%** of the weight of the soybeans being fermented. The final amount of mold in the finished product is low, as it helps initiate fermentation, but is mostly metabolized.
4. **Neurospora** species (e.g., *Neurospora intermedia*)
   * **Used in**: Some **fermented products**, such as **fungal starter cultures** for **Chinese black rice vinegar** and other traditional fermented foods.
   * **Function**: These molds are used to produce **enzymes** that help in the fermentation of starches and sugars.
   * **Amount**: Similar to *Aspergillus* molds, the actual amount of mold used is generally **0.1% to 1%** of the raw ingredients, but it contributes indirectly to the final product by facilitating the fermentation process.

Key Factors Affecting Mold Use in Commercial Food Products:

* **Mold Concentration in Starter Cultures**: Molds are often added to food as part of a **starter culture** or **spore suspension**. The amount used is usually measured in terms of the **concentration of spores** or **inoculum**. For instance, in **cheese production**, the starter culture will typically contain millions of spores per gram of the culture. These cultures are added to the food in very small amounts.
* **Fermentation Time**: The final amount of mold in the finished product is influenced by the **fermentation time** and **conditions** (temperature, humidity, etc.), as molds will grow and spread during the fermentation process. The mold’s presence in the final product is generally low, as it is primarily used for enzymatic action rather than as an ingredient.
* **Regulation and Safety**: Mold use in food products is heavily regulated by food safety authorities like the **FDA** in the U.S. or the **European Food Safety Authority (EFSA)**. The molds used in commercial food production are carefully selected strains that are safe for consumption, unlike **spontaneous or unwanted molds** that can contaminate food and lead to spoilage or health risks.

Typical Amounts of Mold in Commercial Food Products:

1. **Cheeses (e.g., Blue cheese, Camembert, Brie)**:
   * Molds like *Penicillium* species are used as **starter cultures**.
   * **Typical Amount**: The **mold content** in the final cheese product is typically very low, at around **0.1% to 1%** by weight, depending on the type of cheese and how long it is aged.
2. **Soy Sauce, Miso, Sake, and Tempeh**:
   * Molds such as *Aspergillus oryzae* are used in the fermentation process.
   * **Typical Amount**: These molds are added as **spores** or **starter cultures** at concentrations of **0.1% to 1%** of the total weight of the ingredients. The mold content in the final product is minimal because much of it is metabolized during fermentation.
3. **Fermented Vegetables and Pickled Foods**:
   * Molds are sometimes used in the fermentation of **pickled vegetables** or traditional fermented foods.
   * **Typical Amount**: If molds are used, the concentration is usually low, typically around **0.1% to 1%** of the raw ingredients, as mold is mainly present to aid fermentation.
4. **Fermented Meats (e.g., Salami, Prosciutto)**:
   * **Penicillium** species are used to develop the rind on cured meats and prevent spoilage during aging.
   * **Typical Amount**: The mold used in cured meats is typically applied as a surface inoculant, and the **amount on the final product** is very low, usually less than **1%** of the final product's weight.
5. **Wine and Vinegar (e.g., Rice Vinegar, Balsamic Vinegar)**:
   * Molds like *Neurospora* are used in some vinegar and wine fermentation processes.
   * **Typical Amount**: Molds are used at very low levels, usually in the range of **0.1% to 1%** of the raw ingredients or fermentation starter.

Conclusion:  
**Mold** used in commercial food products (such as in **cheese**, **fermented meats**, **soy sauce**, **tempeh**, and other fermented foods) is typically used in very small amounts, often around **0.1% to 1%** by weight of the raw ingredients. The mold is introduced as a **starter culture** or **spores** to aid in the **fermentation** and **ripening** processes. The **mold content** in the final product is typically low, as the mold is used to facilitate enzymatic action during fermentation, and much of it is metabolized or incorporated into the food matrix. The exact amount can vary depending on the product, but molds are usually used in controlled quantities to ensure food safety and quality.

[3:43](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732045439136459)

BeeChoo Liang

**Mono- and Diesters of Fats and Fatty Acids** are **emulsifiers** and **fatty acid derivatives** that are commonly used in the food industry to improve the texture, stability, and consistency of various food products. These compounds are typically used to help mix fat and water-based ingredients, preventing them from separating, and can enhance the **mouthfeel**, **viscosity**, and **overall product performance** in processed foods.  
They are often derived from **glycerol** (as in **mono- and diglycerides**) or **other fatty acids**. These ingredients are widely used in a range of products like **baked goods**, **margarine**, **confectionery**, **dairy products**, **processed meats**, and **beverages**.  
Types of Mono- and Diesters of Fats and Fatty Acids:

1. **Mono- and Diglycerides of Fatty Acids (E471)**: These are the most common form of esters used in food products. They are derived from glycerol (glycerin) and one or two fatty acid molecules.
2. **Sorbitan Esters (e.g., Sorbitan monostearate)**: These are used as emulsifiers in a variety of food products.
3. **Lecithin Derivatives**: While lecithin is often not classified strictly as a mono- or diester, its derivatives can behave similarly in many food formulations.
4. **Propylene Glycol Esters of Fatty Acids (PGME)**: Used primarily in **bakery products**, **confectionery**, and **dairy**, among other applications.

Typical Amounts of Mono- and Diesters of Fats and Fatty Acids in Commercial Food Products:1. **Baked Goods (e.g., Cakes, Cookies, Bread, Pastries)**:

* **Typical Amount**: **0.1% to 1%** of the total weight.
* **Mono- and diesters** are used in **baked goods** as emulsifiers to improve texture, increase shelf life, and prevent staling. They help ensure uniform distribution of fat throughout the dough, which is important for texture and volume.
  + **Example**: A **cake mix** might contain around **0.2% to 0.5%** mono- and diglycerides by weight (i.e., **0.2g to 0.5g per 100g** of the product).

2. **Margarine and Shortening**:

* **Typical Amount**: **1% to 3%** of the total weight.
* In **margarine** and **shortening**, these esters are used to stabilize the fat emulsions and prevent the separation of water and oil phases. They improve the **spreadability** and **consistency** of the product.
  + **Example**: **Margarine** may contain around **1% to 2%** of mono- and diglycerides (i.e., **1g to 2g per 100g** of the product), depending on the formulation and consistency requirements.

3. **Confectionery (e.g., Chocolates, Candy, Chewing Gum)**:

* **Typical Amount**: **0.1% to 2%** of the total weight.
* **Mono- and diglycerides** are often used in **chocolates**, **candies**, and **gum** to improve the texture, prevent crystallization of sugar, and enhance the smoothness of chocolate coatings. They are used to prevent **sugar bloom** and help control the **viscosity** of the product.
  + **Example**: A **chocolate bar** might contain around **0.5% to 1%** mono- and diglycerides by weight (i.e., **0.5g to 1g per 100g** of the product).

4. **Dairy Products (e.g., Ice Cream, Whipped Cream, Butter)**:

* **Typical Amount**: **0.1% to 1%** of the total weight.
* These emulsifiers are used in **ice cream** and other **dairy products** to improve texture, prevent ice crystal formation, and ensure a smooth, stable product. They can also help in **fat dispersion** in **whipped cream** and **butter**.
  + **Example**: **Ice cream** may contain around **0.2% to 0.5%** mono- and diglycerides by weight (i.e., **0.2g to 0.5g per 100g** of ice cream).

5. **Processed Meats (e.g., Sausages, Hot Dogs, Canned Meats)**:

* **Typical Amount**: **0.1% to 1%** of the total weight.
* In **processed meats**, **mono- and diesters** are used as emulsifiers to ensure the proper texture, binding, and fat dispersion. They help prevent fat separation during cooking and improve the mouthfeel of the product.
  + **Example**: **Hot dogs** might contain around **0.2% to 0.5%** mono- and diglycerides by weight (i.e., **0.2g to 0.5g per 100g** of sausage).

6. **Beverages (e.g., Soft Drinks, Milkshakes, Smoothies)**:

* **Typical Amount**: **0.05% to 0.5%** of the total weight.
* **Mono- and diesters** are sometimes used in beverages, especially **milk-based drinks** and **smoothies**, to stabilize emulsions and prevent separation of fat and water phases. They also help improve the mouthfeel of creamy beverages.
  + **Example**: A **milkshake** may contain **0.1% to 0.3%** mono- and diglycerides by weight (i.e., **0.1g to 0.3g per 100g** of the product).

7. **Salad Dressings and Mayonnaise**:

* **Typical Amount**: **0.5% to 1%** of the total weight.
* **Mono- and diesters** are used in **salad dressings** and **mayonnaise** to improve emulsification and help stabilize the mixture of oil and vinegar or other aqueous ingredients.
  + **Example**: A **mayonnaise** might contain around **0.5% to 1%** mono- and diglycerides by weight (i.e., **0.5g to 1g per 100g** of the dressing).

Summary of Typical Amounts of Mono- and Diesters of Fats and Fatty Acids in Commercial Food Products:

* **Baked goods**: **0.1% to 1%** of the total weight (i.e., **0.1g to 1g per 100g**).
* **Margarine and shortening**: **1% to 3%** of the total weight (i.e., **1g to 3g per 100g**).
* **Confectionery**: **0.1% to 2%** of the total weight (i.e., **0.1g to 2g per 100g**).
* **Dairy products**: **0.1% to 1%** of the total weight (i.e., **0.1g to 1g per 100g**).
* **Processed meats**: **0.1% to 1%** of the total weight (i.e., **0.1g to 1g per 100g**).
* **Beverages**: **0.05% to 0.5%** of the total weight (i.e., **0.05g to 0.5g per 100g**).
* **Salad dressings and mayonnaise**: **0.5% to 1%** of the total weight (i.e., **0.5g to 1g per 100g**).

Conclusion:  
**Mono- and Diesters of Fats and Fatty Acids** are used in a wide variety of commercial food products, with typical usage levels ranging from **0.05% to 3%** of the total product weight. These emulsifiers and fat derivatives are added to improve texture, stability, and mouthfeel, as well as to prevent separation in emulsified products. The exact amount used depends on the type of food product and its specific formulation requirements, but these compounds are generally added in small quantities to achieve their desired effects.

[3:46](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732045583452249)

BeeChoo Liang

**Mono- and Diesters of Fatty Acids** (often referred to as **mono- and diglycerides**) are widely used **emulsifiers** and **stabilizers** in the food industry. They are primarily used to help **mix** oil and water in food products, improve texture, extend shelf life, and prevent separation. These compounds are commonly found in **baked goods**, **dairy products**, **margarine**, **processed meats**, **confectionery**, and **beverages**.  
Typical Amount of Mono- and Diesters of Fatty Acids in Commercial Food Products  
The typical amounts used in food products depend on the specific application and the role the emulsifier plays in the formulation. Here is a breakdown of the **usual usage levels**:1. **Baked Goods (e.g., Cakes, Bread, Cookies, Pastries)**:

* **Typical Amount**: **0.1% to 1%** of the total product weight.
* **Purpose**: Mono- and diglycerides help to **emulsify fats**, improve texture, prevent staling, and enhance dough handling. They are used in **bread** to improve volume and texture, and in cakes to increase tenderness.
* **Example**: A typical **cake mix** might contain about **0.2% to 0.5%** mono- and diglycerides by weight.

2. **Margarine and Shortening**:

* **Typical Amount**: **1% to 3%** of the total product weight.
* **Purpose**: Mono- and diglycerides are essential for stabilizing the **fat emulsion**, improving spreadability, and controlling the consistency of the product. They prevent separation of water and oil.
* **Example**: **Margarine** could contain around **1% to 2%** mono- and diglycerides by weight.

3. **Confectionery (e.g., Chocolate, Candy, Chewing Gum)**:

* **Typical Amount**: **0.1% to 2%** of the total product weight.
* **Purpose**: These emulsifiers are used in **chocolates** and **candies** to improve texture, prevent sugar crystallization, enhance smoothness, and help control the **viscosity** of the chocolate coating.
* **Example**: **Chocolate** products might contain about **0.5% to 1%** mono- and diglycerides.

4. **Dairy Products (e.g., Ice Cream, Whipped Cream, Creamer)**:

* **Typical Amount**: **0.1% to 1%** of the total product weight.
* **Purpose**: In **ice cream** and **whipped cream**, these emulsifiers are used to **improve texture**, **prevent ice crystal formation**, and increase creaminess. They also aid in stabilizing the fat and water phases.
* **Example**: A **vanilla ice cream** might contain **0.2% to 0.5%** mono- and diglycerides.

5. **Processed Meats (e.g., Sausages, Hot Dogs, Canned Meats)**:

* **Typical Amount**: **0.1% to 1%** of the total product weight.
* **Purpose**: Mono- and diglycerides are used to **bind fat** and improve the texture of **processed meats**. They help prevent fat separation during cooking and improve mouthfeel.
* **Example**: A **hot dog** might contain around **0.2% to 0.5%** mono- and diglycerides.

6. **Beverages (e.g., Milkshakes, Smoothies, Soft Drinks)**:

* **Typical Amount**: **0.05% to 0.5%** of the total product weight.
* **Purpose**: These emulsifiers are used in beverages, especially **milk-based drinks**, **smoothies**, and **creamers**, to prevent separation of the fat and water components, ensuring a smooth, consistent texture.
* **Example**: A **milkshake** could contain about **0.1% to 0.3%** mono- and diglycerides by weight.

7. **Salad Dressings and Mayonnaise**:

* **Typical Amount**: **0.5% to 1%** of the total product weight.
* **Purpose**: Mono- and diglycerides are used in **mayonnaise** and **salad dressings** to help **emulsify** oil and vinegar (or other water-based liquids) and to stabilize the product.
* **Example**: A **mayonnaise** product might contain about **0.5% to 1%** mono- and diglycerides.

General Summary:

* **Baked goods**: **0.1% to 1%** of total product weight
* **Margarine/Shortening**: **1% to 3%** of total product weight
* **Confectionery**: **0.1% to 2%** of total product weight
* **Dairy products**: **0.1% to 1%** of total product weight
* **Processed meats**: **0.1% to 1%** of total product weight
* **Beverages**: **0.05% to 0.5%** of total product weight
* **Salad dressings/Mayonnaise**: **0.5% to 1%** of total product weight

Conclusion:  
**Mono- and Diesters of Fatty Acids** are typically used in **small amounts**, ranging from **0.05% to 3%** by weight, depending on the product category. Their main function in food products is to **emulsify**, **stabilize**, and **improve texture** by preventing the separation of ingredients like fat and water. They are essential ingredients in many processed foods, particularly in **baked goods**, **margarine**, **confectionery**, and **dairy** products.



BeeChoo LiangBeeChoo Liang  [4:00 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732046431707159)

**Mono Di and Triglycerides** are a group of **fatty acid esters** of glycerol, commonly used as **emulsifiers**, **stabilizers**, and **texturizing agents** in a wide range of **commercial food products**. They are derived from **glycerol** (glycerin) and various **fatty acids** and are used in different forms to help improve product consistency, texture, stability, and shelf life.  
Typical Amount of Mono-, Di-, and Triglycerides in Commercial Food Products  
These compounds are used in relatively small amounts, typically ranging from **0.1% to 3%** by weight, depending on the type of product and its formulation needs. The exact amount varies depending on the product’s requirements for **emulsification**, **texture improvement**, or **fat dispersion**.1. **Baked Goods (e.g., Cakes, Cookies, Bread, Pastries)**:

* **Typical Amount**: **0.1% to 1%** of the total product weight.
* **Purpose**: In **baked goods**, **mono- and diglycerides** are used to improve dough handling, prevent staling, increase **moisture retention**, and enhance the **texture** of cakes and cookies. **Triglycerides** can also contribute to the stability and structure of certain doughs and batters.
* **Example**: A typical **cake mix** or **bread** may contain **0.2% to 0.5%** mono- and diglycerides by weight. Triglycerides are less common here but may still be used for texture enhancement.

2. **Margarine and Shortening**:

* **Typical Amount**: **1% to 3%** of the total product weight.
* **Purpose**: In **margarine** and **shortening**, **mono- and diglycerides** are essential for stabilizing the fat emulsion and achieving the desired **spreadability**. These emulsifiers help keep the water and fat from separating and contribute to the product’s **smoothness** and **uniformity**. **Triglycerides** are a primary component of the fats used in these products, contributing to the desired texture and mouthfeel.
* **Example**: **Margarine** may contain around **1% to 2%** mono- and diglycerides by weight, while triglycerides will form the majority of the fat content.

3. **Confectionery (e.g., Chocolate, Candy, Chewing Gum)**:

* **Typical Amount**: **0.1% to 2%** of the total product weight.
* **Purpose**: In **chocolate** and **candies**, **mono- and diglycerides** are used to enhance texture, improve mouthfeel, and prevent crystallization of sugars. They also help control the **viscosity** of chocolate coatings and fillings. **Triglycerides** form the bulk of the fat content in many confections.
* **Example**: A **chocolate bar** might contain around **0.5% to 1%** mono- and diglycerides, and **triglycerides** make up a significant portion of the chocolate’s fat content.

4. **Dairy Products (e.g., Ice Cream, Whipped Cream, Creamers)**:

* **Typical Amount**: **0.1% to 1%** of the total product weight.
* **Purpose**: In **ice cream**, **whipped cream**, and **creamers**, **mono- and diglycerides** are used to prevent the formation of ice crystals, improve **creaminess**, and maintain a stable emulsion of fat and water. Triglycerides are the primary fat component in these products.
* **Example**: **Ice cream** might contain around **0.2% to 0.5%** mono- and diglycerides. **Triglycerides** make up most of the fat content in ice cream and contribute to its smooth texture.

5. **Processed Meats (e.g., Sausages, Hot Dogs, Canned Meats)**:

* **Typical Amount**: **0.1% to 1%** of the total product weight.
* **Purpose**: **Mono- and diglycerides** help to emulsify fats and improve the texture and binding of the meat in **processed meats**. They also help prevent fat separation during cooking. **Triglycerides** are the primary fat source in meat formulations.
* **Example**: A **hot dog** or **sausage** might contain about **0.2% to 0.5%** mono- and diglycerides, with **triglycerides** forming the majority of the fat content.

6. **Beverages (e.g., Milkshakes, Smoothies, Soft Drinks)**:

* **Typical Amount**: **0.05% to 0.5%** of the total product weight.
* **Purpose**: **Mono- and diglycerides** help to stabilize emulsions in **milkshakes**, **smoothies**, and other beverages that contain both fat and water phases. They help ensure smooth texture and prevent separation. **Triglycerides** make up the fat content in creamy or dairy-based beverages.
* **Example**: A **milkshake** may contain **0.1% to 0.3%** mono- and diglycerides by weight.

7. **Salad Dressings and Mayonnaise**:

* **Typical Amount**: **0.5% to 1%** of the total product weight.
* **Purpose**: In **mayonnaise** and **salad dressings**, **mono- and diglycerides** help to emulsify the oil and water phases, ensuring the product remains stable over time. These emulsifiers help create a smooth, uniform consistency.
* **Example**: **Mayonnaise** may contain around **0.5% to 1%** mono- and diglycerides by weight.

Summary of Typical Amounts of Mono-, Di-, and Triglycerides in Commercial Food Products:

* **Baked goods**: **0.1% to 1%** of total product weight
* **Margarine/Shortening**: **1% to 3%** of total product weight
* **Confectionery**: **0.1% to 2%** of total product weight
* **Dairy products**: **0.1% to 1%** of total product weight
* **Processed meats**: **0.1% to 1%** of total product weight
* **Beverages**: **0.05% to 0.5%** of total product weight
* **Salad dressings/Mayonnaise**: **0.5% to 1%** of total product weight

Conclusion:  
**Mono-, Di-, and Triglycerides** are commonly used in small amounts (typically ranging from **0.05% to 3%** of the total product weight) in a wide variety of food products. Their primary function is to act as **emulsifiers** that help stabilize the mixing of fat and water, improve **texture**, enhance **mouthfeel**, and contribute to the **shelf life** of the product. While **mono- and diglycerides** are used for emulsification, **triglycerides** are the primary fat source in many products, contributing to the overall fat content and texture.

[4:03](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732046582933749)

BeeChoo Liang

The typical amounts of **Mono- and Triglycerides** used in commercial food products vary depending on their role as **emulsifiers**, **stabilizers**, or **fat components**. These compounds are derived from glycerol and fatty acids, and their primary functions are to help emulsify fat and water, stabilize mixtures, enhance texture, and improve the overall quality of the product.  
Typical Amount of Mono- and Triglycerides in Commercial Food Products:  
The usage levels of **mono-** and **triglycerides** depend on the type of product and the specific formulation requirements. Below are typical amounts used in different food categories:1. **Baked Goods (e.g., Cakes, Cookies, Bread, Pastries)**:

* **Typical Amount**: **0.1% to 1%** of the total product weight.
* **Purpose**: **Mono- and triglycerides** are used to improve dough handling, **increase moisture retention**, enhance **texture**, and prevent staling. In cakes and cookies, they help achieve a fine crumb structure and smooth texture. **Triglycerides** are also the primary fat component in most baked goods.
* **Example**: A **cake mix** might contain **0.2% to 0.5%** mono- and triglycerides by weight.

2. **Margarine and Shortening**:

* **Typical Amount**: **1% to 3%** of the total product weight.
* **Purpose**: **Mono- and triglycerides** are used in margarine and shortening to **stabilize emulsions** of fat and water. They improve **spreadability**, **smoothness**, and **texture** while preventing separation of oil and water. **Triglycerides** form the bulk of the fat content in margarine and shortening.
* **Example**: **Margarine** or **shortening** may contain **1% to 2%** mono- and diglycerides by weight, while **triglycerides** make up the majority of the fat content.

3. **Confectionery (e.g., Chocolate, Candy, Chewing Gum)**:

* **Typical Amount**: **0.1% to 2%** of the total product weight.
* **Purpose**: In **chocolates** and **confectionery**, **mono- and triglycerides** are used to **improve texture**, prevent **sugar crystallization**, and help control the **viscosity** of chocolate coatings and fillings. **Triglycerides** are the major fat component in these products, contributing to mouthfeel and smoothness.
* **Example**: A **chocolate bar** might contain **0.5% to 1%** mono- and triglycerides by weight.

4. **Dairy Products (e.g., Ice Cream, Whipped Cream, Creamers)**:

* **Typical Amount**: **0.1% to 1%** of the total product weight.
* **Purpose**: In **ice cream**, **whipped cream**, and **creamers**, **mono- and triglycerides** help to **prevent ice crystal formation**, maintain smoothness, and stabilize the fat-water emulsion. **Triglycerides** make up the fat content and contribute to the creamy texture of these products.
* **Example**: **Ice cream** might contain about **0.2% to 0.5%** mono- and triglycerides.

5. **Processed Meats (e.g., Sausages, Hot Dogs, Canned Meats)**:

* **Typical Amount**: **0.1% to 1%** of the total product weight.
* **Purpose**: In processed meats, **mono- and triglycerides** are used to **emulsify fat**, improve **texture**, and prevent fat separation during cooking. They also help with fat binding, which improves the **mouthfeel** of the product.
* **Example**: **Hot dogs** or **sausage** might contain about **0.2% to 0.5%** mono- and triglycerides.

6. **Beverages (e.g., Milkshakes, Smoothies, Soft Drinks)**:

* **Typical Amount**: **0.05% to 0.5%** of the total product weight.
* **Purpose**: In beverages like **milkshakes**, **smoothies**, and **cream-based drinks**, **mono- and triglycerides** help emulsify the fat and water phases, ensuring smooth texture and preventing separation. These emulsifiers contribute to the **creamy mouthfeel** of the beverage.
* **Example**: A **milkshake** might contain **0.1% to 0.3%** mono- and triglycerides by weight.

7. **Salad Dressings and Mayonnaise**:

* **Typical Amount**: **0.5% to 1%** of the total product weight.
* **Purpose**: In **mayonnaise** and **salad dressings**, **mono- and triglycerides** help to **stabilize emulsions** of oil and water, improving texture and preventing separation over time. These emulsifiers also contribute to the smooth, creamy consistency of the products.
* **Example**: **Mayonnaise** might contain around **0.5% to 1%** mono- and triglycerides.

Summary of Typical Amounts of Mono- and Triglycerides in Commercial Food Products:

* **Baked goods**: **0.1% to 1%** of total product weight
* **Margarine and shortening**: **1% to 3%** of total product weight
* **Confectionery**: **0.1% to 2%** of total product weight
* **Dairy products**: **0.1% to 1%** of total product weight
* **Processed meats**: **0.1% to 1%** of total product weight
* **Beverages**: **0.05% to 0.5%** of total product weight
* **Salad dressings/Mayonnaise**: **0.5% to 1%** of total product weight

Conclusion:  
**Mono- and Triglycerides** are commonly used in **small amounts** in a variety of food products, typically ranging from **0.05% to 3%** by weight, depending on the product and its purpose. **Mono- and diglycerides** act as **emulsifiers**, preventing the separation of fat and water, improving **texture**, and extending **shelf life**. **Triglycerides** form the majority of the fat content in many food products, contributing to **creamy textures**, **mouthfeel**, and overall **product stability**.

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BeeChoo Liang

**Monoesters of fats and fatty acids** (also known as **mono-fatty acid esters**) are used primarily as **emulsifiers** in food products. They help stabilize mixtures of fat and water, improving texture, shelf life, and product consistency. These compounds are derived by esterifying a **fatty acid** with **glycerol** or other alcohols.  
Typical Amount of Monoesters of Fats and Fatty Acids in Commercial Food Products:  
The use of **monoesters of fatty acids** in commercial food products is generally in small amounts, typically ranging from **0.1% to 1%** of the total product weight. They are highly effective at low concentrations. The exact amount depends on the food type and the specific function they serve in the product formulation.1. **Baked Goods (e.g., Cakes, Cookies, Bread, Pastries)**:

* **Typical Amount**: **0.1% to 0.5%** of the total product weight.
* **Purpose**: In baked goods, **monoesters** of fats are used to enhance dough handling, increase **moisture retention**, prevent staling, and improve the **texture** of cakes, cookies, and bread. They help emulsify the fat and water phases in batters and dough.
* **Example**: A **cake mix** might contain about **0.2%** monoesters of fatty acids.

2. **Margarine and Shortening**:

* **Typical Amount**: **0.5% to 1%** of the total product weight.
* **Purpose**: **Monoesters** are used in **margarine** and **shortening** to stabilize the **fat emulsion** and ensure smoothness. They help prevent the separation of water and fat, improving the **spreadability** and **texture** of the product.
* **Example**: **Margarine** may contain around **0.5% to 1%** monoesters of fatty acids by weight.

3. **Confectionery (e.g., Chocolate, Candy, Chewing Gum)**:

* **Typical Amount**: **0.1% to 1%** of the total product weight.
* **Purpose**: In **chocolates** and **candies**, **monoesters of fatty acids** help **improve texture**, **prevent crystallization**, and aid in the uniform coating of products. They also help maintain a **smooth mouthfeel** and **viscosity** in coatings.
* **Example**: A **chocolate bar** might contain about **0.5%** monoesters of fatty acids.

4. **Dairy Products (e.g., Ice Cream, Whipped Cream, Creamers)**:

* **Typical Amount**: **0.1% to 0.5%** of the total product weight.
* **Purpose**: In **ice cream** and **whipped cream**, **monoesters** help prevent **ice crystal formation**, improve the **creaminess**, and stabilize the fat-water emulsion. They help maintain the **smooth texture** of ice cream and other dairy-based products.
* **Example**: **Ice cream** might contain about **0.2%** monoesters of fatty acids.

5. **Processed Meats (e.g., Sausages, Hot Dogs, Canned Meats)**:

* **Typical Amount**: **0.1% to 0.5%** of the total product weight.
* **Purpose**: **Monoesters of fatty acids** help emulsify fat in **processed meats**, improving texture and preventing fat separation during cooking. They also enhance the **mouthfeel** of meat products.
* **Example**: **Hot dogs** or **sausage** may contain around **0.2%** monoesters.

6. **Beverages (e.g., Milkshakes, Smoothies, Soft Drinks)**:

* **Typical Amount**: **0.05% to 0.5%** of the total product weight.
* **Purpose**: In **beverages** like **milkshakes** and **smoothies**, **monoesters** help emulsify the fat phase, preventing separation and improving the **creamy texture** and **mouthfeel** of the product.
* **Example**: A **milkshake** might contain about **0.1%** monoesters of fatty acids.

7. **Salad Dressings and Mayonnaise**:

* **Typical Amount**: **0.1% to 0.5%** of the total product weight.
* **Purpose**: In **mayonnaise** and **salad dressings**, **monoesters** of fatty acids help **stabilize emulsions**, ensuring a smooth and consistent texture and preventing the separation of oil and water.
* **Example**: **Mayonnaise** may contain around **0.1% to 0.5%** monoesters of fatty acids.

Summary of Typical Amounts of Monoesters of Fats and Fatty Acids in Commercial Food Products:

* **Baked goods**: **0.1% to 0.5%** of total product weight
* **Margarine and shortening**: **0.5% to 1%** of total product weight
* **Confectionery**: **0.1% to 1%** of total product weight
* **Dairy products**: **0.1% to 0.5%** of total product weight
* **Processed meats**: **0.1% to 0.5%** of total product weight
* **Beverages**: **0.05% to 0.5%** of total product weight
* **Salad dressings/Mayonnaise**: **0.1% to 0.5%** of total product weight

Conclusion:  
**Monoesters of fats and fatty acids** are typically used in small quantities, ranging from **0.05% to 1%** of the total product weight. These emulsifiers are highly effective at low concentrations and are commonly used in a wide range of food products to **stabilize emulsions**, improve **texture**, and enhance the **shelf life** and **mouthfeel** of products.

[4:08](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732046916149799)

BeeChoo Liang

**Monoglycerides of fatty acids** (also known as **monoglycerides**) are widely used in commercial food products as **emulsifiers**, helping to blend fat and water, improve texture, enhance stability, and prevent phase separation. They are derived from the esterification of **glycerol** with a **single fatty acid**, and are typically used in small amounts due to their high effectiveness at low concentrations.  
Typical Amount of **Monoglycerides of Fatty Acids** in Commercial Food Products:  
The typical amounts of **monoglycerides of fatty acids** used in various food products generally range from **0.1% to 1%** of the total product weight. However, the exact amount depends on the type of product and its specific formulation needs.1. **Baked Goods (e.g., Cakes, Cookies, Bread, Pastries)**:

* **Typical Amount**: **0.1% to 0.5%** of the total product weight.
* **Purpose**: **Monoglycerides** help to **improve dough handling**, enhance **moisture retention**, and prevent **staling**. They also improve the **texture** of cakes, cookies, and bread, and help to emulsify the fat and water phases in dough or batter.
* **Example**: A **cake mix** might contain around **0.2%** monoglycerides by weight.

2. **Margarine and Shortening**:

* **Typical Amount**: **0.5% to 1%** of the total product weight.
* **Purpose**: **Monoglycerides** are used in **margarine** and **shortening** to **stabilize emulsions** of fat and water, improve **spreadability**, and enhance **smoothness**. They help maintain the **texture** and prevent separation of oil and water.
* **Example**: **Margarine** may contain **0.5% to 1%** monoglycerides by weight.

3. **Confectionery (e.g., Chocolate, Candy, Chewing Gum)**:

* **Typical Amount**: **0.1% to 1%** of the total product weight.
* **Purpose**: In **chocolates** and **candies**, **monoglycerides** improve the **texture**, help **prevent crystallization**, and enhance the **smoothness** of coatings or fillings. They also contribute to the **mouthfeel** and **viscosity** of the product.
* **Example**: A **chocolate bar** might contain around **0.5%** monoglycerides by weight.

4. **Dairy Products (e.g., Ice Cream, Whipped Cream, Creamers)**:

* **Typical Amount**: **0.1% to 0.5%** of the total product weight.
* **Purpose**: In **ice cream** and **whipped cream**, **monoglycerides** help **stabilize fat-water emulsions**, **prevent ice crystals** from forming, and improve the **creaminess** and **smoothness** of the product. They contribute to the **texture** and mouthfeel.
* **Example**: **Ice cream** might contain around **0.2% to 0.3%** monoglycerides by weight.

5. **Processed Meats (e.g., Sausages, Hot Dogs, Canned Meats)**:

* **Typical Amount**: **0.1% to 0.5%** of the total product weight.
* **Purpose**: **Monoglycerides** are used in processed meats to **emulsify fat**, prevent fat separation during cooking, and enhance the **texture** and **mouthfeel** of the product.
* **Example**: **Sausages** or **hot dogs** might contain around **0.2%** monoglycerides.

6. **Beverages (e.g., Milkshakes, Smoothies, Soft Drinks)**:

* **Typical Amount**: **0.05% to 0.5%** of the total product weight.
* **Purpose**: In beverages like **milkshakes**, **smoothies**, and **cream-based drinks**, **monoglycerides** help to **emulsify fat** and water, preventing phase separation and improving the **creamy texture** and **mouthfeel**.
* **Example**: A **milkshake** might contain about **0.1% to 0.2%** monoglycerides by weight.

7. **Salad Dressings and Mayonnaise**:

* **Typical Amount**: **0.1% to 0.5%** of the total product weight.
* **Purpose**: **Monoglycerides** in **mayonnaise** and **salad dressings** help to **stabilize emulsions** and ensure that the oil and water phases remain mixed, preventing separation. They also improve the **texture** and smoothness of the dressing.
* **Example**: **Mayonnaise** may contain around **0.2% to 0.5%** monoglycerides by weight.

Summary of Typical Amounts of **Monoglycerides of Fatty Acids** in Commercial Food Products:

* **Baked goods**: **0.1% to 0.5%** of total product weight
* **Margarine and shortening**: **0.5% to 1%** of total product weight
* **Confectionery**: **0.1% to 1%** of total product weight
* **Dairy products**: **0.1% to 0.5%** of total product weight
* **Processed meats**: **0.1% to 0.5%** of total product weight
* **Beverages**: **0.05% to 0.5%** of total product weight
* **Salad dressings/Mayonnaise**: **0.1% to 0.5%** of total product weight

Conclusion:  
**Monoglycerides of fatty acids** are typically used in **small amounts**, usually between **0.1% and 1%** of the total product weight, depending on the type of food and its formulation. These **emulsifiers** play a crucial role in improving **texture**, **stability**, and **mouthfeel** in a variety of food products, such as **baked goods**, **margarine**, **confectionery**, **dairy products**, **processed meats**, and **salad dressings**. Their primary function is to **stabilize emulsions** and ensure that fat and water phases stay uniformly mixed.



BeeChoo LiangBeeChoo Liang  [4:20 AM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732047612294319)

In the production of **soy sauce**, **Koji** (a fermented mixture of grains like rice, wheat, or soybeans inoculated with the mold *Aspergillus oryzae*) plays a critical role in the fermentation process. It is responsible for breaking down the starches and proteins in the raw ingredients, leading to the development of the characteristic flavors, amino acids (like glutamate), and other compounds found in soy sauce.  
Typical Amount of Koji Used in Soy Sauce Production  
In commercial **soy sauce** production, the amount of **Koji** used varies depending on the specific type of soy sauce and the method of production. However, **Koji** is typically used in the initial fermentation phase to create the **mash** (or **moromi**), which will later be fermented further to produce soy sauce.  
Here are some typical figures based on industrial practices:1. **General Soy Sauce Production**:

* **Koji Amount**: Generally, about **10% to 20%** of the total weight of the soybeans and wheat or other grains used in the soy sauce production process.
* **Example**: If a batch of soy sauce is made from **100 kg of soybeans and wheat**, around **10 kg to 20 kg of Koji** might be used to inoculate the grains during the fermentation process.

2. **Koji in Wheat or Soy-Based Soy Sauce**:

* **Koji Amount**: If **wheat** is included in the recipe (which is common in many soy sauce varieties), the amount of **Koji** is typically in the range of **15% to 18%** of the total weight of the grains (soybeans and wheat combined).
* **Example**: In a commercial production where **50% soybeans** and **50% wheat** are used, the **Koji inoculation** could be about **15% of the total weight of the wheat and soybeans**.

3. **Traditional vs. Rapid Fermentation**:

* **Traditional Fermentation**: In more traditional, slow fermentation processes (which can take months), **Koji** is typically used in slightly higher amounts to allow for a more complex fermentation.
* **Rapid Fermentation (modern methods)**: In commercial production using rapid fermentation methods (which may take a week or less), the amount of **Koji** used may be slightly lower, as the process is more controlled and accelerated.

Breakdown of Soy Sauce Production Process with Koji:

1. **Preparation of Grains**: Soybeans (or other grains like wheat) are cooked, and then a portion of them is inoculated with **Koji** mold.
2. **Koji Cultivation**: The inoculated grains are allowed to ferment under controlled conditions to allow the mold to grow and break down starches and proteins, producing enzymes that will later help in the fermentation of the soy sauce.
3. **Mash (Moromi)**: The **Koji**-inoculated grains are then mixed with **saltwater**, and the fermentation process begins. The enzymes from the **Koji** further break down the starches and proteins, producing amino acids (including glutamate, which provides the savory umami flavor) and other compounds that give soy sauce its distinctive taste.
4. **Aging**: After this initial fermentation, the moromi is typically aged for a period (usually weeks to months) to develop further flavors before being pressed, filtered, and bottled.

Example of Koji Usage in a Soy Sauce Recipe:  
For a 1,000-liter batch of soy sauce (roughly 1,200 kg of raw ingredients), a typical recipe might include:

* **Soybeans**: 500 kg
* **Wheat**: 500 kg
* **Koji inoculant**: Around **15% to 20%** of the total grain weight (soybeans + wheat), so approximately **150 kg to 200 kg** of Koji would be used to inoculate the grains.

After the fermentation process, the resulting soy sauce would undergo pressing and filtration, which would leave the solid parts behind and extract the liquid soy sauce.Summary:

* **Koji Amount**: Typically **10% to 20%** of the total weight of the grains (soybeans and wheat or other cereals) in the production of soy sauce.
* In commercial soy sauce production, **Koji** is a critical ingredient used to inoculate the grains, initiating the breakdown of starches and proteins to develop flavor and aroma.

This amount can vary depending on the **type of soy sauce** being produced (e.g., light soy sauce vs. dark soy sauce) and the **method of fermentation** (traditional vs. rapid fermentation). However, **10% to 20%** is a general guideline for most commercial processes.

[4:22](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732047749881609)

BeeChoo Liang

The amount of **spice** used in commercial food products depends on several factors, including the type of spice, the specific food product, and the desired flavor profile. **Spices** are typically used in small amounts since they are highly concentrated and potent in flavor. The typical usage also depends on whether the spice is a **main flavoring** (e.g., chili powder in hot sauces) or used as a **seasoning** to enhance other ingredients (e.g., black pepper in processed meats or baked goods).  
Typical Amount of **Spices** Used in Commercial Food Products:  
Spices are often used in **quantities ranging from 0.1% to 5%** of the total product weight, with variations depending on the spice's potency and the product type. Below is a breakdown of typical usage for various food categories:1. **Baked Goods (e.g., Cakes, Cookies, Breads)**:

* **Typical Amount**: **0.1% to 1%** of the total product weight.
* **Common Spices**: **Cinnamon**, **nutmeg**, **ginger**, **cloves**, and **allspice** are often used in baked goods like cakes, cookies, pies, and bread.
* **Example**: A **pumpkin pie** spice mix in a commercial pie might contain about **0.5%** cinnamon, with **0.1% to 0.2%** nutmeg and **ginger**.

2. **Processed Meats (e.g., Sausages, Hot Dogs, Deli Meats)**:

* **Typical Amount**: **0.2% to 2%** of the total product weight.
* **Common Spices**: **Black pepper**, **garlic powder**, **paprika**, **mustard powder**, **coriander**, **nutmeg**, and **cumin**.
* **Example**: A **sausage** may have about **0.3% to 1%** of **black pepper** and **0.1% to 0.3%** of **garlic powder**, with other spices like **paprika** and **mustard** contributing smaller amounts.

3. **Snacks (e.g., Chips, Pretzels, Crackers)**:

* **Typical Amount**: **0.1% to 3%** of the total product weight, depending on the type of snack and the flavor profile.
* **Common Spices**: **Salt**, **paprika**, **onion powder**, **garlic powder**, **cheese powder**, and **chili powder**.
* **Example**: **Flavored chips** might contain **0.3% to 1%** of **paprika** and **0.1% to 0.5%** of **garlic powder**, while a **spicy flavor** might include **0.2% to 1%** of **cayenne pepper** or **chili powder**.

4. **Sauces and Condiments (e.g., Ketchup, Mustard, Barbecue Sauce)**:

* **Typical Amount**: **0.1% to 5%** of the total product weight, depending on the flavor intensity.
* **Common Spices**: **Vinegar**, **garlic powder**, **onion powder**, **mustard seeds**, **cloves**, **paprika**, **cayenne pepper**, and **black pepper**.
* **Example**: **Barbecue sauces** often contain around **0.3% to 1%** of **paprika**, **1% to 2%** of **garlic powder**, and up to **0.5%** of **cayenne** or **black pepper**.

5. **Canned Foods (e.g., Soups, Stews, Ready-to-Eat Meals)**:

* **Typical Amount**: **0.1% to 2%** of the total product weight.
* **Common Spices**: **Black pepper**, **bay leaves**, **thyme**, **rosemary**, **oregano**, **paprika**, and **garlic powder**.
* **Example**: A **canned soup** might contain around **0.2% to 0.5%** of **black pepper**, **0.1% to 0.3%** of **garlic powder**, and a touch of **thyme** or **rosemary**.

6. **Beverages (e.g., Tea, Coffee, Soft Drinks)**:

* **Typical Amount**: **0.1% to 2%** of the total product weight, depending on the type of beverage and whether it is a spiced product.
* **Common Spices**: **Cinnamon**, **ginger**, **cloves**, **cardamom**, and **peppermint**.
* **Example**: **Spiced chai tea** might contain **0.2% to 0.5%** of **cinnamon**, **0.1% to 0.3%** of **ginger**, and small amounts of **cloves** and **cardamom**.

7. **Frozen Foods (e.g., Frozen Pizza, Ready-to-Cook Meals)**:

* **Typical Amount**: **0.1% to 1%** of the total product weight.
* **Common Spices**: **Garlic powder**, **oregano**, **basil**, **paprika**, **black pepper**, **chili powder**.
* **Example**: A **frozen pizza sauce** might contain around **0.2% to 0.5%** of **oregano**, **garlic powder**, and **onion powder**.

8. **Ethnic and Spicy Foods (e.g., Curries, Chili, Hot Sauces)**:

* **Typical Amount**: **1% to 5%** of the total product weight, especially in spicy or flavorful dishes.
* **Common Spices**: **Curry powder**, **turmeric**, **cumin**, **coriander**, **cayenne pepper**, **chili powder**, **cinnamon**, **cloves**.
* **Example**: A **curry sauce** might contain **1% to 2%** of **curry powder**, **0.5% to 1%** of **turmeric**, and **0.1% to 0.5%** of **cumin** or **coriander**.

Summary of Typical Spice Amounts in Commercial Food Products:

* **Baked Goods**: **0.1% to 1%** of the total product weight.
* **Processed Meats**: **0.2% to 2%** of the total product weight.
* **Snacks**: **0.1% to 3%** of the total product weight.
* **Sauces & Condiments**: **0.1% to 5%** of the total product weight.
* **Canned Foods**: **0.1% to 2%** of the total product weight.
* **Beverages**: **0.1% to 2%** of the total product weight.
* **Frozen Foods**: **0.1% to 1%** of the total product weight.
* **Ethnic & Spicy Foods**: **1% to 5%** of the total product weight.

Conclusion:  
Spices are generally used in **small quantities** (usually ranging from **0.1% to 5%** of the total product weight) in commercial food products. The exact amount depends on the type of spice, the product, and the desired flavor intensity. For **subtle seasoning**, such as **black pepper** or **garlic powder**, the amounts are typically on the lower end, while **stronger spices** or **blends** (like **chili powder** or **curry powder**) can be used in higher concentrations, especially in spicy or flavorful foods.

[4:25](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732047928398579)

BeeChoo Liang

It seems that you are asking about "Tango" in the context of commercial food products. However, the term "Tango" isn't clearly associated with a specific food ingredient or spice commonly used in the food industry. There are a few possibilities for what you might be referring to, so I'll outline some potential interpretations:  
1. **Tango (Fruit/Flavoring)**

* **Tango** is the name of a variety of **citrus fruit** (often a variety of **mandarin orange**) or it can sometimes refer to **flavored beverages** (such as **Tango Soft Drink**). If you are asking about a **Tango-flavored** ingredient or product used in food, like citrus or fruit flavoring, the amounts used would depend on the product type.
* **Typical Amount**: For flavoring, such as **Tango citrus essence**, it would likely be used in small amounts, typically **0.1% to 2%** of the total product weight depending on whether it's a **beverage, candy, or processed food**.
* **Example**: In a commercial **fruit juice** or **soft drink**, the **Tango flavoring** (if derived from mandarin or citrus) might be used at a rate of about **0.2% to 1%**.

2. **Tango Soft Drink** (Commercial Beverage)

* If you are referring to the **Tango soft drink** (a brand of carbonated beverages), the amount of **Tango** used would be in the **entire beverage** itself. A typical soft drink contains a high proportion of water, sugar, and flavorings, and Tango, as a flavor, would be included in those flavoring blends.
* **Typical Amount**: For **Tango soft drinks**, the amount of flavoring could be about **0.5% to 3%** of the total beverage weight, depending on the flavor intensity and the formulation.

3. **Tango as a Spice or Seasoning**

* There’s a possibility that **Tango** could be a brand name or specific seasoning blend, though it is not widely recognized in the spice or seasoning market by that name.
* If **Tango** refers to a specific **spice blend** or **seasoning mix** (such as a commercial product with a name like "Tango Spice Blend"), the typical usage would be in line with other spice blends, usually ranging from **0.1% to 2%** of the total product weight, depending on the product.

4. **Tango (Tapioca or Textured Products)**

* It's also possible that "Tango" could refer to a specific **brand name** for **textured vegetable protein** or other **tapioca-based** ingredients used in processed foods. These types of ingredients are typically used in small quantities for specific textures in products like **meat analogs** or **gluten-free foods**.
* **Typical Amount**: For texturizing ingredients like **Tango tapioca starch** or **textured vegetable protein**, the usage would generally range from **1% to 5%** of the total product weight.

Conclusion:  
If you're referring to a **Tango citrus flavoring**, it would typically be used in the range of **0.1% to 2%** of the total product weight in beverages or flavored products. For a **Tango soft drink**, the concentration would be much higher since it's a primary component of the drink. If you're talking about a **spice blend or seasoning**, it would likely be used in small amounts, typically **0.1% to 1%**.  
If this answer doesn’t quite match what you meant by "Tango," please provide more specific details, and I’d be happy to refine the response!

[4:30](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732048201649079)

BeeChoo Liang

**Esterified Propoxylated Glycerol** (also known as **Esterified Glycerol Propoxylate**) is a food ingredient used primarily as an **emulsifier** and **stabilizer** in various commercial food products. It's a modified form of **glycerol**, typically produced by combining glycerol with propylene oxide in the presence of acids or bases, leading to the formation of ester groups.  
This type of compound is used in food processing to help **blend** oil and water-based ingredients, prevent separation, and improve the texture of emulsions.  
Typical Amount of Esterified Propoxylated Glycerol Used in Food Products:  
The exact amount used can vary depending on the specific food product and its formulation. However, as a **food emulsifier** or **stabilizer**, **Esterified Propoxylated Glycerol** is typically used in **small amounts**.  
General Usage Ranges:

* **Typical Amount**: **0.05% to 0.5%** of the total product weight.
* **Example**: In **margarine**, **mayonnaise**, **ice cream**, and **dressings**, the amount of this emulsifier might be on the lower end of this range, often around **0.1% to 0.3%** by weight.
* In **confectionery** products, where stability and texture enhancement are needed (like chocolate coatings or soft candies), the usage might also fall within the range of **0.1% to 0.5%**.

Common Food Products that Use Esterified Propoxylated Glycerol:

1. **Emulsified products**:
   * **Margarine**: Esterified glycerol propoxylates can help with the **texture** and **spreadability** of margarine.
   * **Mayonnaise and Salad Dressings**: Used to stabilize the oil-water mixture and ensure a smooth, uniform texture.
2. **Beverages**:
   * In **beverages** (especially those with added oils or fats, such as in certain **energy drinks** or **nutritional drinks**), esterified glycerol can be used to **stabilize emulsions**.
3. **Confectionery**:
   * **Chocolate coatings**, **gumdrops**, and other soft candies benefit from its use to improve texture and **prevent crystallization**.
4. **Baked Goods**:
   * In certain **baked goods** (e.g., cakes, cookies, or pastries), esterified glycerol might be used in **frostings** and **fillings** to enhance texture and stability.

Functions of Esterified Propoxylated Glycerol:

* **Emulsification**: Helps mix oil and water-based ingredients that would typically separate (e.g., in sauces, dressings, and beverages).
* **Stabilization**: Maintains the **texture** and **mouthfeel** of food products, particularly in processed foods like **margarine**, **ice cream**, and **confectionery**.
* **Improved Shelf Life**: Enhances the **shelf stability** of emulsions by preventing phase separation.

Regulatory and Safety Considerations:  
Esterified Propoxylated Glycerol is generally recognized as **safe (GRAS)** by food safety authorities like the **FDA** and the **EFSA** when used within specified limits. It is commonly found in products with emulsification or stabilization needs, especially where it does not exceed the recommended usage limits.Conclusion:  
**Esterified Propoxylated Glycerol** is typically used in small amounts, usually in the range of **0.05% to 0.5%** of the total product weight in commercial food products. Its primary function is as an **emulsifier** and **stabilizer**, helping to blend oil and water-based ingredients and maintain the consistency and texture of food products.

[4:32](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732048350510259)

BeeChoo Liang

**Esters of Mono and Diglycerides** (often referred to as **mono- and diglycerides esters**) are commonly used in commercial food products as **emulsifiers**, stabilizers, and texturizers. These ingredients help to mix water and oil-based components, preventing separation and improving the texture and shelf life of the product.  
Typical Amount of Esters of Mono and Diglycerides Used in Commercial Food Products  
The typical usage of **Esters of Mono and Diglycerides** in food products depends on the type of product and its specific formulation. Generally, the amount used is small, given that they are effective in very low concentrations. Here’s a general guideline for their use:  
**Typical Range:**

* **0.05% to 0.5%** of the total product weight.

**Common Applications and Usage by Product Type:**

1. **Baked Goods (e.g., Bread, Cakes, Cookies, Pastries)**:
   * **Typical Amount**: **0.1% to 0.5%** of the total product weight.
   * **Purpose**: Used to improve the texture, shelf life, and volume of baked goods. In bread, for example, mono- and diglycerides help with dough handling and improve the bread’s **softness** and **moisture retention**.
2. **Margarine and Spreads**:
   * **Typical Amount**: **0.1% to 0.3%** of the total product weight.
   * **Purpose**: Acts as an emulsifier to combine water and fat, providing the desired **spreadability** and **texture** in margarine and butter substitutes.
3. **Ice Cream and Frozen Desserts**:
   * **Typical Amount**: **0.1% to 0.3%** of the total product weight.
   * **Purpose**: Helps stabilize the air incorporated into the product during churning, prevents ice crystal formation, and ensures a **smooth texture**.
4. **Confectionery (e.g., Chocolate, Candies, Gummies)**:
   * **Typical Amount**: **0.05% to 0.2%** of the total product weight.
   * **Purpose**: Used to control the **crystallization** of fats and improve the **texture** of chocolate coatings or confectionery products.
5. **Dairy Products (e.g., Cheese, Creamers, Whipped Toppings)**:
   * **Typical Amount**: **0.1% to 0.5%** of the total product weight.
   * **Purpose**: Used in processed cheese and non-dairy creamers to help with **emulsification** and maintain a **uniform texture**.
6. **Sauces, Dressings, and Mayonnaise**:
   * **Typical Amount**: **0.1% to 0.5%** of the total product weight.
   * **Purpose**: Acts as an emulsifier in sauces and dressings, improving the **texture** and preventing separation of the oil and water phases.
7. **Fried Foods and Snack Foods**:
   * **Typical Amount**: **0.1% to 0.3%** of the total product weight.
   * **Purpose**: Helps with **oil absorption** and provides improved texture and crispness in fried snacks or coatings.

Functions of Esters of Mono and Diglycerides:

1. **Emulsification**: Helps water and oil-based ingredients mix and stay combined, creating a stable product.
2. **Stabilization**: Prevents phase separation (oil and water separation) in products like salad dressings, mayonnaise, and margarine.
3. **Texture Improvement**: Enhances the **mouthfeel** of products, especially in bakery goods and frozen desserts, by improving moisture retention and volume.
4. **Shelf Life Extension**: Helps maintain the **quality** and **freshness** of products by stabilizing emulsions and preventing separation.

Regulatory and Safety Considerations:  
Esters of **Mono and Diglycerides** are widely used in food products and are generally recognized as **safe (GRAS)** by food safety authorities such as the **FDA** and **EFSA** when used within recommended limits. They are also **approved for use in organic products** by the **USDA** and **EU Organic** standards.Conclusion:  
The typical amount of **Esters of Mono and Diglycerides** used in commercial food products is generally in the range of **0.05% to 0.5%** of the total product weight. These emulsifiers are used across a wide variety of food products, from **baked goods** and **margarine** to **ice cream** and **confectionery**, where they help improve texture, stability, and shelf life.



BeeChoo LiangBeeChoo Liang  [12:48 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732078091913699)

Autolyzed yeast flavor, often used as a flavor enhancer in food products for its savory, umami taste, is typically used in **concentrations ranging from 0.5% to 2% by weight** in many commercial food products. However, the exact amount can vary based on the type of product and the desired flavor intensity.  
Here are some general examples of how it's used in various food categories:

1. **Savory snacks (chips, popcorn, etc.)**: Around **0.5% to 2%**.
2. **Seasonings and spice mixes**: Generally, **1-2%** depending on the overall composition of the mix.
3. **Soups and sauces**: Around **1%**, though it can go higher for more concentrated formulations.
4. **Processed meats**: About **0.5% to 1.5%**, to enhance the overall meat flavor.
5. **Cheese powders or cheese-flavored products**: Around **0.5% to 1.5%** by weight.

As with other flavor enhancers, the precise amount depends on factors such as the intensity of other flavors in the product and consumer taste preferences.



BeeChoo LiangBeeChoo Liang  [1:08 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732079329243739)

Beer extract is used in commercial food products primarily to add a beer-like flavor and aroma without the need for actual beer. The amount of beer extract used can vary depending on the desired flavor intensity and the specific food product. Generally, the typical concentration of beer extract in food products ranges from **0.5% to 3%** by weight.  
Here are some examples of how beer extract is used in different food products:

1. **Snacks (e.g., chips, popcorn)**: Typically around **0.5% to 2%** by weight.
2. **Sauces and marinades**: Generally **1% to 3%**, depending on how strong a beer flavor is needed.
3. **Seasoning blends**: Often in the range of **0.5% to 2%**.
4. **Baked goods (e.g., breads, crackers)**: Typically **0.5% to 1%** by weight, though this can vary based on the specific recipe.
5. **Frozen foods**: Beer extract might be used in small quantities, around **0.5% to 1%**.

The exact amount depends on the specific formulation of the product and the level of beer flavor desired. It’s essential for manufacturers to balance the extract with other ingredients to avoid overpowering the flavor profile.

[1:11](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732079511793159)

BeeChoo Liang

Beer hop extract is used in commercial food products primarily to impart a bitter, hoppy flavor and aroma reminiscent of beer. The amount of hop extract used depends on the specific product and the desired intensity of the hop flavor, but typical concentrations are generally quite low due to the potency of hop extract.  
Typical Amounts of Beer Hop Extract in Food Products:

* **General range**: **0.05% to 0.5%** by weight.

Here are some common applications and typical usage amounts:

1. **Savory Snacks (e.g., chips, popcorn)**: Typically around **0.05% to 0.2%** by weight to provide a mild hop flavor without overwhelming the other seasonings.
2. **Baked Goods (e.g., crackers, breads)**: Hop extract might be used at **0.1% to 0.3%**, adding a subtle hop flavor to the product.
3. **Sauces and Marinades**: Around **0.1% to 0.3%**, depending on the strength of flavor desired.
4. **Flavored Beverages or Non-Alcoholic Beers**: Hop extract could be used in slightly higher amounts, generally in the range of **0.2% to 0.5%** by weight, to achieve a noticeable hop aroma and taste.
5. **Confectionery (e.g., chocolates or candies)**: The usage level tends to be on the lower end, typically **0.05% to 0.1%**, to avoid overpowering sweetness with bitterness.

The potency of hop extract means it’s usually used sparingly in food products, and its concentration is carefully controlled to avoid making the product too bitter, which could detract from the overall flavor balance.

[1:13](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732079609527429)

BeeChoo Liang

Bitter almond extract is used in commercial food products for its strong, almond-like flavor with a characteristic bitter note. Due to its potency, it is typically used in very small quantities. The amount of bitter almond extract used in food products generally ranges from **0.1% to 1%** by weight, depending on the product and desired flavor intensity.  
Typical Amounts of Bitter Almond Extract in Food Products:

1. **Baked Goods (e.g., cakes, cookies, pastries)**:
   * **0.1% to 0.5%** by weight, depending on how strong a flavor is needed. It's often used to enhance almond-flavored products or as a complement to other ingredients.
2. **Confectionery (e.g., chocolates, candies)**:
   * Around **0.1% to 0.3%**, as the flavor is very concentrated and a small amount can be sufficient to achieve the desired effect.
3. **Ice Cream and Dairy Products**:
   * Typically **0.05% to 0.2%** by weight, used sparingly to add a hint of almond flavor without overpowering the product.
4. **Liquor and Beverages**:
   * In beverages like liqueurs or almond-flavored drinks, bitter almond extract might be used in slightly higher amounts, usually **0.1% to 0.5%**, depending on the strength of the almond flavor desired.
5. **Flavoring for Nut-based Products**:
   * **0.1% to 0.3%**, often used to intensify almond or nut flavors in processed nut products.

Since bitter almond extract contains compounds (like **benzaldehyde**) that can be toxic in large quantities, the use of bitter almond extract in commercial food products is highly regulated. Manufacturers must ensure that the extract used is safe and within recommended limits, which are usually quite low to avoid any potential health risks.



BeeChoo LiangBeeChoo Liang  [1:22 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732080123035069)

Beer yeast extract, used for its umami, savory flavor, and depth, is typically added in small amounts in commercial food products. It provides a flavor similar to that of beer or savory broths and is often used as a flavor enhancer, especially in snacks, seasonings, and processed foods.  
Typical Amounts of Beer Yeast Extract in Commercial Food Products:

* **General range**: **0.5% to 3%** by weight, though the exact amount can vary based on the product type and desired flavor profile.

Here are some common uses and typical concentrations:

1. **Savory Snacks (chips, popcorn, pretzels)**:
   * Typically **0.5% to 2%** by weight, depending on the intensity of flavor desired.
2. **Seasoning Mixes (for soups, sauces, marinades)**:
   * Generally around **1% to 3%** by weight, depending on the product's formulation and the desired flavor strength.
3. **Processed Meats (sausages, ready meals)**:
   * About **1% to 2%** by weight, contributing to the savory taste without overpowering the overall flavor.
4. **Cheese and Cheese-flavored Products**:
   * Usually **0.5% to 1.5%** by weight, depending on the cheese-like flavor profile desired.
5. **Vegetarian and Vegan Products**:
   * In plant-based alternatives, beer yeast extract can be used at levels between **0.5% to 2%** to enhance savory, umami flavors and mimic the taste of meat-based products.

Beer yeast extract is potent, so a little goes a long way in enhancing the overall flavor profile of foods. The concentration is carefully controlled to maintain a balanced taste without overwhelming the other ingredients.

[1:23](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732080199412939)

BeeChoo Liang

Berry extracts, derived from various berries like blueberry, strawberry, raspberry, or acai, are used in commercial food products for flavor enhancement, color, and antioxidant benefits. The typical amount of berry extract used varies based on the specific type of extract (liquid, powder, or concentrated) and the desired flavor intensity, color, or health benefits.  
Typical Amounts of Berry Extract in Commercial Food Products:

* **General range**: **0.1% to 3%** by weight, though the exact amount depends on the application.

Here are some typical applications and amounts:

1. **Beverages (fruit drinks, smoothies, and juices)**:
   * Berry extract is typically used at **0.1% to 1%** by weight. Higher concentrations may be used in more concentrated products or for specific health benefits (e.g., antioxidant-rich drinks).
2. **Yogurts, Dairy, and Plant-based Products**:
   * Generally, **0.1% to 2%** by weight is used to impart berry flavor or to color the product naturally. In premium or "berry-flavored" versions, it may be at the higher end of the range.
3. **Baked Goods (cakes, muffins, cookies)**:
   * **0.5% to 2%** by weight is typical, depending on whether the goal is flavor, color, or both. For more intense berry flavor, higher amounts can be used.
4. **Confectionery (candies, chocolates, gummies)**:
   * Often **0.5% to 2%** by weight, depending on how strongly the berry flavor or color needs to be present in the final product.
5. **Frozen Desserts (ice cream, sorbet)**:
   * **0.2% to 1.5%** by weight is common. The extract can serve both as a flavoring agent and to enhance the visual appeal of the product with natural color.
6. **Health Supplements and Nutraceuticals**:
   * For antioxidant or health-related benefits, berry extracts (e.g., acai, blueberry) are often used in higher concentrations, sometimes **1% to 3%** or more, depending on the formulation and the desired potency.

Since berry extracts can vary greatly in concentration, the exact amount depends on the form of extract (e.g., concentrated, powder, or juice) and the desired intensity of the berry flavor or health properties in the food product.

[1:26](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732080371868259)

BeeChoo Liang

Black truffle extract is used in commercial food products to impart the distinctive, earthy, and umami-rich flavor of truffles. Due to the potency of truffle extract, it is typically used in small amounts to avoid overwhelming the flavor profile. The amount used in food products can vary depending on the form of the extract (liquid, powder, or concentrated), the product type, and the desired intensity of the truffle flavor.  
Typical Amounts of Black Truffle Extract in Commercial Food Products:

* **General range**: **0.1% to 1%** by weight, though the concentration may be higher in premium products.

Here are some common food applications and typical usage amounts:

1. **Savory Snacks (chips, popcorn, crackers)**:
   * Typically, **0.1% to 0.5%** by weight. Truffle extract is used sparingly to provide a subtle, high-end flavor without overpowering the snack’s base flavor.
2. **Gourmet Sauces and Dressings**:
   * Around **0.2% to 1%** by weight, depending on the product's desired flavor strength. Truffle extract is often used in premium or artisanal products to deliver a rich, savory finish.
3. **Processed Meats (sausages, ready meals)**:
   * Typically **0.1% to 0.5%**, used to add depth of flavor without dominating the product.
4. **Baked Goods (e.g., breads, pastries)**:
   * Truffle extract is usually added at **0.1% to 0.3%** by weight to enhance flavor. It’s used primarily in high-end, savory baked goods.
5. **Cheese and Cheese-flavored Products**:
   * **0.1% to 0.5%** by weight. The extract enhances the rich and earthy notes of the cheese without overpowering it.
6. **Vegetarian and Vegan Products**:
   * In plant-based alternatives, black truffle extract may be used at **0.1% to 0.5%** by weight, contributing to a savory, umami flavor that mimics the richness typically found in meat-based products.

Since black truffle extract is very concentrated and its flavor is potent, manufacturers use it in small amounts to avoid excessive bitterness or overwhelming the other flavors. It is often used in premium or gourmet products due to its luxury status and distinctive taste.

[1:28](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732080520846459)

BeeChoo Liang

Blackberry extract is used in commercial food products for its sweet, tart flavor and natural color, often in beverages, desserts, and processed foods. The amount of blackberry extract used in food products can vary depending on the desired flavor intensity, type of product, and extract concentration (liquid, powder, or concentrated).  
Typical Amounts of Blackberry Extract in Commercial Food Products:

* **General range**: **0.1% to 3%** by weight, though the specific amount depends on the form of extract and the application.

Here are some typical applications and amounts:

1. **Beverages (fruit juices, smoothies, flavored waters)**:
   * **0.1% to 1%** by weight. This range is typical for adding flavor and color without overpowering other ingredients in the beverage.
2. **Dairy Products (yogurt, ice cream, and milk-based drinks)**:
   * **0.1% to 2%** by weight. The extract can be used to enhance flavor, provide color, or add nutritional benefits. For stronger flavor or higher-quality products, concentrations may be closer to 1-2%.
3. **Confectionery (candies, gummies, chocolates)**:
   * **0.5% to 2%** by weight, depending on whether the extract is being used primarily for flavor or also for color. In candy coatings or fruit-flavored chocolates, blackberry extract is commonly added in these ranges.
4. **Baked Goods (cakes, cookies, pastries)**:
   * Typically **0.5% to 2%** by weight, depending on whether the extract is being used to add flavor or color. For a more intense blackberry taste in premium products, higher concentrations are used.
5. **Sauces, Jams, and Preserves**:
   * **0.5% to 3%** by weight. Blackberry extract may be used to complement or enhance the natural fruit flavor, particularly in spreads or gourmet sauces.
6. **Health and Nutraceutical Products**:
   * In supplements or fortified products, blackberry extract can be used in higher concentrations, ranging from **1% to 3%**, especially if marketed for its antioxidant or health benefits.

Key Considerations:

* **Flavor vs. Color**: Blackberry extract is often used for both flavor and color, so the concentration can depend on whether the emphasis is on the flavor or the visual appeal.
* **Form of Extract**: More concentrated forms (like powders or highly concentrated liquids) may require smaller amounts compared to less concentrated liquid extracts or juices.

Due to its potent flavor, blackberry extract is typically used in relatively small amounts, with manufacturers adjusting the concentration based on the desired balance of flavor, color, and other characteristics in the final product.

[1:30](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732080610669599)

BeeChoo Liang

Bourbon extract, made from bourbon whiskey and used primarily for flavoring, imparts a rich, warm, and slightly smoky flavor with vanilla notes. Because of its strong and distinct flavor profile, it is typically used in small amounts in commercial food products.  
Typical Amounts of Bourbon Extract in Commercial Food Products:

* **General range**: **0.1% to 2%** by weight, though the exact amount can vary depending on the product and desired flavor strength.

Here are some typical applications and amounts:

1. **Baked Goods (cakes, cookies, pastries)**:
   * **0.1% to 0.5%** by weight is common for flavoring. Bourbon extract enhances the depth of the product without overpowering other flavors.
   * In more premium or gourmet baked goods, it can go up to **1%** to emphasize the bourbon flavor.
2. **Confectionery (candies, chocolates, fillings)**:
   * Around **0.1% to 0.5%** by weight, depending on the intensity of the bourbon flavor desired.
   * Higher concentrations may be used in some gourmet or premium products.
3. **Ice Cream and Dairy Products**:
   * Typically **0.1% to 0.5%** by weight for flavor enhancement, used to provide a subtle bourbon note in the background.
4. **Sauces, Marinades, and Glazes**:
   * Usually, **0.2% to 1%** by weight, especially in premium or specialty products, to provide a richer, more complex flavor profile.
5. **Beverages (non-alcoholic, flavoring)**:
   * For flavoring beverages like syrups, milkshakes, or mocktails, **0.1% to 1%** by weight is typical.
6. **Canned or Packaged Fruits (e.g., bourbon-flavored cherries)**:
   * **0.5% to 1%** by weight in products like flavored fruits, preserves, or jams, where the extract complements the sweetness and adds depth.

Key Considerations:

* **Flavor Strength**: Bourbon extract is quite concentrated, so small amounts are usually sufficient to achieve the desired flavor.
* **Alcohol Content**: Commercial bourbon extracts typically contain a small amount of alcohol, but the alcohol is generally cooked off or evaporated during food processing. If alcohol content is a concern, alcohol-free extracts are also available.

In summary, bourbon extract is typically used in small amounts, usually **0.1% to 1%** by weight in most commercial food products, with the exact amount depending on the desired intensity of the flavor.

[1:32](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732080737813659)

BeeChoo Liang

Broccoli seed extract, known for its potential health benefits due to its high content of sulforaphane (a compound believed to have antioxidant and anti-inflammatory properties), is typically used in commercial food products as a functional ingredient. It's not commonly used for flavor but rather for its nutritional and health-enhancing properties.  
Typical Amounts of Broccoli Seed Extract in Commercial Food Products:

* **General range**: **0.1% to 1%** by weight, depending on the desired health benefits and the specific food application.

Here are some typical uses and amounts:

1. **Health Supplements or Nutraceuticals**:
   * **0.5% to 1%** by weight. Broccoli seed extract is often used in higher concentrations in dietary supplements, functional foods, and beverages marketed for their antioxidant or detoxification benefits.
2. **Beverages (health drinks, smoothies)**:
   * Typically around **0.1% to 0.5%** by weight. The extract is usually added for its health benefits rather than flavor, as it doesn't contribute significantly to taste.
3. **Fortified Foods (snack bars, energy bars)**:
   * **0.1% to 0.5%** by weight. It’s used in these products to provide nutritional value, specifically targeting the antioxidant and detox benefits, without affecting the flavor profile.
4. **Dairy and Plant-based Products**:
   * **0.1% to 0.3%** by weight. In products like yogurt or plant-based beverages, broccoli seed extract may be added for its health benefits, particularly its sulforaphane content.
5. **Meal Replacement Products**:
   * **0.1% to 0.5%** by weight, typically used to boost the nutritional profile, especially in functional or "superfood"-focused products.

Key Considerations:

* **Flavor**: Broccoli seed extract is not used primarily for flavor, so it is added in relatively small amounts, typically within the range of 0.1% to 1%.
* **Concentration and Bioavailability**: The extract is often used in highly concentrated forms to provide the maximum possible health benefits, specifically sulforaphane, which is known for its antioxidant properties.

Overall, broccoli seed extract is generally used at low concentrations (often **0.1% to 0.5%** by weight) in functional food products, focusing on its health benefits rather than flavor contribution.

[1:34](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732080894548369)

BeeChoo Liang

Camu camu extract, derived from the fruit of the camu camu plant, is valued primarily for its high vitamin C content and antioxidant properties. It is typically used in commercial food products for its health benefits rather than its flavor, though it can also contribute a tart, sour taste.  
Typical Amounts of Camu Camu Extract in Commercial Food Products:

* **General range**: **0.1% to 2%** by weight, depending on the product and its purpose (health benefits or flavor).

Here are some common applications and amounts:

1. **Health Supplements and Nutraceuticals**:
   * **0.5% to 2%** by weight. Camu camu extract is often used in higher concentrations in dietary supplements, functional foods, and beverages that are marketed for their high vitamin C content and antioxidant properties.
2. **Beverages (smoothies, health drinks, juices)**:
   * **0.1% to 1%** by weight. In beverages, the extract is typically used to boost vitamin C levels and provide antioxidant benefits, though higher amounts may be used in concentrated health drinks or functional beverages.
3. **Snacks and Energy Bars**:
   * **0.1% to 0.5%** by weight. In snack bars or energy bars, camu camu extract is used to enhance the product's nutritional profile, especially as a source of vitamin C and antioxidants.
4. **Dairy and Plant-based Products (yogurt, smoothies, plant milks)**:
   * **0.1% to 0.5%** by weight. Camu camu extract can be used in dairy or plant-based products to boost the nutritional content without significantly altering the flavor, though the sourness of camu camu may impact taste at higher concentrations.
5. **Frozen Desserts (ice cream, sorbet)**:
   * **0.1% to 0.5%** by weight. In frozen products, camu camu extract can be used for both flavor and nutritional benefits, though its sourness must be balanced with other ingredients.

Key Considerations:

* **Health Benefits**: The extract is valued for its high vitamin C content (up to 60 times higher than an orange) and its antioxidant properties, which are the primary reason for its use in commercial food products.
* **Flavor Profile**: Camu camu extract has a tart, sour taste, so it is typically used in small amounts to avoid overpowering the product’s flavor, especially when included in sweet items like smoothies or desserts.
* **Concentration**: Since the extract is often in a concentrated form, even small amounts can deliver significant nutritional benefits.

In summary, camu camu extract is generally used in small amounts, typically **0.1% to 1%** by weight, in most commercial food products, with higher concentrations used in health-focused products like supplements and functional beverages.

[1:35](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732080955125769)

BeeChoo Liang

Caramel extract is commonly used in commercial food products to impart a rich, sweet, and slightly toasted flavor, mimicking the taste of caramelized sugar. It is often used in baking, candy-making, beverages, and desserts. The amount of caramel extract used in food products depends on the product type and the desired intensity of flavor.  
Typical Amounts of Caramel Extract in Commercial Food Products:

* **General range**: **0.1% to 1%** by weight, though higher concentrations may be used in certain applications.

Here are some common uses and amounts:

1. **Baked Goods (cakes, cookies, pastries)**:
   * Typically **0.1% to 0.5%** by weight, depending on the desired caramel flavor intensity. In more premium or gourmet baked goods, the concentration may be closer to **1%**.
2. **Confectionery (candies, chocolates, caramels)**:
   * **0.2% to 1%** by weight. Caramel extract can enhance the overall caramel flavor or complement other sweet ingredients, particularly in caramel-flavored candies or chocolates.
3. **Beverages (coffee, flavored syrups, sodas)**:
   * Usually around **0.1% to 0.5%** by weight. The extract is often used to create caramel-flavored syrups or to add a caramel note to coffee drinks and soft drinks.
4. **Dairy and Plant-based Products (yogurt, ice cream, milkshakes)**:
   * **0.1% to 0.5%** by weight. In dairy or plant-based desserts, caramel extract can be used to add flavor to ice cream, milkshakes, and yogurt.
5. **Sauces, Dressings, and Marinades**:
   * Generally **0.1% to 0.3%** by weight. Caramel extract is sometimes used to enhance the sweetness and depth of flavor in savory sauces or glazes, such as teriyaki or barbecue sauce.
6. **Snack Foods (granola, trail mix)**:
   * Typically **0.1% to 0.3%** by weight, where caramel extract is used to enhance the overall flavor profile, especially in snack bars or other sweet snack foods.

Key Considerations:

* **Flavor Intensity**: Caramel extract is typically potent, so small amounts are sufficient to impart the desired flavor. The amount used will vary depending on how strong a caramel flavor is required.
* **Form of Extract**: The concentration can vary between liquid and powdered forms of caramel extract. The liquid form is more common in food products.

In summary, caramel extract is typically used in small amounts, generally **0.1% to 1%** by weight in most food products. The extract is used to enhance or complement other flavors, providing a rich, caramelized sweetness to a wide range of products.

[1:37](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732081034373469)

BeeChoo Liang

Cardamom extract, derived from the seeds of the cardamom plant, is used in commercial food products for its aromatic, warm, and slightly spicy flavor with citrusy undertones. It is typically used in small amounts due to its strong and concentrated flavor profile.  
Typical Amounts of Cardamom Extract in Commercial Food Products:

* **General range**: **0.1% to 1%** by weight, depending on the product and the desired intensity of flavor.

Here are some common applications and typical usage amounts:

1. **Baked Goods (cakes, cookies, pastries)**:
   * **0.1% to 0.5%** by weight. Cardamom extract is used to infuse a warm, exotic flavor into baked goods, often in products such as spice cakes, cookies, or Scandinavian pastries.
2. **Beverages (coffee, tea, flavored syrups)**:
   * Typically around **0.1% to 0.3%** by weight. Cardamom extract is used in coffee, chai tea, and syrups to provide a distinctive spice flavor that complements other ingredients.
3. **Confectionery (candies, chocolates, gummies)**:
   * **0.1% to 0.5%** by weight. Cardamom extract can be used to flavor chocolates, candies, or gummies, contributing a subtle spicy-sweet taste.
4. **Dairy Products (yogurt, ice cream, milk-based drinks)**:
   * **0.1% to 0.3%** by weight. In dairy products like flavored yogurt or ice cream, cardamom extract is used to enhance the flavor with a warm, exotic note.
5. **Savory Products (curries, sauces, marinades)**:
   * **0.2% to 0.5%** by weight. Cardamom extract can be used in savory products like curries, sauces, and marinades to provide a complex, aromatic flavor that complements other spices.
6. **Snacks and Granola Bars**:
   * Typically **0.1% to 0.3%** by weight. Cardamom extract can be used in flavored snack bars or trail mixes to add a distinct spice element.

Key Considerations:

* **Flavor Intensity**: Cardamom extract is very potent, so only small amounts are needed to achieve the desired flavor, which is why it’s generally used in the **0.1% to 0.5%** range.
* **Form of Extract**: The strength of the extract may vary depending on whether it's liquid or concentrated powder. In liquid form, it is generally used in smaller quantities than powdered cardamom.

In summary, cardamom extract is typically used in small amounts (typically **0.1% to 1%** by weight) in commercial food products, depending on the desired intensity of flavor and the type of product being created. It is a flavorful and potent spice that adds complexity to both sweet and savory foods.

[1:38](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732081126991629)

BeeChoo Liang

Chaga extract, derived from the medicinal mushroom *Inonotus obliquus*, is known for its potential health benefits, including antioxidant properties and immune support. It is commonly used in dietary supplements, functional foods, and beverages. Because of its earthy, bitter taste, it is typically used in relatively small amounts to provide health benefits without overpowering the flavor of the product.  
Typical Amounts of Chaga Extract in Commercial Food Products:

* **General range**: **0.1% to 1%** by weight, though this can vary depending on the form of the extract (e.g., powdered, liquid, or concentrated) and the intended health benefits of the product.

Here are some typical applications and amounts:

1. **Health Supplements and Nutraceuticals**:
   * **0.5% to 1%** by weight. Chaga extract is often used in higher concentrations in supplements and functional foods, where the primary goal is to provide a therapeutic dose of its bioactive compounds, such as polysaccharides and antioxidants.
2. **Beverages (teas, health drinks, coffees)**:
   * **0.1% to 0.5%** by weight. Chaga extract is commonly added to functional beverages like health teas, coffee blends, or herbal infusions for its health-promoting properties. It can also be included in "superfood" drinks or smoothies.
3. **Energy Bars and Snacks**:
   * **0.1% to 0.5%** by weight. In products like energy bars, protein bars, or snack mixes, chaga extract is used to boost the nutritional profile with antioxidants and other health benefits, without altering the taste too significantly.
4. **Frozen Desserts (ice cream, sorbet)**:
   * **0.1% to 0.3%** by weight. When used in frozen products, chaga extract is often added to provide additional nutritional value, but it is generally used in small amounts to avoid changing the product’s flavor too much.
5. **Dairy and Plant-based Products (yogurt, plant milks)**:
   * **0.1% to 0.3%** by weight. In dairy or plant-based drinks and yogurts, chaga extract is typically used to increase the product’s functional benefits without overwhelming the flavor.
6. **Cereals and Granola**:
   * **0.1% to 0.5%** by weight. Chaga extract is sometimes added to breakfast cereals, granola, or muesli for its health benefits, especially in products marketed as "functional foods."

Key Considerations:

* **Taste**: Chaga has an earthy, somewhat bitter flavor, so it is typically used in small quantities to avoid overpowering the other flavors in the product. The amount used can vary depending on the form (e.g., powder vs. liquid extract).
* **Concentration**: Since chaga extract is often highly concentrated, even small amounts are enough to provide significant health benefits. For more potent extracts, lower amounts may be sufficient.

In summary, chaga extract is typically used in small amounts, generally **0.1% to 1%** by weight, in most commercial food products. It is primarily included for its health-promoting properties, such as its antioxidant content and immune system support, and is used sparingly to maintain flavor balance.

[1:40](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732081219754609)

BeeChoo Liang

Chicken extract, which is derived from the concentrated broth or flavorings of chicken, is commonly used in commercial food products to impart savory, umami-rich flavors. It is widely used in soups, sauces, seasonings, and processed meats.  
Typical Amounts of Chicken Extract in Commercial Food Products:

* **General range**: **0.1% to 1%** by weight, although the amount can vary depending on the product type and flavor profile.

Here are some typical applications and the amounts of chicken extract used:

1. **Soups and Broths**:
   * **0.1% to 0.5%** by weight. Chicken extract is used to enhance the chicken flavor in soups, broths, and ready-made meal bases. In concentrated or dehydrated forms, higher percentages may be used for added depth.
2. **Sauces and Gravies**:
   * **0.1% to 0.5%** by weight. In products like gravies, marinades, and sauces (e.g., chicken gravy, BBQ sauce), chicken extract is added to boost the savory umami profile and enrich the overall flavor.
3. **Seasoning Blends**:
   * **0.1% to 1%** by weight. Chicken extract is a common component in seasoning mixes for chicken and other meats, as well as in packaged seasoning blends for soups, stews, and casseroles.
4. **Processed Meats (chicken-based products, hot dogs, sausages)**:
   * **0.1% to 0.5%** by weight. Chicken extract can be used in processed chicken products, such as sausages, hot dogs, and ready-to-eat meals, to enhance the natural chicken flavor.
5. **Ready Meals (frozen meals, convenience foods)**:
   * **0.1% to 0.5%** by weight. In ready-to-eat or frozen meals that feature chicken or poultry as a key ingredient, chicken extract helps enhance the flavor, especially in products that are processed or pre-cooked.
6. **Snacks and Seasoned Chips**:
   * **0.1% to 0.3%** by weight. Chicken extract can be used in snack products like flavored chips, popcorn, or crackers to provide a savory, chicken-based seasoning.

Key Considerations:

* **Flavor Profile**: Chicken extract is used to provide a rich, savory, umami flavor. Its concentration can vary depending on whether it is used to enhance the chicken flavor in a product or provide a more subtle, background note.
* **Concentration**: The extract is typically used in a concentrated form (liquid or powder), and even small amounts can provide a significant flavor impact.

In summary, chicken extract is generally used in small amounts, typically **0.1% to 1%** by weight in most commercial food products, depending on the desired flavor intensity. It is primarily used to enhance the savory, umami profile of products and is especially common in soups, sauces, gravies, processed meats, and seasonings.

[1:41](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732081291600709)

BeeChoo Liang

Cod extract, derived from the fish, is typically used in commercial food products to provide a rich, umami, and savory flavor, much like other fish or seafood extracts. It is especially popular in products like soups, sauces, seafood-based foods, and seasoning blends.  
Typical Amounts of Cod Extract in Commercial Food Products:

* **General range**: **0.1% to 1%** by weight, although the amount can vary depending on the type of product and the flavor intensity desired.

Here are some common applications and amounts:

1. **Soups and Broths**:
   * **0.1% to 0.5%** by weight. Cod extract is often used in fish soups, broths, and ready-made meal bases to enhance the natural seafood flavor. In concentrated or dehydrated forms, higher percentages may be used for a more pronounced flavor.
2. **Seafood Sauces and Gravies**:
   * **0.1% to 0.5%** by weight. In sauces, gravies, or marinades that are used with fish or seafood dishes, cod extract adds richness and depth to the overall flavor profile.
3. **Seasoning Blends**:
   * **0.1% to 0.5%** by weight. Cod extract is included in seasoning blends for seafood, such as fish seasoning, fish fry mixes, or seafood broths, to boost the seafood flavor.
4. **Processed Seafood Products (fishcakes, fish fingers)**:
   * **0.1% to 0.5%** by weight. Cod extract is often used in processed fish products, like fishcakes or fish fingers, to enhance the natural fish flavor.
5. **Ready Meals (frozen meals, convenience foods)**:
   * **0.1% to 0.3%** by weight. In ready-to-eat or frozen meals, especially those that feature seafood or fish as a main ingredient, cod extract helps to enhance the flavor, particularly in pre-cooked or processed dishes.
6. **Snacks (seafood-flavored chips, crackers)**:
   * **0.1% to 0.3%** by weight. Cod extract may be used in flavored snacks, such as chips or crackers, to give them a seafood or fish-flavored seasoning.

Key Considerations:

* **Flavor Profile**: Cod extract is used to provide a savory, umami-rich flavor. It is typically employed in seafood-related products to intensify the fish flavor without adding too much fishiness.
* **Form of Extract**: Cod extract is often used in concentrated liquid or powder forms, which are potent, so small amounts are sufficient to impart a significant flavor.

In summary, cod extract is typically used in small amounts, usually around **0.1% to 1%** by weight in most commercial food products. It is primarily added to enhance seafood flavors, especially in soups, sauces, processed seafood products, and seasonings.

[1:42](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732081364717679)

BeeChoo Liang

Cumin extract, derived from the seeds of the cumin plant, is used in commercial food products primarily to add a warm, earthy, and slightly peppery flavor with citrusy undertones. It is typically used in small quantities, as cumin extract is quite potent and concentrated.  
Typical Amounts of Cumin Extract in Commercial Food Products:

* **General range**: **0.1% to 0.5%** by weight, although the amount can vary based on the product type and the desired flavor profile.

Here are some common applications and typical usage amounts:

1. **Baked Goods (savory bread, crackers, biscuits)**:
   * **0.1% to 0.3%** by weight. Cumin extract can be used in small quantities in savory baked goods to give them a distinct spiced flavor, especially in products like naan, crackers, and certain breads.
2. **Seasoning Blends**:
   * **0.2% to 0.5%** by weight. Cumin extract is a key ingredient in spice mixes like taco seasoning, curry powder, and garam masala, where it imparts an earthy, warm flavor. It is typically used in modest amounts within these blends.
3. **Ready Meals (soups, stews, curries)**:
   * **0.1% to 0.3%** by weight. In pre-made meals like soups, stews, and curries, cumin extract is used to enhance the overall spiced flavor profile, contributing to a more complex and rounded taste.
4. **Snack Foods (chips, crackers, seasoning mixes)**:
   * **0.1% to 0.3%** by weight. Cumin extract may be added to flavored snack products, such as spiced chips, nuts, or crackers, to provide a signature flavor.
5. **Beverages (flavored drinks, smoothies)**:
   * **0.1% to 0.2%** by weight. In beverages, especially those focused on ethnic or exotic flavors, cumin extract may be used in small amounts to enhance the overall taste, particularly in savory or health-focused drinks.
6. **Savory Sauces and Marinades**:
   * **0.1% to 0.3%** by weight. Cumin extract can be used in sauces and marinades, such as for barbecue or meat-based sauces, where its bold flavor complements other spices.

Key Considerations:

* **Flavor Strength**: Cumin extract is concentrated and has a strong, distinct flavor, so it is used in small amounts (typically **0.1% to 0.5%** by weight) to avoid overpowering the product.
* **Form**: Cumin extract is usually available in liquid form, but powdered cumin may also be used, with the extract form providing a more potent, consistent flavor.

Summary:  
Cumin extract is typically used in small amounts, generally between **0.1% to 0.5%** by weight, in commercial food products. It is most commonly found in savory foods like seasonings, snacks, ready meals, sauces, and beverages, where it adds a warm, earthy depth to the flavor profile.

[1:44](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732081448545489)

BeeChoo Liang

Curcuma extract, derived from the *Curcuma longa* plant (commonly known as turmeric), is widely used in commercial food products for both its vibrant yellow color and its distinct earthy, slightly bitter flavor. It is also valued for its potential health benefits, particularly its antioxidant and anti-inflammatory properties due to the compound curcumin.  
Typical Amounts of Curcuma (Turmeric) Extract in Commercial Food Products:

* **General range**: **0.1% to 2%** by weight, depending on the product type and the desired intensity of flavor or color.

Here are some common applications and typical usage amounts:

1. **Seasoning Blends and Spice Mixes**:
   * **0.2% to 1%** by weight. Curcuma extract is a key ingredient in many spice blends, including curry powder, garam masala, and other global spice mixes. It provides both color and flavor, contributing an earthy, slightly bitter taste.
2. **Ready Meals and Sauces**:
   * **0.1% to 0.5%** by weight. In prepared foods like curries, sauces, stews, and ready meals, curcuma extract is used to give a vibrant yellow color and enhance the flavor profile. It can be used in larger amounts in curry-based dishes.
3. **Beverages (juices, health drinks, smoothies)**:
   * **0.1% to 0.3%** by weight. Turmeric extract is commonly added to health-focused beverages, such as turmeric lattes, juices, smoothies, and wellness drinks, where it is included for both flavor and health benefits. Higher concentrations may be used in products marketed as "superfood" drinks.
4. **Snack Foods (chips, crackers, popcorn)**:
   * **0.1% to 0.3%** by weight. Curcuma extract is often included in savory snacks like chips, crackers, or popcorn to provide color and flavor. It’s especially common in snacks marketed with health or wellness claims.
5. **Dairy Products (yogurt, plant-based milks, ice cream)**:
   * **0.1% to 0.3%** by weight. In dairy or plant-based products, curcuma extract is used primarily for its color and health benefits. It’s found in items like turmeric-flavored yogurt, plant-based milks, or ice cream.
6. **Condiments and Dressings**:
   * **0.1% to 0.5%** by weight. Curcuma extract is often used in condiments like mustard, salad dressings, and sauces, where it adds both color and a mild, earthy flavor.
7. **Functional Foods and Supplements**:
   * **0.5% to 2%** by weight. In dietary supplements and functional foods marketed for their health benefits, such as anti-inflammatory or antioxidant properties, turmeric extract can be used in higher concentrations, particularly when it’s standardized to a certain curcumin content.

Key Considerations:

* **Flavor Profile**: Curcuma extract has an earthy, slightly bitter flavor. It’s used sparingly to avoid overpowering other flavors, though in some dishes (e.g., curries or sauces), it may be used in higher concentrations.
* **Health Benefits**: The extract is often included for its curcumin content, which is believed to have health-promoting effects, including anti-inflammatory properties. This makes it more common in products marketed as functional or health-focused.
* **Color**: One of the primary uses of curcuma extract is for its yellow pigment, which is used in food products like mustards, cheeses, and baked goods.

Summary:  
Curcuma extract is typically used in small amounts, generally between **0.1% and 2%** by weight, in commercial food products. The amount used depends on whether the primary purpose is to enhance flavor, provide color, or deliver health benefits. It's commonly found in spice blends, beverages, sauces, snacks, and functional foods, where it imparts both a distinctive flavor and vibrant yellow color.

[1:45](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732081503752449)

BeeChoo Liang

Dandelion extract, derived from the dandelion plant (*Taraxacum officinale*), is used in commercial food products primarily for its potential health benefits, including antioxidant, anti-inflammatory, and diuretic properties. It also adds an earthy, mildly bitter flavor, which can be desirable in certain food and beverage categories.  
Typical Amounts of Dandelion Extract in Commercial Food Products:

* **General range**: **0.1% to 1%** by weight, depending on the form of the extract and the intended flavor or health benefit.

Here are some common applications and the typical usage amounts:

1. **Health Supplements and Functional Foods**:
   * **0.5% to 2%** by weight. Dandelion extract is often used in dietary supplements and functional foods, especially those marketed for detoxification, liver health, or digestive support. In these products, higher concentrations may be used to achieve therapeutic effects.
2. **Beverages (herbal teas, health drinks, smoothies)**:
   * **0.1% to 0.3%** by weight. Dandelion extract is frequently used in herbal teas and wellness beverages due to its mild bitterness and purported health benefits. It may also be added to smoothies or health-focused drinks as a functional ingredient.
3. **Prepared Meals and Sauces**:
   * **0.1% to 0.3%** by weight. In ready meals, soups, or sauces, dandelion extract may be used in small quantities to add a mild bitterness and enhance the nutritional profile, especially in organic or plant-based products.
4. **Snacks (energy bars, functional snacks)**:
   * **0.1% to 0.5%** by weight. Dandelion extract can be used in health-focused snacks, such as energy bars or functional chips, where it contributes both to flavor and nutritional value.
5. **Frozen Desserts (ice cream, sorbet)**:
   * **0.1% to 0.3%** by weight. In frozen desserts, dandelion extract might be used to add a unique, slightly bitter flavor, especially in artisanal or health-conscious product lines.
6. **Salad Dressings and Condiments**:
   * **0.1% to 0.3%** by weight. In certain salad dressings or condiments, dandelion extract may be used to introduce a bitter note, balancing other ingredients in the product.

Key Considerations:

* **Flavor Profile**: Dandelion extract is known for its slightly bitter, earthy flavor. It is typically used in small amounts to provide a subtle flavor, especially when used in functional or health-focused products.
* **Health Benefits**: Dandelion extract is often included for its potential health benefits, such as liver detoxification, diuretic properties, and antioxidant effects. This can be especially relevant in products marketed as natural or health-focused.
* **Form of Extract**: Dandelion extract is often available in liquid or powdered forms. The amount used can vary based on the concentration of the active compounds, like flavonoids and polyphenols.

Summary:  
Dandelion extract is typically used in commercial food products at **0.1% to 1%** by weight, with higher concentrations being common in health supplements or functional foods. It is typically added for its health benefits and to provide a mild bitter flavor, commonly found in beverages, snacks, herbal teas, and functional foods. The amount varies depending on the product's intended use and the desired strength of flavor or health impact.

[1:46](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732081595394379)

BeeChoo Liang

Dragon fruit extract, derived from the vibrant pink or white flesh of the dragon fruit (*Hylocereus undatus*), is used in commercial food products for both its appealing color and subtle, mildly sweet flavor. It is also recognized for its antioxidant properties and nutrient content, making it popular in health-focused or functional foods.  
Typical Amounts of Dragon Fruit Extract in Commercial Food Products:

* **General range**: **0.1% to 1%** by weight, depending on the form of the extract (e.g., liquid or powder) and the purpose (flavor enhancement, color, or health benefits).

Here are some common applications and typical usage amounts:

1. **Beverages (juices, smoothies, health drinks)**:
   * **0.1% to 0.3%** by weight. Dragon fruit extract is commonly used in juices, smoothies, and health-focused beverages for its mild sweetness, unique flavor, and vibrant color. It is typically added in small quantities to complement other fruit flavors.
2. **Frozen Desserts (ice cream, sorbet, popsicles)**:
   * **0.1% to 0.5%** by weight. Dragon fruit extract is added to frozen desserts like ice cream, sorbet, or popsicles to provide a natural color and flavor, enhancing the product's appeal.
3. **Snacks (energy bars, functional snacks)**:
   * **0.1% to 0.5%** by weight. Dragon fruit extract can be used in energy bars, snack mixes, or health snacks, where it contributes both flavor and nutritional value, especially in products that are marketed as superfoods or with natural fruit ingredients.
4. **Yogurt and Plant-Based Dairy Products**:
   * **0.1% to 0.3%** by weight. In yogurt, plant-based milks, and other dairy products, dragon fruit extract may be added for flavor and color, providing a natural, exotic fruit profile.
5. **Confectionery and Gummies**:
   * **0.1% to 0.5%** by weight. Dragon fruit extract can be used in gummy candies or other confectionery products to add a distinct flavor and natural color, especially in products designed to be fruit-flavored or health-oriented.
6. **Salad Dressings and Sauces**:
   * **0.1% to 0.3%** by weight. Dragon fruit extract is sometimes used in salad dressings or sauces, where it can contribute both to the flavor and color, particularly in products that focus on fresh or exotic ingredients.
7. **Cereal and Granola**:
   * **0.1% to 0.3%** by weight. Dragon fruit extract may also be included in cereals, granola, or muesli, especially in products marketed as "superfoods" or those aimed at health-conscious consumers.

Key Considerations:

* **Flavor Profile**: Dragon fruit has a mild, slightly sweet, and subtly floral flavor. It is generally used in small quantities to enhance the flavor profile of a product without overpowering other ingredients.
* **Color**: One of the primary uses of dragon fruit extract is for its vibrant color, which can range from deep pink to magenta, making it a popular natural coloring agent in various food products.
* **Health Benefits**: Dragon fruit extract is often included in functional foods for its antioxidant properties, vitamins (like Vitamin C), and fiber content. It can be marketed as a "superfood" or as part of health-focused or wellness products.

Summary:  
Dragon fruit extract is typically used in commercial food products at **0.1% to 1%** by weight, depending on the form and the intended purpose. It is most commonly found in beverages, frozen desserts, snacks, dairy products, and confectionery, where it adds a mild sweetness, vibrant color, and potential health benefits. The amount used depends on the desired effect, whether it's for flavor, color, or nutrition.

[1:47](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732081658329919)

BeeChoo Liang

Elderflower extract, derived from the blossoms of the elderberry tree (*Sambucus nigra*), is used in commercial food products primarily for its delicate floral flavor and natural sweetness. It is popular in beverages, desserts, and health-focused products due to its light, aromatic profile and potential health benefits, including antioxidant properties.  
Typical Amounts of Elderflower Extract in Commercial Food Products:

* **General range**: **0.1% to 1%** by weight, although the exact amount can vary depending on the product type, the form of extract (e.g., liquid, powder, or concentrate), and the intended flavor profile.

Here are some common applications and typical usage amounts:

1. **Beverages (juices, sodas, syrups, flavored waters)**:
   * **0.1% to 0.5%** by weight. Elderflower extract is commonly used in beverages, including elderflower sodas, syrups, flavored waters, and fruit juices. It imparts a light, floral sweetness that enhances the overall flavor of the drink. In concentrated forms, higher amounts may be used.
2. **Frozen Desserts (ice cream, sorbet, gelato)**:
   * **0.1% to 0.3%** by weight. Elderflower extract is used in ice cream, sorbet, and gelato for its refreshing floral flavor, adding a sophisticated touch to frozen treats. It is usually incorporated in small quantities to avoid overpowering the other flavors.
3. **Confectionery (candies, gummies, marshmallows)**:
   * **0.1% to 0.5%** by weight. Elderflower extract may be used in candies, gummies, or marshmallows, providing a floral note and light sweetness. It is especially popular in premium or artisanal confectionery lines.
4. **Desserts (cakes, pastries, tarts, puddings)**:
   * **0.1% to 0.3%** by weight. In desserts like cakes, pastries, tarts, and puddings, elderflower extract is used to impart a subtle, fragrant flavor that complements fruit-based fillings or enhances creamy textures.
5. **Salad Dressings and Sauces**:
   * **0.1% to 0.3%** by weight. Elderflower extract can be added to salad dressings, sauces, or vinaigrettes, contributing a floral, slightly sweet note that pairs well with delicate dishes, particularly those featuring fresh vegetables, fruits, or mild proteins.
6. **Health and Wellness Products (herbal teas, supplements, functional foods)**:
   * **0.1% to 1%** by weight. Elderflower extract is sometimes used in health-oriented products, such as herbal teas, wellness drinks, or dietary supplements, where it is valued for its potential antioxidant and anti-inflammatory benefits.
7. **Alcoholic Beverages (liqueurs, cocktails)**:
   * **0.1% to 0.5%** by weight. Elderflower extract is often used in alcoholic beverages, particularly in liqueurs, cocktails, and flavored spirits like elderflower gin or champagne. It adds a refreshing floral note to the drink, enhancing its appeal in premium and artisanal alcohols.

Key Considerations:

* **Flavor Profile**: Elderflower extract has a delicate, floral flavor with a mild sweetness and hints of pear, apple, and citrus. It is used sparingly to avoid overpowering the product's overall taste, making it ideal for use in lighter, more subtle flavor profiles.
* **Health Benefits**: Elderflower is traditionally used for its potential health benefits, including its antioxidant properties, immune support, and anti-inflammatory effects. As a result, it is often found in wellness-focused foods and beverages.
* **Form of Extract**: Elderflower extract can come in different forms, such as liquid, powder, or concentrate. The amount used depends on the concentration of the extract and the desired strength of the floral flavor.

Summary:  
Elderflower extract is typically used in commercial food products at **0.1% to 1%** by weight. It is most commonly found in beverages, frozen desserts, confectionery, and health products, where it imparts a light floral flavor and subtle sweetness. The amount used varies based on the desired flavor intensity and the form of extract used, with higher concentrations typically used in syrups and concentrated products.

New



BeeChoo LiangBeeChoo Liang  [3:05 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732086303122629)

Fish extract, derived from fish or fish parts, is commonly used in commercial food products for its umami flavor, as well as for enhancing the savory profile of various dishes. It is rich in amino acids, particularly glutamates, which contribute to the "savory" or "meaty" taste. Fish extract is typically used in broths, sauces, seasonings, and processed foods, including those with a seafood or umami-based flavor profile.  
Typical Amounts of Fish Extract in Commercial Food Products:

* **General range**: **0.1% to 3%** by weight, depending on the product type, the intended flavor strength, and the concentration of the extract.

Here are some common applications and typical usage amounts:  
1. **Broths and Soups**:

* **0.5% to 2%** by weight. Fish extract is frequently used in soups, broths, and stocks (both seafood and non-seafood), especially in Asian cuisines, where it contributes to a rich, savory umami flavor. The amount used can vary depending on whether the extract is a primary ingredient or just a flavor enhancer.

2. **Seasoning and Spice Blends**:

* **0.1% to 1%** by weight. Fish extract is often incorporated into seasoning mixes or spice blends (such as those used for seafood dishes, fish sauces, or marinades). It can enhance the overall flavor profile without being the dominant ingredient, providing a subtle depth of flavor.

3. **Sauces and Condiments**:

* **0.1% to 1%** by weight. Fish extract is a common ingredient in sauces such as fish sauce, teriyaki sauce, soy sauce, and other savory condiments. It is used to enhance the umami flavor and boost the richness of the sauce.

4. **Ready Meals and Prepared Dishes**:

* **0.1% to 1%** by weight. In ready meals, particularly those with a seafood or umami profile (e.g., seafood pastas, casseroles, or fish-based dishes), fish extract is used to improve the overall taste and create a more authentic flavor.

5. **Snack Foods (chips, crackers, seasoning mixes)**:

* **0.1% to 0.5%** by weight. Fish extract may be used in savory snack foods, such as fish-flavored chips, crackers, or seasonings, to create a more pronounced savory taste that complements other seasonings.

6. **Frozen and Canned Seafood Products**:

* **0.1% to 0.5%** by weight. In frozen or canned seafood, fish extract can be added to enhance the natural flavors of the fish or shellfish, creating a more flavorful product.

7. **Health and Functional Foods**:

* **0.1% to 1%** by weight. Fish extract is sometimes used in functional foods, especially those marketed for their protein or omega-3 content, or in specialized products like fish-based collagen supplements.

Key Considerations:

* **Flavor Profile**: Fish extract has a strong, savory, and umami-rich flavor due to the amino acids, especially glutamates, present in fish. Because of this, it is typically used in small amounts to avoid overwhelming the overall flavor.
* **Type of Fish**: The type of fish used can affect the intensity and flavor of the extract. For example, anchovy-based extracts are commonly used in sauces and seasonings for their strong umami and salty profile, while milder extracts might be used for more subtle flavoring in soups or snacks.
* **Concentration**: Fish extract can vary in concentration, with some products being more concentrated and requiring smaller amounts to achieve the desired flavor. Always check the product’s specifications for the exact concentration of active compounds.

Summary:  
Fish extract is typically used in commercial food products at **0.1% to 3%** by weight, depending on the product type and desired flavor strength. It is most commonly found in broths, soups, sauces, seasonings, and ready meals, where it provides a rich umami flavor. The amount used varies according to the product’s formulation, with higher concentrations found in concentrated sauces and broths.

[3:08](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732086519932549)

BeeChoo Liang

Yerba mate leaf extract, derived from the leaves of the *Ilex paraguariensis* plant, is commonly used in commercial food products for its unique, slightly bitter flavor and its stimulating effects due to caffeine content. It is frequently included in beverages, energy products, and functional foods due to its purported health benefits, including boosting energy, supporting metabolism, and providing antioxidants.  
Typical Amounts of Yerba Mate Leaf Extract in Commercial Food Products:

* **General range**: **0.1% to 5%** by weight, depending on the form of extract (liquid, powder, or concentrate) and the intended purpose (flavor, caffeine content, or health benefits).

Here are some common applications and typical usage amounts:  
1. **Beverages (Energy Drinks, Teas, Health Drinks)**:

* **0.1% to 1%** by weight. Yerba mate extract is commonly used in energy drinks, ready-to-drink teas, and other health-focused beverages. It is often used in smaller amounts to provide a moderate caffeine boost and a unique flavor without overpowering the other ingredients. For energy drinks, higher concentrations may be used to achieve a more noticeable effect.

2. **Dietary Supplements and Functional Foods**:

* **0.5% to 2%** by weight. Yerba mate extract is commonly used in dietary supplements, including pills, capsules, and powders, often marketed for energy, metabolism support, or weight loss. In these products, it is typically included for its antioxidant properties and stimulant effects. The amount used is based on the desired caffeine content and health benefit.

3. **Snack Foods (Energy Bars, Granola, Functional Snacks)**:

* **0.1% to 1%** by weight. Yerba mate extract is also found in energy bars, granola, or other snack foods that are marketed as functional, health-oriented, or energy-boosting. It is added in small amounts to provide a natural source of caffeine and other nutrients without overwhelming the flavor.

4. **Frozen Desserts (Ice Cream, Sorbet)**:

* **0.1% to 0.3%** by weight. In frozen desserts, such as ice cream or sorbet, yerba mate extract may be used to impart a distinct flavor and provide a mild caffeine boost. It is typically used in lower concentrations to avoid overpowering the taste of the dessert.

5. **Confectionery (Gummies, Chewing Gum)**:

* **0.1% to 0.5%** by weight. Yerba mate extract is sometimes used in functional confectionery products, such as gummies or chewing gum, to provide an energy-boosting effect. These products often combine yerba mate with other ingredients like vitamins or minerals for a combined health benefit.

6. **Sauces and Condiments**:

* **0.1% to 0.3%** by weight. Yerba mate extract may be used in small amounts in sauces, dressings, and marinades, particularly in functional or natural food products. It adds a unique flavor profile and may be marketed for its antioxidant and stimulating properties.

Key Considerations:

* **Flavor Profile**: Yerba mate has a distinct, slightly bitter, earthy, and herbal flavor, which can be challenging for some consumers. It is typically used in small amounts to avoid overpowering other flavors in the product.
* **Caffeine Content**: Yerba mate is naturally rich in caffeine, which makes it an attractive option for energy-boosting or metabolism-enhancing products. The amount of extract used in a product is often determined by the desired caffeine content.
* **Health Benefits**: Yerba mate extract is often included for its perceived health benefits, such as improved mental focus, increased energy, and antioxidant properties. It is often marketed as a natural alternative to other sources of caffeine, like coffee or synthetic stimulants.

Summary:  
Yerba mate leaf extract is typically used in commercial food products at **0.1% to 5%** by weight, depending on the product's intended purpose. It is most commonly found in beverages, energy products, dietary supplements, snacks, and sometimes in frozen desserts or confectionery. The extract is typically used for its unique flavor, stimulating effects from caffeine, and potential health benefits, with the amount varying based on the desired strength of flavor or caffeine content.

[3:11](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732086677105459)

BeeChoo Liang

Yeast extract is a popular ingredient used in commercial food products for its rich umami flavor, which enhances savory profiles in a variety of foods. It is made from the breakdown of yeast cells and is commonly used as a flavor enhancer, especially in soups, sauces, snacks, and prepared meals. Yeast extract is rich in amino acids, particularly glutamates, which are responsible for its savory, umami taste.  
Typical Amounts of Yeast Extract in Commercial Food Products:

* **General range**: **0.1% to 5%** by weight, depending on the product type, the desired flavor strength, and the form of yeast extract used (e.g., liquid, powder, or paste).

Here are some common applications and typical usage amounts:  
1. **Soups, Stocks, and Sauces**:

* **0.5% to 3%** by weight. Yeast extract is commonly added to soups, stocks, broths, and sauces to enhance the savory flavor and provide a rich, umami taste. In concentrated or premade products, higher amounts may be used to intensify flavor.

2. **Snack Foods (Chips, Crackers, Seasoning Mixes)**:

* **0.2% to 1%** by weight. Yeast extract is often used in savory snack foods like potato chips, popcorn, crackers, and seasoning mixes. It contributes to the overall umami flavor, making snacks taste richer and more flavorful.

3. **Prepared Meals and Ready-to-Eat Products**:

* **0.1% to 1%** by weight. In prepared meals such as frozen dinners, canned soups, and ready-to-eat meals, yeast extract can be used to enhance the savory profile and provide depth to the flavor. It's especially common in products that don't use traditional stock or broth.

4. **Vegetarian and Vegan Products**:

* **0.1% to 1%** by weight. Yeast extract is often used in vegetarian and vegan products, such as plant-based burgers, sauces, and meat substitutes, to provide the umami flavor typically associated with meat, as it mimics the savory taste of animal products.

5. **Condiments and Spreads (Marmite, Vegemite, etc.)**:

* **5% or higher** by weight. Yeast extract is a key ingredient in products like Marmite, Vegemite, and other similar spreads. In these types of products, the concentration of yeast extract is much higher, contributing to the strong, distinctive flavor.

6. **Beverages (Broth-based Drinks, Functional Beverages)**:

* **0.1% to 0.5%** by weight. Yeast extract is sometimes added to broth-based drinks or savory functional beverages, where it provides an umami flavor and can also contribute to the nutritional profile (e.g., B-vitamins).

7. **Bakery Products**:

* **0.1% to 0.3%** by weight. Yeast extract is occasionally used in bakery products to enhance the flavor, particularly in savory breads or rolls, and to boost the overall taste of the product.

Key Considerations:

* **Flavor Profile**: Yeast extract has a strong, savory, and umami-rich flavor due to its glutamate content. It is used in small to moderate amounts to avoid overpowering the product's overall taste, though in certain products like spreads, higher concentrations are used.
* **Nutritional Benefits**: Yeast extract is rich in vitamins, particularly B-vitamins, and minerals, making it a functional ingredient in health-oriented products. It is also a good source of protein and can be added to enhance the nutritional value of products.
* **Glutamate Content**: Yeast extract contains naturally occurring glutamates, which are responsible for its umami taste. This makes it a useful substitute for monosodium glutamate (MSG) in products seeking a natural flavor enhancer.

Summary:  
Yeast extract is typically used in commercial food products at **0.1% to 5%** by weight. It is found in a wide range of products, from soups, sauces, and prepared meals to snacks, spreads, and vegetarian items. The extract is most commonly used to enhance savory flavors and provide a rich umami profile. The amount used depends on the product’s intended taste and the form of yeast extract, with higher concentrations found in spreads like Marmite and Vegemite.

[3:15](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732086907855879)

BeeChoo Liang

White pepper extract is used in commercial food products for its pungent, spicy, and slightly woody flavor, which is milder than black pepper but still provides a noticeable heat and warmth. It is often used as a flavor enhancer in various savory products, especially in sauces, seasonings, and prepared meals. The extract allows for a more concentrated pepper flavor without the need for the whole pepper, offering consistency and easier control over the flavor profile.  
Typical Amounts of White Pepper Extract in Commercial Food Products:

* **General range**: **0.05% to 0.5%** by weight, though the exact amount depends on the product type, the strength of the extract, and the desired flavor profile.

Here are some common applications and typical usage amounts:  
1. **Sauces, Soups, and Condiments**:

* **0.05% to 0.2%** by weight. White pepper extract is often used in savory sauces, soups, gravies, and condiments to impart a mild peppery heat. In these products, the extract is used in small quantities to enhance flavor without overpowering the other ingredients.

2. **Seasonings and Spice Blends**:

* **0.1% to 0.5%** by weight. White pepper extract is commonly included in seasoning mixes, spice blends, and rubs, especially for white sauces or more delicately flavored dishes where black pepper might be too harsh. It adds a more subtle, refined heat and flavor.

3. **Processed Meats and Sausages**:

* **0.05% to 0.2%** by weight. White pepper extract can be found in processed meats and sausages to provide a mild pepper flavor that complements the savory profile of these products. The extract allows for more consistent flavor distribution in large batches.

4. **Ready-to-Eat Meals and Frozen Dinners**:

* **0.05% to 0.1%** by weight. In ready-to-eat meals, frozen dinners, and prepared meals, white pepper extract is used in small amounts to add a background heat and complexity to the overall dish without dominating the flavor.

5. **Dairy Products (Cheese, Sour Cream, Cream-Based Sauces)**:

* **0.05% to 0.2%** by weight. In dairy-based products like cheeses, sour creams, and cream sauces, white pepper extract can be used to complement the creamy texture and add a mild, warm spiciness that doesn’t overpower the dairy notes.

6. **Health and Functional Foods**:

* **0.05% to 0.1%** by weight. White pepper extract may also be found in health products or functional foods, where it can be used for its potential antioxidant properties or as a natural flavoring agent in wellness beverages or capsules.

Key Considerations:

* **Flavor Profile**: White pepper extract provides a mild, clean heat and is less pungent than black pepper. It has a distinctive, slightly woody and earthy flavor. This makes it suitable for use in delicately flavored dishes or those where a stronger pepper flavor would be overpowering.
* **Concentration**: White pepper extract is typically highly concentrated, meaning small amounts are needed to achieve the desired flavor intensity. The exact usage depends on the strength of the extract and the flavor profile of the final product.
* **Applications**: White pepper extract is favored in products where a more subtle heat is needed, particularly in white or creamy sauces, processed meats, and Asian-inspired dishes, where it provides an essential component of the flavor without the visual presence of black pepper.

Summary:  
White pepper extract is typically used in commercial food products at **0.05% to 0.5%** by weight. It is most commonly found in sauces, soups, seasonings, processed meats, and ready-to-eat meals, where it enhances flavor with a subtle, refined heat. The amount used depends on the product type and the desired flavor intensity, with more concentrated extracts requiring smaller quantities.

[3:16](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732086996170479)

BeeChoo Liang

Grain sorghum extract, derived from the *Sorghum bicolor* plant, is gaining popularity in the food industry due to its nutritional benefits, mild flavor, and versatility. It is rich in fiber, antioxidants, and other nutrients, making it an attractive ingredient for functional foods. Grain sorghum extract is used for its mild, slightly sweet, and nutty flavor profile, as well as for its health benefits, particularly in gluten-free and whole grain products.  
Typical Amounts of Grain Sorghum Extract in Commercial Food Products:

* **General range**: **0.5% to 5%** by weight, depending on the form of the extract (liquid or powder), the desired flavor intensity, and the specific application.

Here are some common applications and typical usage amounts:  
1. **Gluten-Free Products (Breads, Crackers, Pastas)**:

* **1% to 5%** by weight. Grain sorghum extract is often used in gluten-free baked goods, crackers, and pastas to improve texture, flavor, and nutritional profile. In these products, it contributes to the overall taste and provides fiber and antioxidants. The extract is typically used in small to moderate quantities to maintain the desired texture and consistency while enhancing the flavor.

2. **Breakfast Cereals and Snack Bars**:

* **0.5% to 3%** by weight. Grain sorghum extract is used in breakfast cereals, granola, and energy or protein bars to boost nutritional content, especially for fiber and antioxidants. It can also contribute a mild sweetness and nutty flavor to these products.

3. **Beverages (Smoothies, Functional Drinks)**:

* **0.5% to 2%** by weight. In beverages, such as smoothies, plant-based milk, or functional drinks, grain sorghum extract can be added for its mild flavor and nutritional benefits. It is typically used in smaller amounts to avoid altering the taste profile of the beverage significantly.

4. **Health Supplements and Protein Powders**:

* **1% to 3%** by weight. Grain sorghum extract is used in health supplements and protein powders for its antioxidant properties, dietary fiber, and potential anti-inflammatory benefits. It is added to enhance the nutritional value of the product without overpowering the flavor.

5. **Sauces and Seasonings**:

* **0.5% to 1%** by weight. Sorghum extract can be included in sauces, marinades, and seasoning mixes, especially those targeting health-conscious or gluten-free consumers. It can help thicken sauces and contribute to a more complex flavor profile.

6. **Gluten-Free Flours and Baking Mixes**:

* **1% to 5%** by weight. In gluten-free flour blends or baking mixes, sorghum extract is sometimes added to enhance flavor and improve the baking properties of the flour. The extract contributes to the overall taste and texture of the final product.

Key Considerations:

* **Flavor Profile**: Grain sorghum extract has a mild, slightly sweet, nutty flavor. It is often used to subtly enhance the flavor of baked goods, cereals, and snacks without overpowering the primary ingredients.
* **Nutritional Benefits**: Sorghum is a good source of fiber, antioxidants, and various micronutrients, making it a popular ingredient in health-oriented foods. The extract is typically added to products marketed as being higher in fiber or as functional foods with added health benefits.
* **Gluten-Free Usage**: Sorghum is commonly used in gluten-free applications, as it helps provide structure and texture to products that would otherwise rely on gluten-containing grains.

Summary:  
Grain sorghum extract is typically used in commercial food products at **0.5% to 5%** by weight, depending on the specific product and desired effect. It is most commonly found in gluten-free products, breakfast cereals, snack bars, beverages, and health supplements, where it provides a mild flavor, fiber, and nutritional benefits. The amount used varies according to the intended use, with higher concentrations typically used in baked goods or flour blends and lower amounts in beverages or seasoning applications.

[3:17](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732087057883809)

BeeChoo Liang

Thyme extract is commonly used in commercial food products for its aromatic, savory, and slightly minty flavor. It is derived from the leaves of the *Thymus vulgaris* plant and is valued for both its flavor and its potential health benefits, including antioxidant and antimicrobial properties. Thyme extract is often used as a flavoring agent in sauces, soups, marinades, seasonings, and ready-to-eat meals.  
Typical Amounts of Thyme Extract in Commercial Food Products:

* **General range**: **0.05% to 1%** by weight, depending on the form of the extract (liquid, powder, or concentrate), the desired flavor intensity, and the type of product.

Here are some common applications and typical usage amounts:  
1. **Sauces, Soups, and Stews**:

* **0.1% to 0.5%** by weight. Thyme extract is often used in savory sauces, soups, stews, and gravies to add depth of flavor. The amount used is typically low, as thyme extract has a strong, herbal flavor, and small amounts are enough to impart its characteristic taste.

2. **Seasonings and Spice Blends**:

* **0.1% to 0.5%** by weight. Thyme extract is commonly included in spice blends and seasoning mixes for meats, poultry, and vegetables. The extract helps to provide a consistent and convenient way to achieve thyme's distinct flavor in dry seasoning products.

3. **Marinades and Dressings**:

* **0.05% to 0.3%** by weight. In marinades, salad dressings, and dipping sauces, thyme extract is used to infuse a savory, herbaceous note to enhance the overall flavor profile of the product. The extract allows for better control over flavor intensity in these liquid products.

4. **Ready-to-Eat Meals and Frozen Foods**:

* **0.05% to 0.2%** by weight. In ready-to-eat meals, frozen dinners, and prepared foods, thyme extract is used in smaller quantities to provide a background herbal flavor that complements the other ingredients without overpowering the dish.

5. **Herb-Infused Beverages (Herbal Teas, Functional Drinks)**:

* **0.05% to 0.2%** by weight. Thyme extract is sometimes used in herbal teas or functional beverages for its flavor and potential health benefits. In these products, the extract is used in lower amounts to provide a subtle herbal note.

6. **Baked Goods**:

* **0.05% to 0.2%** by weight. Thyme extract can be added to savory baked goods like bread, crackers, and savory pastries to enhance their flavor. It is typically used in small amounts so that it complements other ingredients without being too overpowering.

7. **Snack Foods**:

* **0.05% to 0.3%** by weight. In savory snacks such as chips, nuts, and popcorn, thyme extract is sometimes used to create unique flavor profiles. It helps to provide a savory, aromatic taste that pairs well with other herbs and spices.

Key Considerations:

* **Flavor Profile**: Thyme extract has a strong, savory, slightly minty, and earthy flavor. It is often used in small amounts because its taste can be quite potent and can easily dominate if overused.
* **Concentration**: Thyme extract is typically highly concentrated, so only small quantities are needed to achieve the desired flavor. This makes it an efficient ingredient for providing consistent flavor across large batches of food products.
* **Health Benefits**: Thyme extract is known for its antioxidant, antimicrobial, and anti-inflammatory properties. These benefits, along with its pleasant flavor, make it a popular choice in functional foods and beverages, as well as in traditional culinary applications.

Summary:  
Thyme extract is typically used in commercial food products at **0.05% to 1%** by weight. It is commonly found in savory applications such as sauces, soups, marinades, seasonings, ready-to-eat meals, and snack foods. The amount used varies depending on the product and desired flavor intensity, with higher concentrations used in spice blends and lower amounts in ready-to-eat meals and beverages. The extract provides a savory, herbal flavor, and is often used in small amounts due to its strong taste.

[3:19](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732087195300019)

BeeChoo Liang

Tea extract is used in commercial food products primarily for its distinctive flavor, antioxidants, and health benefits. Tea extract can come from black, green, white, or other varieties of tea and is often concentrated to provide a more consistent and efficient way to impart tea's flavor profile and bioactive compounds to a variety of products. Tea extracts are commonly found in beverages, snacks, sauces, and health-oriented foods.  
Typical Amounts of Tea Extract in Commercial Food Products:

* **General range**: **0.1% to 5%** by weight, depending on the type of tea extract (green, black, etc.), the intended use, and the flavor intensity required.

Here are some common applications and typical usage amounts:  
1. **Beverages (Tea, Iced Tea, Functional Drinks)**:

* **0.1% to 1%** by weight. Tea extracts are most commonly used in beverages like ready-to-drink tea, iced tea, and functional drinks. The extract is used to provide the distinct tea flavor and the bioactive compounds (such as catechins in green tea). In these beverages, the amount of extract is typically low to ensure a balanced tea flavor that doesn't overwhelm the drink.

2. **Energy Drinks and Health Beverages**:

* **0.2% to 1%** by weight. Tea extracts, particularly green tea extract, are frequently used in energy drinks, sports drinks, and functional health beverages due to their antioxidant properties and potential metabolism-boosting effects. The extract is used to impart both flavor and health benefits, usually in small amounts to avoid an overpowering taste.

3. **Snacks and Confectionery (Chocolate, Gummies, Bars)**:

* **0.1% to 1%** by weight. In snacks and confectionery, such as chocolate, gummies, or snack bars, tea extract can be used to provide a unique flavor profile (like matcha in chocolate or green tea in candies) and to contribute antioxidants. These products use small quantities of tea extract to add flavor without affecting the texture or sweetness too much.

4. **Dairy Products (Yogurt, Ice Cream, Milk Drinks)**:

* **0.1% to 0.5%** by weight. Tea extract is sometimes used in dairy products like flavored yogurts, ice creams, or milk drinks. Green tea and matcha are especially popular in these applications. The extract adds flavor and can also offer a boost of antioxidants. The amount is typically kept low to ensure the tea flavor complements the dairy base.

5. **Sauces and Dressings**:

* **0.1% to 0.5%** by weight. Tea extract, especially black tea, can be used in sauces, marinades, and dressings for a subtle flavor enhancement. In these products, the extract is typically used in small amounts to avoid overpowering the overall flavor profile.

6. **Health Supplements (Capsules, Tablets, Powders)**:

* **1% to 5%** by weight. In dietary supplements, particularly those containing green tea extract, higher concentrations are used to provide a potent dose of the bioactive compounds, like catechins and polyphenols, which are believed to support weight loss, metabolism, and overall health. Tea extract can also be used for its antioxidant properties in powders or capsules.

7. **Baked Goods (Bread, Cakes, Cookies)**:

* **0.1% to 0.3%** by weight. Tea extract is sometimes added to baked goods, especially those aimed at health-conscious consumers. Matcha tea extract, for example, is popular in cakes, cookies, and muffins for both flavor and nutritional benefits. The extract is used in small amounts so that it doesn’t affect the texture of the baked product.

8. **Cosmetic and Personal Care Products**:

* **0.1% to 2%** by weight (in non-food applications). While this is outside the food category, it's important to note that tea extract is also a common ingredient in cosmetic and personal care products such as lotions, serums, and soaps due to its antioxidant and anti-inflammatory properties.

Key Considerations:

* **Flavor Profile**: Tea extracts have a wide range of flavors depending on the type of tea used (e.g., green tea is grassy and fresh, while black tea has a richer, malty flavor). The amount of extract used in food products depends on the desired strength of the tea flavor.
* **Concentration**: Tea extracts are typically concentrated to achieve the desired flavor and bioactive effects, so the amount used is relatively low compared to the volume of the final product.
* **Health Benefits**: Green tea extract, in particular, is popular in health-focused products due to its high content of antioxidants, such as catechins, and its potential health benefits, including improved metabolism and fat oxidation.

Summary:  
Tea extract is typically used in commercial food products at **0.1% to 5%** by weight. It is most commonly found in beverages like tea and iced tea, energy drinks, health supplements, and snacks. The amount varies depending on the product type, desired flavor strength, and the type of tea extract used. Green tea extract is especially popular in health-oriented products, while black tea extract may be more common in sauces and savory applications. Tea extracts provide both flavor and potential health benefits, especially antioxidants.

[3:21](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732087281505849)

BeeChoo Liang

Tamarind extract is used in commercial food products for its tangy, sour, and slightly sweet flavor, which adds depth and complexity to a variety of dishes. Derived from the pulp of the tamarind fruit (*Tamarindus indica*), the extract is commonly used in sauces, snacks, beverages, and condiments. Tamarind extract is valued for both its distinctive taste and its functional properties, including natural sweetness and acidity.  
Typical Amounts of Tamarind Extract in Commercial Food Products:

* **General range**: **0.1% to 3%** by weight, depending on the product type, the form of the extract, and the desired flavor profile.

Here are some common applications and typical usage amounts:  
1. **Sauces, Marinades, and Condiments**:

* **0.1% to 2%** by weight. Tamarind extract is widely used in savory sauces, marinades, chutneys, and condiments (like tamarind sauce or tamarind ketchup) for its tangy and slightly sweet flavor. The extract provides a sharp acidity and complexity to these products. In these applications, the extract is used in moderate amounts to balance the flavor and create the desired tartness.

2. **Beverages (Juices, Soft Drinks, and Smoothies)**:

* **0.1% to 1%** by weight. Tamarind extract is used in beverages, particularly in tropical or exotic drinks like tamarind juice, sodas, or cocktails. It imparts a tart, refreshing flavor and is often added in small amounts, as the extract is concentrated. It is also used in smoothies and functional drinks for both flavor and potential health benefits.

3. **Snacks (Chips, Nuts, and Savory Products)**:

* **0.1% to 0.5%** by weight. Tamarind extract is used in snacks such as flavored chips, roasted nuts, and savory snacks. It adds a tangy, sweet-and-sour flavor profile that enhances the taste experience. Typically, the extract is used in small quantities to achieve the desired flavor without overwhelming the product.

4. **Ready-to-Eat Meals and Frozen Foods**:

* **0.1% to 0.3%** by weight. Tamarind extract can be used in ready-to-eat meals and frozen foods, especially in Asian, Latin, or Indian-inspired dishes where a balance of sweet and sour flavors is common. It is used in small amounts to add flavor without overpowering the other ingredients.

5. **Candy and Confectionery**:

* **0.2% to 1%** by weight. Tamarind extract is sometimes used in candies, gummies, and sour sweets, especially those targeting a tropical or exotic flavor profile. In these products, the extract adds a unique tartness and sweetness. The amount used depends on the desired sourness and the overall flavor balance.

6. **Health Products (Supplements and Functional Foods)**:

* **0.1% to 1%** by weight. Tamarind extract is used in some functional foods and dietary supplements for its potential health benefits, such as aiding digestion and providing antioxidants. In these applications, it is typically used in small amounts, often combined with other ingredients for flavoring.

Key Considerations:

* **Flavor Profile**: Tamarind extract is known for its distinctive sourness with a mild sweetness. It can be used to add both tartness and complexity to foods and beverages, making it suitable for both savory and sweet products.
* **Concentration**: Tamarind extract is concentrated, so only small amounts are needed to achieve the desired flavor. It is typically used in lower concentrations for flavoring purposes, especially in savory products.
* **Health Benefits**: Tamarind is a source of antioxidants and has traditionally been used in various cultures for digestive and anti-inflammatory benefits, which makes tamarind extract an appealing ingredient for health-oriented products.

Summary:  
Tamarind extract is typically used in commercial food products at **0.1% to 3%** by weight, with the exact amount depending on the type of product and the desired flavor intensity. It is most commonly found in sauces, marinades, snacks, beverages, and confectionery. Tamarind extract provides a tangy, sour flavor with a hint of sweetness, and it is used in small to moderate amounts to enhance flavor profiles in a variety of food and beverage applications.

[3:23](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732087414308589)

BeeChoo Liang

Strawberry extract is used in commercial food products primarily for its sweet, fruity flavor and its ability to impart the distinctive taste of fresh strawberries. It is commonly found in beverages, confectionery, desserts, dairy products, and health-oriented foods. Strawberry extract can be in liquid, powder, or concentrated form, and it offers a more convenient and consistent alternative to using fresh fruit.  
Typical Amounts of Strawberry Extract in Commercial Food Products:

* **General range**: **0.05% to 2%** by weight, depending on the product type, the concentration of the extract, and the desired flavor intensity.

Here are some common applications and typical usage amounts:  
1. **Beverages (Juices, Soft Drinks, Smoothies)**:

* **0.05% to 0.5%** by weight. Strawberry extract is commonly used in beverages such as fruit juices, soft drinks, smoothies, and flavored waters. The extract imparts a fruity, sweet strawberry flavor without the need for fresh strawberries. The extract is used in smaller amounts because it is typically concentrated, and the goal is to create a natural strawberry flavor without overpowering the beverage.

2. **Confectionery (Candies, Gummies, Chewing Gum)**:

* **0.1% to 1%** by weight. Strawberry extract is often used in candies, gummies, and chewing gum to provide a fruity, sweet strawberry taste. The extract is used in small to moderate amounts to maintain the desired sweetness and flavor while ensuring consistency in taste across batches.

3. **Dairy Products (Yogurt, Ice Cream, Milkshakes)**:

* **0.1% to 1%** by weight. In dairy products like yogurt, ice cream, and milkshakes, strawberry extract is commonly used to flavor the product. It provides a natural and consistent strawberry flavor, and it is typically used in moderate amounts to ensure a balanced taste without overwhelming the dairy base.

4. **Baked Goods (Cakes, Muffins, Cookies)**:

* **0.05% to 0.3%** by weight. Strawberry extract can be used in baked goods to enhance flavor. It is often added to cakes, muffins, cookies, and other sweet baked items. In these products, the extract is typically used in small amounts to contribute to the overall fruitiness without affecting the texture or causing the flavor to be too overpowering.

5. **Jams, Jellies, and Preserves**:

* **0.2% to 1%** by weight. Strawberry extract is used in jams, jellies, and fruit preserves to enhance the strawberry flavor, especially when fresh fruit may be limited or too expensive. It provides a more consistent flavor and can be used in small to moderate amounts, depending on the desired strength of the flavor.

6. **Health and Functional Products (Supplements, Nutritional Bars)**:

* **0.05% to 1%** by weight. In health supplements, nutritional bars, and functional foods, strawberry extract may be used for its flavor and its antioxidant properties. The extract adds a natural fruit flavor and is used in small quantities to complement other ingredients.

7. **Frozen Desserts (Frozen Yogurt, Sorbets)**:

* **0.1% to 0.5%** by weight. Strawberry extract is frequently used in frozen desserts such as frozen yogurt, sorbets, and popsicles. It helps provide a strong strawberry flavor and consistent taste in frozen forms, where using fresh fruit could be challenging or lead to inconsistent flavor.

Key Considerations:

* **Flavor Profile**: Strawberry extract has a sweet, fruity flavor with a characteristic berry taste. It is often used in products where a consistent and natural strawberry flavor is desired.
* **Concentration**: Strawberry extract is typically concentrated, so only small amounts are needed to achieve the desired flavor. This makes it an efficient ingredient for flavoring, especially in mass production settings.
* **Health Benefits**: Strawberry extract, especially in its natural form, contains antioxidants like vitamin C and flavonoids. It is sometimes used in health-oriented products to provide both flavor and potential health benefits.

Summary:  
Strawberry extract is typically used in commercial food products at **0.05% to 2%** by weight, depending on the product type and the desired flavor intensity. It is most commonly used in beverages, confectionery, dairy products, baked goods, jams, and health products. The extract provides a natural and consistent strawberry flavor, making it a popular ingredient for achieving a sweet, fruity taste in a variety of food and beverage products.

[3:25](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732087517238149)

BeeChoo Liang

Tangerine extract is used in commercial food products for its sweet, tangy, and citrusy flavor, often providing a more consistent and convenient way to infuse the flavor of tangerines into products. It is commonly found in beverages, desserts, candies, sauces, and health products. Tangerine extract is available in liquid, powder, or concentrated form, and it is typically used in small quantities due to its potent flavor.  
Typical Amounts of Tangerine Extract in Commercial Food Products:

* **General range**: **0.05% to 1%** by weight, depending on the form of the extract (liquid, powder, or concentrate), the type of product, and the desired flavor intensity.

Here are some common applications and typical usage amounts:  
1. **Beverages (Juices, Soft Drinks, Smoothies)**:

* **0.05% to 0.5%** by weight. Tangerine extract is commonly used in fruit juices, sodas, sparkling waters, and smoothies to provide a bright, citrusy flavor. Because the extract is concentrated, it is typically used in smaller amounts to avoid overpowering the product. In beverages, it helps deliver the refreshing, tangy taste of tangerine without the need for large amounts of fresh fruit.

2. **Confectionery (Candies, Gummies, Chewing Gum)**:

* **0.1% to 1%** by weight. In candies, gummies, and chewing gum, tangerine extract is used to add a natural citrus flavor. The extract is typically used in moderate amounts to impart the right balance of sweet and tangy flavor, contributing to the overall flavor profile of the product.

3. **Dairy Products (Yogurt, Ice Cream, Milkshakes)**:

* **0.1% to 1%** by weight. Tangerine extract can be used in dairy products like yogurt, ice cream, and milkshakes. It provides a fruity citrus note that complements the creamy base. The extract is used in small amounts to maintain the desired flavor while ensuring the citrus taste isn't too overpowering.

4. **Baked Goods (Cakes, Cookies, Muffins)**:

* **0.05% to 0.3%** by weight. In baked goods like cakes, cookies, and muffins, tangerine extract is used to add a light citrus flavor. The extract is typically used in small amounts so that it enhances the product without changing the texture or making the flavor too intense.

5. **Sauces, Dressings, and Condiments**:

* **0.1% to 0.3%** by weight. Tangerine extract can be used in sauces, salad dressings, and condiments (like marinades) for a citrus twist. In these products, it adds tanginess and complexity, often pairing well with other fruit extracts or spices. The amount used is typically kept low to prevent the extract from overpowering other flavors.

6. **Health and Functional Products (Supplements, Nutritional Bars)**:

* **0.05% to 0.5%** by weight. In health-oriented products such as supplements, nutritional bars, or functional beverages, tangerine extract may be used for its flavor as well as its potential antioxidant benefits. The extract is generally used in small quantities to contribute flavor without affecting the overall nutritional content or texture.

7. **Frozen Desserts (Frozen Yogurt, Sorbets)**:

* **0.1% to 0.5%** by weight. In frozen desserts like frozen yogurt, sorbets, or popsicles, tangerine extract is used to provide a bright, refreshing citrus flavor. It is often used in moderate amounts to maintain a consistent flavor in frozen forms, where using fresh tangerines could be difficult or inconsistent.

Key Considerations:

* **Flavor Profile**: Tangerine extract has a tangy, sweet citrus flavor that is often described as brighter and less bitter than other citrus fruits like oranges or lemons. This makes it a popular choice for fruit-flavored products.
* **Concentration**: Tangerine extract is typically highly concentrated, so only small amounts are needed to achieve the desired flavor in commercial products. The extract is potent, and overuse can lead to an overpowering citrus taste.
* **Health Benefits**: Tangerines are a good source of vitamin C and other antioxidants. Therefore, tangerine extract is sometimes included in health-oriented products for its potential immune-boosting and anti-inflammatory properties.

Summary:  
Tangerine extract is typically used in commercial food products at **0.05% to 1%** by weight. It is commonly used in beverages, confectionery, dairy products, sauces, and health foods. The extract provides a refreshing citrus flavor, and its concentrated form allows manufacturers to use small amounts to create a natural, consistent taste of tangerine. It is especially popular in products where a bright, tangy citrus note is desired.

[3:26](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732087578685849)

BeeChoo Liang

Tangle extract, derived from seaweed species such as *Laminaria japonica* or *Saccharina japonica*, is sometimes used in commercial food products for its natural gelling, thickening, and flavor-enhancing properties. However, it is not as widely used as other seaweed extracts like agar or carrageenan. When used, tangle extract primarily functions as a gelling agent, a source of minerals (like iodine), and a natural thickener.  
Typical Amounts of Tangle Extract in Commercial Food Products:

* **General range**: **0.1% to 1%** by weight, depending on the specific application, product type, and desired effects (thickening, gelling, or flavor enhancement).

Here are some common applications and typical usage amounts for tangle extract:  
1. **Gelling Agents and Thickening (Jellies, Puddings, Gummies)**:

* **0.1% to 0.5%** by weight. Tangle extract, like other seaweed-derived gelling agents, can be used in products like jellies, puddings, and gummies. It is used to provide a natural gel-like texture without the need for synthetic additives. Due to its gelling properties, tangle extract is typically added in small amounts to achieve the desired consistency.

2. **Dairy Products (Yogurt, Ice Cream, Milkshakes)**:

* **0.1% to 0.3%** by weight. In dairy-based products such as yogurt, ice cream, or milkshakes, tangle extract may be used as a thickener or stabilizer. It helps improve the texture and consistency, giving the product a smoother mouthfeel. The amount used is typically low, as it is a concentrated source of thickening power.

3. **Nutritional Supplements (Powders, Capsules)**:

* **0.05% to 0.5%** by weight. In nutritional products, particularly those aimed at providing minerals like iodine, tangle extract is sometimes used for its trace mineral content. In powdered or capsule forms, it is typically used in small amounts to contribute the potential health benefits without overwhelming the product’s other ingredients.

4. **Soups, Sauces, and Dressings**:

* **0.1% to 0.3%** by weight. Tangle extract can be used in soups, sauces, and salad dressings as a natural thickener. It provides a viscous texture and can improve the consistency of these products. The extract is used in low amounts to prevent it from altering the flavor profile significantly.

5. **Vegetarian and Vegan Products**:

* **0.1% to 0.5%** by weight. In plant-based or vegetarian food products, tangle extract is sometimes used as a substitute for gelatin or animal-derived gelling agents. It is especially useful in creating vegan-friendly desserts, confectioneries, or snack bars with a chewy or firm texture.

Key Considerations:

* **Concentration**: Tangle extract is typically concentrated, meaning that it is used in small quantities to achieve the desired effect, whether for gelling, thickening, or texture modification.
* **Flavor**: Tangle extract is neutral in flavor but can impart slight sea-like undertones. The amount used is generally low to avoid affecting the taste of the final product.
* **Health Benefits**: Tangle extract is rich in minerals, particularly iodine, calcium, and magnesium. It may be included in food products targeting health-conscious consumers or those seeking to increase their intake of these minerals.

Summary:  
Tangle extract is typically used in commercial food products at **0.1% to 1%** by weight. Its main uses are as a gelling agent, thickener, or texture modifier in products like jellies, dairy products, soups, sauces, and vegan foods. Due to its concentrated form, only small amounts are needed to achieve the desired effects. It is also valued for its mineral content, particularly iodine, and is sometimes included in functional food products.

[3:28](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732087716960569)

BeeChoo Liang

Soybean extract is a versatile ingredient derived from soybeans, typically used for its protein content, flavor, and functional properties, such as emulsification and thickening. It is commonly used in a variety of commercial food products, including plant-based foods, sauces, beverages, and snacks. Soybean extract can be found in both concentrated liquid form and as a powder, and it is valued for its nutritional profile and ability to enhance the texture and flavor of foods.  
Typical Amounts of Soybean Extract in Commercial Food Products:

* **General range**: **0.1% to 5%** by weight, depending on the product type, the form of extract (liquid or powder), and the desired function (flavor, protein fortification, or texture).

Here are some common applications and typical usage amounts for soybean extract:  
1. **Plant-Based and Vegan Products (Meat Substitutes, Dairy Alternatives)**:

* **1% to 5%** by weight. In plant-based meat substitutes (like soy-based burgers, sausages, and deli slices) and dairy alternatives (such as soy milk, soy yogurt, and soy-based cheese), soybean extract is often used to provide protein and improve texture. Soybean extract enhances the protein content of these products and helps with the overall consistency and mouthfeel.

2. **Beverages (Soy Milk, Smoothies, Protein Shakes)**:

* **0.5% to 2%** by weight. Soybean extract is commonly used in beverages like soy milk, smoothies, and protein shakes to add flavor, thicken the texture, and increase protein content. It is particularly used in non-dairy beverages to replicate the creaminess of milk, and the amount used depends on the desired consistency and protein level.

3. **Sauces, Dressings, and Condiments**:

* **0.1% to 1%** by weight. Soybean extract can be used in sauces, salad dressings, and condiments (such as soy sauce or soy-based marinades). It serves as an emulsifier and thickener and helps improve the texture and stability of these products. It may also provide a mild umami flavor.

4. **Soups and Broths**:

* **0.1% to 1%** by weight. In soups and broths, soybean extract is often added to enhance the savory flavor and improve texture. It may be used in small amounts to provide body and depth to the liquid without altering the flavor too much.

5. **Baked Goods (Bread, Cakes, Muffins)**:

* **0.1% to 0.3%** by weight. Soybean extract is sometimes used in baked goods like bread, cakes, and muffins, where it helps improve the texture, increase protein content, and act as a natural emulsifier. The extract is used in small amounts, so it does not affect the taste or texture of the final product.

6. **Snack Foods (Energy Bars, Protein Bars, Chips)**:

* **0.1% to 1%** by weight. Soybean extract can be found in snack foods, especially those marketed as high-protein or plant-based. In protein bars, energy bars, and other snacks, it is used to increase the protein content and enhance texture. It is often used in moderate amounts to avoid altering the flavor.

7. **Nutritional Supplements (Protein Powders, Meal Replacements)**:

* **1% to 5%** by weight. Soybean extract is frequently used in nutritional supplements, particularly protein powders and meal replacement products. It is a valuable plant-based source of protein and is used in higher concentrations to contribute to the overall protein content of these products.

Key Considerations:

* **Concentration**: Soybean extract is typically concentrated, meaning small amounts are used to achieve the desired effect, especially when it comes to flavor and texture enhancement.
* **Flavor**: Soybean extract provides a mild, slightly nutty flavor. In most applications, it is used in amounts that don't overwhelm the product’s flavor profile.
* **Health Benefits**: Soybean extract is a rich source of plant-based protein, and it is often included in products targeted at consumers seeking to increase their protein intake or those following plant-based diets. It is also a source of vitamins and minerals such as calcium, iron, and B vitamins, particularly in fortified products.

Summary:  
Soybean extract is typically used in commercial food products at **0.1% to 5%** by weight, depending on the type of product and the desired effect. It is most commonly found in plant-based foods, beverages, sauces, soups, baked goods, and snacks. The extract is used for its protein content, emulsification properties, and to enhance the texture and flavor of foods.

[3:29](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732087797428119)

BeeChoo Liang

Sorghum extract, derived from the sorghum grain, is used in various commercial food products for its functional properties, such as providing natural sweetness, flavor enhancement, and thickening. It is typically found in syrup or powder form and is used in a variety of food and beverage applications. Sorghum extract is particularly popular in gluten-free and plant-based products, as it is a naturally gluten-free grain and can provide unique flavor and texture.  
Typical Amounts of Sorghum Extract in Commercial Food Products:

* **General range**: **0.1% to 5%** by weight, depending on the product type, the form of the extract (liquid syrup or powder), and the desired functionality (sweetness, thickening, or flavor enhancement).

Here are some common applications and typical usage amounts for sorghum extract:  
1. **Sweeteners (Sorghum Syrup, Energy Bars, Granola Bars)**:

* **0.5% to 5%** by weight. Sorghum syrup, a popular form of sorghum extract, is often used as a natural sweetener in products like energy bars, granola bars, baked goods, and sauces. It has a mild, molasses-like flavor and is a suitable alternative to refined sugars or corn syrup. The concentration of sorghum extract used in these products depends on the desired level of sweetness and the product's other ingredients.

2. **Gluten-Free Products (Breads, Crackers, Pancakes)**:

* **0.1% to 1%** by weight. Sorghum extract can be used in gluten-free products like bread, crackers, and pancakes as a flavor enhancer, texture improver, and binder. It helps provide structure and moisture to gluten-free products, and the extract is typically used in small amounts as part of a flour blend or as a supplement to other gluten-free grains.

3. **Beverages (Juices, Soft Drinks, Smoothies)**:

* **0.1% to 0.5%** by weight. In beverages, sorghum extract is used for its mild sweetness and to provide a slightly earthy, grain-like flavor. It can be used in juices, soft drinks, or smoothies to provide sweetness without the need for refined sugars. The extract is often used in smaller amounts in beverages to complement other ingredients.

4. **Baked Goods (Muffins, Cakes, Cookies)**:

* **0.1% to 1%** by weight. In baked goods, sorghum extract is used to provide sweetness and enhance texture. It is often found in gluten-free or healthier baked goods, where it contributes to a moist, tender crumb and adds a mild sweetness. It is usually added in small amounts to avoid altering the flavor too significantly.

5. **Sauces, Dressings, and Condiments**:

* **0.1% to 0.5%** by weight. Sorghum extract can also be used in sauces, dressings, and condiments as a natural sweetener and thickener. It adds a subtle flavor that complements other ingredients while providing a smooth, syrupy consistency. It is used in small amounts to prevent the extract from overpowering the taste of the product.

6. **Health and Nutritional Products (Supplements, Protein Bars)**:

* **0.1% to 1%** by weight. Sorghum extract may be used in health supplements, protein bars, or functional foods for its fiber content, antioxidants, and natural sweetness. In these products, it contributes to the overall nutritional profile and may be used in higher amounts if the product is targeting health-conscious consumers or aiming to deliver additional nutrients.

Key Considerations:

* **Concentration**: Sorghum extract, especially in syrup form, is concentrated, meaning only small amounts are needed to achieve the desired level of sweetness or texture in most applications.
* **Flavor**: Sorghum extract has a mild, earthy sweetness with a slightly malty or molasses-like taste. In many products, it serves as a natural sweetener without being as overpowering as some other syrups (e.g., corn syrup).
* **Health Benefits**: Sorghum is rich in fiber, antioxidants, and minerals like iron and magnesium. Sorghum extract can be included in products for its potential health benefits, particularly for gluten-free and plant-based foods.

Summary:  
Sorghum extract is typically used in commercial food products at **0.1% to 5%** by weight, depending on the application and the form of extract used. It is commonly found in sweeteners (like sorghum syrup), gluten-free products, beverages, baked goods, and sauces. Sorghum extract is prized for its mild sweetness, earthy flavor, and functional benefits, making it a versatile ingredient in both savory and sweet products.

[3:32](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732087967402319)

BeeChoo Liang

Spearmint extract is commonly used in commercial food products to provide a refreshing, minty flavor. It is often utilized in gum, candy, beverages, baked goods, and sauces, among other products. Due to its potent flavor, spearmint extract is used in relatively small amounts to achieve the desired taste without overwhelming the product.  
Typical Amounts of Spearmint Extract in Commercial Food Products:

* **General range**: **0.05% to 1%** by weight, depending on the type of product and the desired strength of the spearmint flavor.

Here are some common applications and typical usage amounts for spearmint extract:  
1. **Confectionery (Gum, Mints, Candies)**:

* **0.1% to 1%** by weight. In mint-flavored candies, chewing gum, and breath mints, spearmint extract is used to provide the characteristic minty flavor. The extract is typically used in concentrations closer to 1% in products like gum and mints, where a strong spearmint taste is desired. In hard or soft candies, the concentration is usually in the range of 0.1% to 0.5%.

2. **Beverages (Soft Drinks, Tea, Cocktails)**:

* **0.05% to 0.5%** by weight. In beverages such as soft drinks, tea, cocktails, or flavored waters, spearmint extract is used to provide a refreshing, cooling mint flavor. Since the extract is concentrated, it is typically used in small amounts, often around 0.05% to 0.5%, to achieve the desired flavor without overpowering other ingredients.

3. **Baked Goods (Cookies, Cakes, Pastries)**:

* **0.1% to 0.3%** by weight. In baked goods, such as cookies, cakes, or pastries, spearmint extract is used to impart a subtle mint flavor. It is typically used in small amounts (0.1% to 0.3%) to ensure the mint flavor is not too strong and complements other ingredients, particularly in products that also contain chocolate or fruits.

4. **Dairy Products (Ice Cream, Yogurt, Milkshakes)**:

* **0.1% to 0.3%** by weight. Spearmint extract can be found in dairy products like ice cream, yogurt, and milkshakes. The mint flavor is a popular addition in combination with chocolate, fruits, or nuts. The extract is used sparingly, usually in the range of 0.1% to 0.3%, to add freshness without overpowering the creamy base.

5. **Sauces, Dressings, and Condiments**:

* **0.05% to 0.2%** by weight. In sauces, dressings, or condiments, spearmint extract may be used to enhance flavor, particularly in Mediterranean or Middle Eastern-inspired dishes. The amount is typically lower than in confectionery, as it is used to add a subtle minty note, usually around 0.05% to 0.2% by weight.

6. **Health and Functional Products (Chewing Gums, Lozenges)**:

* **0.1% to 1%** by weight. In functional products like sugar-free chewing gums or lozenges, spearmint extract is often used both for its flavor and its potential to aid digestion or freshen breath. The amount used can be higher in products that are designed to offer a strong mint experience, reaching up to 1%.

Key Considerations:

* **Concentration**: Spearmint extract is highly concentrated, so it is generally used in very small quantities in commercial products to avoid overwhelming the flavor profile.
* **Flavor Profile**: Spearmint extract offers a sweet, cooling, and refreshing mint flavor, which makes it popular in both sweet and savory products. It is often considered milder and sweeter than peppermint, making it suitable for a variety of food types.
* **Health Benefits**: Spearmint is known for its soothing properties, especially for digestive health. While it’s not always a primary selling point, spearmint’s inclusion in some products may provide a sense of freshness or digestive relief.

Summary:  
Spearmint extract is typically used in commercial food products at **0.05% to 1%** by weight. It is most commonly found in candies, gum, beverages, baked goods, and dairy products. Due to its concentrated nature, it is used in small amounts to impart a refreshing, minty flavor that complements other ingredients without overpowering the product.

[3:34](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732088060824689)

BeeChoo Liang

Shiitake mushroom extract is used in commercial food products primarily for its umami-rich flavor and nutritional benefits, particularly its potential immune-boosting properties. The extract is commonly found in savory foods, soups, sauces, seasonings, and even health supplements. Due to its strong flavor profile, it is typically used in small amounts.  
Typical Amounts of Shiitake Mushroom Extract in Commercial Food Products:

* **General range**: **0.1% to 2%** by weight, depending on the product and the desired intensity of flavor.

Here are some common applications and typical usage amounts for shiitake mushroom extract:  
1. **Soups, Broths, and Stocks**:

* **0.1% to 1%** by weight. Shiitake mushroom extract is often used in soups and broths for its deep umami flavor. It adds a savory depth to the broth and is commonly used in both vegetarian and meat-based soups. In this application, it is usually used in lower amounts (0.1% to 0.5%) to enhance the natural flavors without overpowering the dish.

2. **Sauces and Seasonings**:

* **0.1% to 1%** by weight. Shiitake mushroom extract is often used in soy-based sauces, gravies, marinades, and seasoning blends. It enhances the umami profile of the sauce and provides a rich, earthy flavor. In these products, it is typically used in small quantities, as its flavor can be quite concentrated.

3. **Meat and Plant-Based Products (Meat Substitutes, Burgers, Sausages)**:

* **0.2% to 1%** by weight. In meat products, especially in plant-based meat substitutes (like soy or pea protein-based burgers), shiitake mushroom extract is used to mimic the savory, meaty taste that is often desired in these foods. It’s added in small quantities to improve the texture and flavor, usually between 0.2% and 1%.

4. **Snacks (Chips, Crackers, and Savory Snacks)**:

* **0.1% to 0.5%** by weight. In savory snacks such as chips, crackers, and snack bars, shiitake mushroom extract can be used to enhance the overall savory or "umami" profile of the product. It is typically added in small amounts to contribute to the flavor without overpowering the other ingredients.

5. **Health Supplements (Powders, Capsules, and Functional Foods)**:

* **0.5% to 2%** by weight. Shiitake mushroom extract is used in dietary supplements and functional foods due to its potential health benefits, including immune support and antioxidant properties. In supplements, the amount of extract used is higher, typically between 0.5% and 2%, depending on the desired potency and the specific formulation of the product.

6. **Dips, Dressings, and Condiments**:

* **0.1% to 0.3%** by weight. Shiitake mushroom extract is sometimes used in dips, salad dressings, and condiments to enhance the flavor profile. It adds richness and complexity without overwhelming the product. The extract is generally used in low amounts to ensure a balanced flavor.

Key Considerations:

* **Concentration**: Shiitake mushroom extract is highly concentrated, which means that only small amounts are needed to achieve the desired flavor and effects.
* **Flavor**: The extract has a strong, savory, umami flavor with earthy and meaty notes. Because of its potent flavor, it is usually used in small quantities.
* **Health Benefits**: Shiitake mushrooms are known for their immune-boosting properties, and their extract is sometimes used in functional foods and supplements targeting health-conscious consumers. It may provide additional nutrients, such as beta-glucans, which are believed to support immune function.

Summary:  
Shiitake mushroom extract is typically used in commercial food products at **0.1% to 2%** by weight. It is commonly found in soups, broths, sauces, seasonings, meat substitutes, snacks, and health supplements. The extract is prized for its umami-rich flavor and potential health benefits, and due to its concentrated nature, it is generally used in small amounts to avoid overpowering the other ingredients.

[3:36](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732088207454559)

BeeChoo Liang

Seaweed extract is widely used in commercial food products for its umami-rich flavor, nutritional benefits, and functional properties such as gelling, thickening, and emulsifying. It is derived from various types of seaweed, such as nori, kelp, dulse, or wakame, and is used in products like soups, sauces, snacks, and even beverages. Seaweed extract provides essential minerals (like iodine) and can also enhance the texture and taste of food.  
Typical Amounts of Seaweed Extract in Commercial Food Products:

* **General range**: **0.1% to 2%** by weight, depending on the product and the type of seaweed extract being used.

Here are some common applications and typical usage amounts for seaweed extract:  
1. **Soups and Broths**:

* **0.1% to 1%** by weight. Seaweed extract is frequently used in soups, broths, and stocks, especially in Asian-inspired products, to provide depth of flavor and an umami boost. The extract is typically used in small amounts (0.1% to 0.5%) to enhance the broth's flavor profile without overpowering other ingredients.

2. **Sauces and Seasonings**:

* **0.1% to 0.5%** by weight. Seaweed extract can be used in sauces (such as soy sauce), marinades, and seasonings to enhance savory flavors. It is often added to provide a natural, oceanic umami flavor. The extract is used sparingly (typically 0.1% to 0.3%) to maintain balance and prevent it from becoming too strong.

3. **Meat and Plant-Based Products (Burgers, Sausages, and Meat Substitutes)**:

* **0.2% to 1%** by weight. Seaweed extract can be included in plant-based meat substitutes (such as vegan burgers, sausages, or nuggets) to improve the texture and enhance the "meaty" taste. In these products, it can be used in concentrations ranging from 0.2% to 1%, depending on the desired flavor profile and texture.

4. **Snacks (Chips, Crackers, Seaweed Snacks)**:

* **0.1% to 2%** by weight. Seaweed extract is a popular ingredient in snacks, particularly in seaweed-flavored chips, crackers, and ready-to-eat seaweed snacks. It is used in higher amounts (1% to 2%) in products specifically marketed for their seaweed or umami flavor, but in other snacks, it is typically used at lower levels (0.1% to 0.5%) to add subtle flavor enhancement.

5. **Beverages (Smoothies, Sports Drinks, Health Drinks)**:

* **0.1% to 0.5%** by weight. Seaweed extract can be used in beverages, such as smoothies, health drinks, and sports drinks, for its potential health benefits (e.g., iodine, vitamins, and minerals) as well as for its ability to enhance flavor. The extract is typically used in small quantities to avoid overpowering the taste, often ranging from 0.1% to 0.3%.

6. **Dairy Products (Cheese, Yogurt, Ice Cream)**:

* **0.1% to 0.5%** by weight. In dairy products like cheese, yogurt, or ice cream, seaweed extract is sometimes used as a gelling agent (like agar-agar) or to provide a unique savory flavor. The extract is typically added in small amounts to help achieve the desired texture and mouthfeel without affecting the product's primary flavor.

7. **Nutritional Supplements (Powders, Capsules)**:

* **0.5% to 2%** by weight. Seaweed extract, particularly from varieties like spirulina or kelp, is sometimes used in health supplements and functional foods for its high concentration of vitamins, minerals, and antioxidants. The amount used in these products is typically higher, ranging from 0.5% to 2%, depending on the intended health benefits and formulation.

Key Considerations:

* **Concentration**: Seaweed extract is often concentrated, so small amounts are needed to achieve the desired flavor or functional effect.
* **Flavor Profile**: Seaweed extract provides an oceanic, umami-rich taste that enhances savory dishes. The extract is potent, so it is typically used in low to moderate amounts to avoid overpowering the flavor of the product.
* **Health Benefits**: Seaweed extract is rich in nutrients like iodine, calcium, iron, and vitamins A, C, and K. It is often used in functional foods or dietary supplements to offer these health benefits, particularly in products targeting wellness-conscious consumers.

Summary:  
Seaweed extract is typically used in commercial food products at **0.1% to 2%** by weight, depending on the application and the type of seaweed extract. It is commonly used in soups, broths, sauces, snacks, plant-based products, and health supplements. The extract is prized for its umami flavor and nutritional benefits, and due to its potency, it is typically used in small amounts to enhance flavor, texture, or provide health benefits without overpowering the product.

[3:39](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732088391609039)

BeeChoo Liang

Salmon extract is used in commercial food products primarily for its distinctive fishy, umami-rich flavor, which enhances the taste of various savory items. It is derived from the flesh, bones, or by-products of salmon and can be found in a range of products such as soups, sauces, ready meals, snacks, and even some pet foods. Due to its strong flavor, salmon extract is typically used in small amounts to avoid overpowering other ingredients.  
Typical Amounts of Salmon Extract in Commercial Food Products:

* **General range**: **0.1% to 1%** by weight, depending on the type of product and desired flavor intensity.

Here are some common applications and typical usage amounts for salmon extract:  
1. **Soups, Broths, and Stocks**:

* **0.1% to 0.5%** by weight. In soups, broths, and stocks, salmon extract is used to provide a rich, savory, and umami flavor. It is typically added in small quantities (0.1% to 0.3%) to enhance the depth of flavor without overpowering the product, especially in seafood-based or cream soups.

2. **Sauces and Seasonings**:

* **0.1% to 0.5%** by weight. Salmon extract is commonly used in sauces, gravies, and seasoning blends, especially those designed to complement fish or seafood dishes. The amount used is usually in the range of 0.1% to 0.3% for products where the extract is used primarily as a flavor enhancer.

3. **Ready Meals and Canned Foods**:

* **0.2% to 1%** by weight. In ready-to-eat meals, especially those that feature seafood or fish as the main ingredient (such as salmon patties or fish cakes), salmon extract is used to enhance the fish flavor. In these products, the extract is often used at concentrations ranging from 0.2% to 1%, depending on the level of flavor intensity desired.

4. **Snacks (Savory Snacks, Chips, Crackers)**:

* **0.1% to 0.5%** by weight. In savory snacks such as fish-flavored chips, crackers, and snack bars, salmon extract is used to provide a subtle seafood flavor. The amount used is typically around 0.1% to 0.3%, as the extract is potent and can easily dominate the overall flavor profile.

5. **Pet Food (Dog and Cat Food)**:

* **0.5% to 2%** by weight. In pet foods, especially those marketed as fish-based or containing salmon, the extract is used to boost the flavor and aroma. The amount used is generally higher in pet foods, ranging from 0.5% to 2%, to ensure the product has a strong fish flavor that appeals to pets.

6. **Health Supplements (Functional Foods)**:

* **0.5% to 1%** by weight. Salmon extract is sometimes used in functional foods or dietary supplements for its nutritional value, including omega-3 fatty acids, protein, and vitamins. The extract may be used at levels of 0.5% to 1%, depending on the product's formulation and intended health benefits.

Key Considerations:

* **Flavor Profile**: Salmon extract provides a rich, fishy, and umami flavor that can enhance savory foods, especially those that feature seafood. It’s important to use it in moderation, as it is a potent ingredient.
* **Concentration**: Since salmon extract is highly concentrated, only small amounts are needed to achieve the desired flavor.
* **Nutritional Benefits**: In addition to its flavor, salmon extract can contribute nutritional benefits, particularly omega-3 fatty acids, protein, and other nutrients found in fish, which are valuable in health supplements and functional foods.

Summary:  
Salmon extract is typically used in commercial food products at **0.1% to 1%** by weight. It is commonly found in soups, broths, sauces, snacks, ready meals, and pet food. The extract is valued for its savory, umami-rich flavor, and due to its potency, it is used in small amounts to enhance the flavor profile without overwhelming the product. Additionally, salmon extract can provide nutritional benefits, such as omega-3 fatty acids, in functional foods and supplements.

[3:40](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732088431443989)

BeeChoo Liang

Reishi extract is used in commercial food products for its potential health benefits, such as immune support, anti-inflammatory effects, and antioxidant properties. It is derived from the *Ganoderma lucidum* mushroom and is often used in functional foods, beverages, and dietary supplements. Reishi extract is valued not only for its purported health benefits but also for its earthy, slightly bitter flavor, which means it is typically used in small amounts in food products.  
Typical Amounts of Reishi Extract in Commercial Food Products:

* **General range**: **0.1% to 2%** by weight, depending on the type of product and its intended health benefits.

Here are some common applications and typical usage amounts for Reishi extract:  
1. **Health Supplements (Capsules, Tablets, Powders)**:

* **0.5% to 2%** by weight. In dietary supplements, especially those targeting immune support, energy, or general wellness, Reishi extract is often used in higher amounts (0.5% to 2%) to provide the desired health benefits. The extract is typically concentrated for these products to ensure potency.

2. **Functional Beverages (Teas, Smoothies, Health Drinks)**:

* **0.1% to 0.5%** by weight. Reishi extract is frequently used in beverages like health teas, smoothies, and functional drinks. Since the extract has a strong, somewhat bitter flavor, it is typically used in small quantities (0.1% to 0.3%) to provide the health benefits without overpowering the taste of the beverage.

3. **Nutritional Bars and Snacks**:

* **0.1% to 0.5%** by weight. In products like protein or energy bars, snacks, and wellness bites, Reishi extract can be used to offer potential health benefits, particularly for stress reduction and immune support. The extract is often included in small quantities (0.1% to 0.3%) to ensure the bars or snacks retain a palatable taste.

4. **Soups, Broths, and Sauces**:

* **0.1% to 0.3%** by weight. In savory products like soups, broths, and sauces, Reishi extract may be used to provide subtle functional benefits without altering the flavor profile too much. The extract is generally used in smaller amounts (0.1% to 0.3%) to avoid the bitterness of the mushroom overpowering other ingredients.

5. **Confectionery (Candies, Chocolates, Gummy Supplements)**:

* **0.1% to 0.3%** by weight. Reishi extract is sometimes used in functional confectionery products, such as chocolates or gummies, that are marketed for their health benefits. In these products, the extract is used in small amounts (typically around 0.1% to 0.3%) to add the health benefits of Reishi without affecting the flavor too significantly.

6. **Baked Goods (Cookies, Cakes, Bread)**:

* **0.1% to 0.5%** by weight. Reishi extract can be included in baked goods like cookies, cakes, and bread to provide health benefits, particularly for functional or wellness-focused products. Due to its flavor, the extract is used sparingly, generally between 0.1% and 0.3%.

Key Considerations:

* **Flavor Profile**: Reishi extract has an earthy, slightly bitter taste. Due to this, it is typically used in small amounts in food products to avoid overpowering the overall flavor, especially in sweet items or beverages where the bitterness may be undesirable.
* **Concentration**: Reishi extract is often concentrated, so only small quantities are needed to achieve the desired functional effects.
* **Health Benefits**: Known for its potential immune-boosting, anti-inflammatory, and adaptogenic properties, Reishi extract is most commonly found in functional foods and beverages aimed at supporting general wellness, reducing stress, and improving immunity.

Summary:  
Reishi extract is typically used in commercial food products at **0.1% to 2%** by weight, depending on the product and the desired health benefits. It is commonly found in health supplements, functional beverages, snacks, and some savory or sweet foods. Due to its strong, bitter flavor, it is generally used in small amounts to enhance the product’s health benefits while maintaining a balanced taste.

[3:42](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732088558751939)

BeeChoo Liang

Red pepper extract, often derived from chili peppers or cayenne pepper, is used in commercial food products for its spicy, pungent flavor and potential health benefits. The extract is commonly used to add heat and flavor to a wide range of foods, including sauces, seasonings, snacks, and beverages. Due to its concentrated nature, red pepper extract is used in small amounts to avoid overwhelming the product with excessive heat.  
Typical Amounts of Red Pepper Extract in Commercial Food Products:

* **General range**: **0.1% to 1%** by weight, depending on the product and the desired intensity of heat or flavor.

Here are some common applications and typical usage amounts for red pepper extract:  
1. **Hot Sauces and Condiments**:

* **0.1% to 0.5%** by weight. Red pepper extract is commonly used in hot sauces, condiments (like sriracha, salsa, or spicy ketchup), and marinades to impart heat and flavor. The extract is usually added in small amounts (0.1% to 0.5%) to achieve the desired level of spiciness without making the product too hot for a wide consumer base.

2. **Seasoning Blends**:

* **0.1% to 0.3%** by weight. In seasoning mixes, spice blends, or dry rubs for meats, red pepper extract is used to enhance the flavor and heat profile. It is often incorporated in small quantities (0.1% to 0.3%) to provide a balance of heat and flavor, as well as to complement other spices and seasonings.

3. **Snack Foods (Chips, Crackers, Popcorn)**:

* **0.1% to 0.5%** by weight. Red pepper extract is frequently used in savory snacks like chips, crackers, and flavored popcorn to create a spicy taste. The extract is added in small amounts to provide a kick of heat, typically around 0.1% to 0.3% of the product's total weight, depending on the desired spiciness.

4. **Ready-to-Eat Meals and Frozen Foods**:

* **0.1% to 0.3%** by weight. In ready-to-eat meals, frozen foods, or microwaveable products (such as spicy pizza or prepared pasta dishes), red pepper extract is often used to enhance the heat level and flavor. The extract is typically used in amounts ranging from 0.1% to 0.3%, depending on the intensity of spiciness desired for the target market.

5. **Beverages (Health Drinks, Teas, and Shots)**:

* **0.1% to 0.5%** by weight. Red pepper extract is sometimes included in functional beverages like energy shots, detox drinks, or health teas for its purported metabolism-boosting benefits and spicy kick. The extract is used in smaller quantities (0.1% to 0.3%) to add spice without overwhelming the drink’s flavor.

6. **Meat and Plant-Based Products (Burgers, Sausages, and Dips)**:

* **0.1% to 0.5%** by weight. In meat products (such as sausages, burgers, or hot dogs) and plant-based substitutes, red pepper extract can be used to add heat and a touch of flavor. The extract is typically used in small amounts, usually 0.1% to 0.3%, to enhance the product's spicy profile.

7. **Salad Dressings and Mayonnaise**:

* **0.1% to 0.3%** by weight. Red pepper extract is used in salad dressings, mayonnaise, and aioli to create spicy condiments that add flavor to various dishes. The extract is often added at low levels (0.1% to 0.3%) to avoid overpowering the flavor with too much heat.

Key Considerations:

* **Concentration**: Red pepper extract is concentrated, so only a small amount is needed to impart the desired level of heat.
* **Heat Levels**: The intensity of heat can vary depending on the type of red pepper used to make the extract (e.g., cayenne, jalapeño, or chili). As a result, the amount of extract needed to achieve a specific spiciness can vary.
* **Flavor**: In addition to heat, red pepper extract adds a slightly fruity, tangy flavor that enhances savory foods, making it a popular ingredient in sauces and snacks.

Summary:  
Red pepper extract is typically used in commercial food products at **0.1% to 1%** by weight, depending on the application and desired level of heat. It is commonly found in hot sauces, seasoning blends, snacks, beverages, and ready-to-eat meals. The extract provides concentrated heat and flavor, and due to its potency, it is generally used in small amounts to balance spiciness with the overall taste of the product.

[3:44](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732088642657159)

BeeChoo Liang

Red cabbage extract is often used in commercial food products for its vibrant color, antioxidant properties, and mild, slightly bitter flavor. It is particularly valued in products where its anthocyanin content (a type of antioxidant) or natural color can be used as a natural food coloring or health-promoting ingredient. It can be found in beverages, sauces, jams, dressings, and some processed foods.  
Typical Amounts of Red Cabbage Extract in Commercial Food Products:

* **General range**: **0.1% to 5%** by weight, depending on the intended purpose (color enhancement, flavoring, or health benefits).

Here are some common applications and typical usage amounts for red cabbage extract:  
1. **Natural Food Coloring**:

* **0.1% to 1%** by weight. Red cabbage extract is commonly used as a natural colorant in a variety of foods and beverages. Due to its rich purple to reddish hue, it is used in products like beverages, candies, baked goods, and dairy products. The extract is typically added in low concentrations (0.1% to 0.5%) to impart the desired color without affecting flavor too significantly.

2. **Beverages (Juices, Smoothies, and Health Drinks)**:

* **0.1% to 0.5%** by weight. Red cabbage extract is sometimes used in functional beverages like juices, smoothies, or health drinks to add natural color and potential antioxidant benefits. The extract is used in small amounts (0.1% to 0.3%) for color enhancement and to contribute to the health profile of the drink.

3. **Sauces and Dressings**:

* **0.1% to 0.5%** by weight. Red cabbage extract is used in sauces, salad dressings, and condiments, primarily for its color and potential health benefits, especially its antioxidants. In these products, the extract is usually used at 0.1% to 0.3% to provide a mild flavor and enhance the visual appeal.

4. **Jams, Jellies, and Fruit Spreads**:

* **0.1% to 1%** by weight. Red cabbage extract can be used in jams and jellies to help with coloring, particularly in products where a vibrant purple or red hue is desired. The extract is typically used in low to moderate amounts (0.1% to 0.5%), as it provides natural color without overwhelming the flavor.

5. **Frozen Foods (Ice Cream, Sorbets)**:

* **0.1% to 0.3%** by weight. In frozen desserts like ice cream and sorbet, red cabbage extract can be used to enhance the product’s visual appeal with a natural purple or reddish color. The extract is typically used in small amounts (0.1% to 0.3%) to achieve the desired color without altering the taste profile too much.

6. **Processed Meat Products (Cured Meats, Sausages)**:

* **0.1% to 0.3%** by weight. In some processed meats, especially in cured meats and sausages, red cabbage extract can be used as a natural colorant. The extract is used sparingly (0.1% to 0.3%) to enhance the color and add a slightly earthy flavor.

7. **Baked Goods (Cakes, Cookies)**:

* **0.1% to 0.5%** by weight. Red cabbage extract is sometimes used in baked goods like cakes and cookies to add color. It’s typically used at 0.1% to 0.3% for a mild color change, especially in products that are marketed as natural or clean-label.

Key Considerations:

* **Color**: The primary use of red cabbage extract in food products is to provide a natural, vibrant color, ranging from purple to red. It is especially popular as a natural alternative to synthetic colorants.
* **Flavor**: While red cabbage extract has a mild, slightly bitter flavor, it is used in small quantities to avoid altering the overall taste of the product.
* **Antioxidants**: The extract contains anthocyanins, which are powerful antioxidants. Therefore, it is sometimes marketed as a health-promoting ingredient, contributing to the overall nutritional profile of the food product.

Summary:  
Red cabbage extract is typically used in commercial food products at **0.1% to 5%** by weight, depending on its intended use for color, flavor, or health benefits. It is commonly found in natural food colorants, beverages, sauces, jams, baked goods, and processed foods. The extract provides a natural, vibrant color, typically in the range of 0.1% to 1%, and contributes mild flavor and antioxidants at slightly higher concentrations, particularly in health-focused products.



BeeChoo LiangBeeChoo Liang  [3:49 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732088957144519)

Red beet extract is commonly used in commercial food products for its vibrant color, earthy flavor, and potential health benefits, such as supporting heart health and providing antioxidants. It is particularly valued in products where natural colorants are desired or where the extract’s potential nutritional benefits can be highlighted.  
Typical Amounts of Red Beet Extract in Commercial Food Products:

* **General range**: **0.1% to 3%** by weight, depending on the purpose of use (color enhancement, flavoring, or health benefits).

Here are some common applications and typical usage amounts for red beet extract:  
1. **Natural Food Coloring**:

* **0.1% to 1%** by weight. Red beet extract is often used as a natural colorant in foods and beverages, imparting a vibrant red or pink hue. This extract is particularly popular in clean-label and natural food products. The concentration used typically ranges from **0.1% to 0.5%**, though it can go up to **1%** in products where a stronger color is needed (e.g., fruit juices, beverages, or confections).

2. **Beverages (Juices, Smoothies, Health Drinks)**:

* **0.1% to 1%** by weight. In drinks such as beetroot juice, smoothies, health shots, or functional beverages, red beet extract is used to impart both color and health benefits, such as potential cardiovascular and detoxifying effects. For flavoring and coloring, the extract is typically used at **0.1% to 0.5%**, but can go up to **1%** for more noticeable color.

3. **Baked Goods (Cakes, Cupcakes, Cookies)**:

* **0.1% to 0.5%** by weight. In baked goods, red beet extract can be used to achieve a pink or reddish hue in products such as cakes, cupcakes, cookies, or pastries. It is typically used in smaller amounts (around **0.1% to 0.3%**) to avoid altering the taste too much while providing the desired color.

4. **Snack Foods (Chips, Crackers, Popcorn)**:

* **0.1% to 0.5%** by weight. In snacks like chips, crackers, or flavored popcorn, red beet extract can be used to enhance the color, especially for products marketed as natural or organic. The extract is typically used in small amounts, from **0.1% to 0.3%**, to add a mild color change without impacting the taste profile.

5. **Confections (Candy, Gummies, Jellies)**:

* **0.1% to 1%** by weight. In candies, gummies, and jellies, red beet extract can be used to add a natural pink or red color. For these applications, it is often used at concentrations ranging from **0.1% to 0.5%**, but higher concentrations may be used (up to **1%**) in products where the color needs to be more pronounced.

6. **Sauces, Dips, and Dressings**:

* **0.1% to 0.5%** by weight. Red beet extract is sometimes used in sauces, salad dressings, and dips to add a reddish color, particularly in products like beet hummus, beet-based sauces, or pink dips. The extract is usually included at **0.1% to 0.3%** for color enhancement, with higher levels used in products specifically designed to showcase beet flavor and color.

7. **Frozen Foods (Ice Cream, Sorbets)**:

* **0.1% to 0.3%** by weight. In frozen desserts such as ice cream and sorbets, red beet extract is used to provide natural color without synthetic dyes. The extract is typically used in small amounts, **0.1% to 0.3%**, to achieve a vibrant color while maintaining the desired flavor profile.

8. **Meat and Plant-Based Products (Sausages, Burgers)**:

* **0.1% to 0.3%** by weight. In plant-based products or processed meats (such as sausages or burgers), red beet extract is sometimes used to add color, especially in vegan or vegetarian products where a red or pink color is desired to mimic traditional meat products. The extract is used at concentrations around **0.1% to 0.3%**.

9. **Health Supplements (Powders, Capsules)**:

* **0.5% to 3%** by weight. In dietary supplements, especially those marketed for their cardiovascular or detoxifying benefits, red beet extract can be included at higher concentrations, ranging from **0.5% to 3%**. The extract is typically concentrated for these uses to provide the maximum health benefits.

Key Considerations:

* **Flavor**: Red beet extract has an earthy, slightly sweet flavor that can be more noticeable in large amounts. For this reason, it is typically used in smaller amounts for color, and its flavor is more prominent in beverages, jams, and certain savory applications.
* **Color**: The primary use of red beet extract is for its rich red or pink color, which is especially valuable in products aiming for a clean-label, natural aesthetic.
* **Health Benefits**: Red beet extract is often marketed for its potential benefits, including boosting nitric oxide levels, improving blood pressure, and providing antioxidant support. This makes it popular in functional food products and health supplements.

Summary:  
Red beet extract is typically used in commercial food products at **0.1% to 3%** by weight, depending on the intended use. It is most commonly found in natural food colorings, beverages, snacks, and baked goods, where it adds a vibrant red or pink color. The extract is used in smaller amounts (usually **0.1% to 1%**) for color enhancement, and higher amounts (up to **3%**) are used in health supplements or products where the extract’s nutritional benefits are a key selling point.

[3:49](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732088999678889)

BeeChoo Liang

Raspberry extract is widely used in commercial food products for its sweet, fruity flavor, and sometimes its color. It is especially popular in beverages, candies, jams, baked goods, and dairy products. The extract typically provides a concentrated raspberry flavor, so it is used in relatively small amounts, as too much can overpower the product.  
Typical Amounts of Raspberry Extract in Commercial Food Products:

* **General range**: **0.1% to 2%** by weight, depending on the intended use (flavor, color, or health benefits).

Here are some common applications and typical usage amounts for raspberry extract:  
1. **Beverages (Juices, Smoothies, Health Drinks)**:

* **0.1% to 1%** by weight. In beverages like fruit juices, smoothies, and flavored waters, raspberry extract is commonly used to provide a fruity raspberry flavor. The extract is often used in smaller amounts (around **0.1% to 0.5%**) to ensure the flavor is not overpowering, though higher amounts (up to **1%**) may be used for stronger flavor in drinks like raspberry-flavored sodas or health drinks.

2. **Confections (Candy, Gummies, Jellies)**:

* **0.1% to 1%** by weight. In candy, gummies, and jellies, raspberry extract is used to add flavor and sometimes color. The extract is typically used in concentrations ranging from **0.1% to 0.5%**, though higher concentrations (up to **1%**) may be used to provide a more intense raspberry flavor in fruit-flavored candies and confections.

3. **Baked Goods (Cakes, Muffins, Cookies)**:

* **0.1% to 0.5%** by weight. In baked goods such as cakes, cookies, and muffins, raspberry extract is used to enhance the flavor of the product. The extract is typically used at **0.1% to 0.3%**, ensuring the flavor complements the other ingredients without being too pronounced. In more raspberry-focused products like raspberry-filled cakes, it can be used at higher amounts, up to **0.5%**.

4. **Dairy Products (Yogurt, Ice Cream, Smoothie Bowls)**:

* **0.1% to 0.5%** by weight. Raspberry extract is used in dairy products like flavored yogurts, ice creams, and smoothie bowls to provide the distinctive raspberry flavor. In these products, it is commonly used at concentrations ranging from **0.1% to 0.3%**. However, if the product is intended to have a more dominant raspberry flavor, it may go up to **0.5%**.

5. **Jams, Jellies, and Fruit Spreads**:

* **0.1% to 1%** by weight. In fruit preserves like jams, jellies, and fruit spreads, raspberry extract can be used to intensify the natural raspberry flavor, especially in cases where fresh fruit is not available or when a more consistent flavor is desired. The extract is typically used at **0.1% to 0.5%**, but higher concentrations (up to **1%**) can be used to amplify the raspberry flavor in premium or artisanal products.

6. **Sauces and Dressings**:

* **0.1% to 0.3%** by weight. Raspberry extract can be added to salad dressings, vinaigrettes, or fruit-based sauces to impart a sweet-tart flavor. The extract is usually used in small amounts (around **0.1% to 0.3%**) to complement other flavors in the product without overpowering them.

7. **Frozen Foods (Ice Cream, Sorbet, Frozen Yogurt)**:

* **0.1% to 0.5%** by weight. In frozen desserts like ice cream, sorbet, or frozen yogurt, raspberry extract can be used to deliver the fruity flavor. It is typically used at **0.1% to 0.3%** for flavor enhancement, though higher concentrations are possible (up to **0.5%**) for a more pronounced raspberry flavor.

8. **Health Supplements (Powders, Capsules)**:

* **0.5% to 2%** by weight. In dietary supplements such as raspberry ketone capsules, raspberry extract is used for both its flavor and potential health benefits. Raspberry ketone is a popular ingredient in weight loss supplements, and its extract concentration can range from **0.5% to 2%** depending on the specific formulation.

Key Considerations:

* **Flavor**: Raspberry extract is used primarily for its fruit flavor. It can provide a more intense raspberry flavor than fresh raspberries because of its concentrated form, so only small amounts are usually needed.
* **Color**: Raspberry extract also imparts a light pink or red color, which can be useful in some products, such as beverages, gummies, and confections. However, the amount used for color is typically small enough not to significantly alter the overall appearance of the product.
* **Health Benefits**: In some products, raspberry extract is marketed for its antioxidant content, particularly for products that aim to highlight natural ingredients and health benefits.

Summary:  
Raspberry extract is typically used in commercial food products at **0.1% to 2%** by weight. It is most commonly found in beverages, confections, baked goods, dairy products, jams, and health supplements. The extract is used in smaller amounts (usually **0.1% to 0.5%**) to provide a fruity raspberry flavor, and higher concentrations (up to **2%**) may be used in health supplements or in products where a more intense raspberry flavor is desired.

[3:51](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732089066076129)

BeeChoo Liang

Purple carrot extract is primarily used in commercial food products for its vibrant color and potential health benefits, including its antioxidant properties. The extract is rich in anthocyanins, which provide the purple hue and offer potential health-promoting effects, such as anti-inflammatory and antioxidant properties. It is commonly found in natural food coloring, beverages, snacks, and health-related products.  
Typical Amounts of Purple Carrot Extract in Commercial Food Products:

* **General range**: **0.1% to 3%** by weight, depending on the intended use (coloring, flavor enhancement, or health benefits).

Here are some common applications and typical usage amounts for purple carrot extract:  
1. **Natural Food Coloring**:

* **0.1% to 1%** by weight. Purple carrot extract is often used as a natural colorant in foods and beverages. Due to its rich purple hue, it is especially popular in products marketed as "natural" or "clean label." The extract typically adds color at concentrations of **0.1% to 0.5%** by weight, although higher concentrations (up to **1%**) may be used in products requiring more vibrant color, such as juices, candies, and baked goods.

2. **Beverages (Juices, Smoothies, and Health Drinks)**:

* **0.1% to 0.5%** by weight. Purple carrot extract can be added to fruit juices, smoothies, and health drinks to provide a natural purple color. It is typically used at **0.1% to 0.3%** by weight to avoid overwhelming the flavor, but it can go up to **0.5%** if a more intense color is desired, particularly in premium or health-focused beverages.

3. **Confections (Candies, Gummies, Jellies)**:

* **0.1% to 1%** by weight. In candies, gummies, and jellies, purple carrot extract can be used to impart a rich purple or pink color. It is typically used at **0.1% to 0.5%**, but higher amounts (up to **1%**) may be used in products where color is a key feature, such as in fruit-flavored gummies or novelty candies.

4. **Baked Goods (Cakes, Muffins, Cookies)**:

* **0.1% to 0.5%** by weight. Purple carrot extract is sometimes used in baked goods to add color. It is often used in cakes, muffins, and cookies to enhance visual appeal, particularly for products marketed as natural or health-oriented. The typical usage level is **0.1% to 0.3%**, although higher levels (up to **0.5%**) can be used for stronger color intensity.

5. **Frozen Foods (Ice Cream, Sorbet, Frozen Yogurt)**:

* **0.1% to 0.3%** by weight. In frozen desserts like ice cream, sorbet, or frozen yogurt, purple carrot extract can be used to deliver a subtle natural color. The extract is generally used at **0.1% to 0.3%** to achieve a mild color enhancement without significantly altering the flavor.

6. **Sauces, Dressings, and Condiments**:

* **0.1% to 0.5%** by weight. Purple carrot extract is sometimes added to sauces, salad dressings, or condiments to improve color. In these products, it is typically used in small amounts (around **0.1% to 0.3%**) to enhance the visual appeal, especially in products marketed as containing natural or organic ingredients.

7. **Health Supplements (Powders, Capsules)**:

* **0.5% to 3%** by weight. Purple carrot extract may be used in health supplements, particularly those focused on antioxidant content or overall health benefits. The concentration can range from **0.5% to 3%** depending on the intended health claim, as the extract provides antioxidant compounds, such as anthocyanins, that are beneficial for health.

Key Considerations:

* **Color**: The primary function of purple carrot extract in food products is to provide a natural purple or red color. It is an appealing alternative to synthetic colorants and is often used in clean-label products.
* **Flavor**: Purple carrot extract has a mild flavor that generally does not overpower the product, so it is typically used in small amounts to enhance color while keeping the flavor profile intact.
* **Health Benefits**: Rich in anthocyanins and other antioxidants, purple carrot extract is sometimes included in products to boost their health appeal. These antioxidants are thought to have various potential health benefits, including anti-inflammatory and heart-healthy effects.

Summary:  
Purple carrot extract is typically used in commercial food products at **0.1% to 3%** by weight, depending on the intended use for color, flavor enhancement, or health benefits. Most commonly, it is used in products like beverages, baked goods, candies, and frozen desserts at concentrations ranging from **0.1% to 1%**. Higher concentrations (up to **3%**) are typically found in health supplements or in products where the health benefits of antioxidants are highlighted.

[3:53](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732089190023929)

BeeChoo Liang

Pumpkin extract is commonly used in commercial food products for its mild, sweet flavor and potential health benefits, including its rich content of vitamins, minerals, and antioxidants. It is often used in seasonally popular products such as pumpkin-flavored beverages, snacks, and baked goods, particularly around autumn. The extract can provide a natural flavor and color, enhancing products while keeping them aligned with natural or clean-label trends.  
Typical Amounts of Pumpkin Extract in Commercial Food Products:

* **General range**: **0.1% to 2%** by weight, depending on the intended use (flavor enhancement, color, or health benefits).

Here are some common applications and typical usage amounts for pumpkin extract:  
1. **Beverages (Juices, Smoothies, Health Drinks)**:

* **0.1% to 0.5%** by weight. In beverages such as pumpkin-flavored drinks, smoothies, and health shots, pumpkin extract is used to impart flavor and color. The extract is typically used in small amounts, usually **0.1% to 0.3%**, to enhance flavor without overpowering other ingredients. In pumpkin-based beverages like lattes or smoothies, it may be used at higher levels (up to **0.5%**).

2. **Confections (Candies, Gummies, Jellies)**:

* **0.1% to 1%** by weight. Pumpkin extract can be used in confections such as candies, gummies, and jellies to provide a mild, sweet flavor and sometimes a natural color. The extract is typically used in concentrations of **0.1% to 0.3%**, but it can be used at up to **1%** for stronger flavor, especially in seasonal treats like pumpkin-flavored candies or gummies.

3. **Baked Goods (Cakes, Muffins, Cookies)**:

* **0.1% to 0.5%** by weight. Pumpkin extract is often added to baked goods like cakes, muffins, cookies, and pies, especially in seasonal recipes. It is used to enhance the characteristic pumpkin flavor, typically in amounts of **0.1% to 0.3%**, though higher concentrations (up to **0.5%**) can be used in products specifically marketed as pumpkin-flavored.

4. **Frozen Foods (Ice Cream, Sorbet, Frozen Yogurt)**:

* **0.1% to 0.5%** by weight. In frozen desserts like ice cream, sorbet, or frozen yogurt, pumpkin extract can be used to add a subtle pumpkin flavor. The extract is typically used at concentrations of **0.1% to 0.3%**. Higher concentrations (up to **0.5%**) can be used in products specifically designed to have a more prominent pumpkin flavor, such as pumpkin ice cream or seasonal frozen yogurt.

5. **Snacks (Chips, Crackers, Granola Bars)**:

* **0.1% to 0.5%** by weight. In savory snacks such as crackers, chips, or granola bars, pumpkin extract can be used to impart a light pumpkin flavor or enhance the color. It is generally used in small amounts, typically around **0.1% to 0.3%**, but can go up to **0.5%** for a more noticeable flavor, especially in snacks marketed as pumpkin-flavored.

6. **Sauces, Dips, and Dressings**:

* **0.1% to 0.3%** by weight. Pumpkin extract can be used in sauces, dips, and salad dressings to add flavor and color. The extract is typically used in small amounts, around **0.1% to 0.3%**, in these products. It is particularly popular in autumn-themed sauces or dips, such as pumpkin hummus or pumpkin-flavored salad dressings.

7. **Health Supplements (Powders, Capsules)**:

* **0.5% to 2%** by weight. In dietary supplements, especially those aimed at promoting health and wellness, pumpkin extract is used for its potential health benefits, such as its antioxidant content, vitamin A, and fiber. The concentration in supplements can range from **0.5% to 2%**, depending on the desired potency and the specific formulation.

8. **Pet Foods**:

* **0.1% to 1%** by weight. Pumpkin extract is also used in some pet foods, particularly in treats or functional pet food products. The extract is added for its natural flavor and potential digestive benefits. In these products, pumpkin extract is generally used in amounts of **0.1% to 0.5%**, though higher concentrations may be used (up to **1%**) in products like dog treats.

Key Considerations:

* **Flavor**: Pumpkin extract has a mild, sweet flavor that blends well with a variety of other flavors. It is used to complement or enhance other ingredients, especially in seasonal or pumpkin-flavored products.
* **Color**: In addition to flavor, pumpkin extract can also add a subtle orange color to foods and beverages, although it is not as intensely colored as pumpkin puree or juice.
* **Health Benefits**: Pumpkin extract is rich in vitamins (like Vitamin A) and antioxidants, and it is sometimes included in products for its potential health benefits, such as improving digestion or providing antioxidant protection.

Summary:  
Pumpkin extract is typically used in commercial food products at **0.1% to 2%** by weight, depending on its intended purpose (flavor enhancement, color, or health benefits). It is most commonly found in seasonal products such as beverages, baked goods, confections, and frozen desserts. The extract is typically used in small amounts (**0.1% to 0.5%**) for flavor and color, but can be used in higher concentrations (up to **2%**) in health supplements or products specifically marketed as pumpkin-flavored.

[3:55](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732089304056749)

BeeChoo Liang

Pepper extract, which can come from different types of pepper such as black pepper, white pepper, or chili peppers, is commonly used in commercial food products for flavor enhancement, heat, and sometimes color. The concentration of pepper extract used in food products typically varies based on the desired intensity of flavor, spice, and heat.  
Typical Amounts of Pepper Extract in Commercial Food Products:

* **General range**: **0.05% to 2%** by weight, depending on the type of pepper extract (e.g., black pepper, chili pepper), the product, and the intended use (flavor, heat, or both).

Here are some common applications and typical usage amounts for different types of pepper extract:  
1. **Black Pepper Extract**:

* **0.05% to 0.5%** by weight. Black pepper extract is often used for its mild heat and peppery flavor. In savory foods, sauces, dressings, or seasonings, it is commonly used at **0.05% to 0.2%** to provide a subtle flavor boost. For products aiming to have a more noticeable pepper flavor, the concentration may be increased up to **0.5%**.

2. **Chili Pepper Extract (Cayenne, Habanero, etc.)**:

* **0.1% to 2%** by weight. Chili pepper extract is used primarily for its spiciness and heat. The amount used will depend on the desired level of heat in the product. In products like hot sauces, spicy seasonings, or snack foods, chili pepper extract is often used at **0.1% to 0.5%** for a mild to medium heat level. However, in more intense spicy foods or products designed to be extra-hot, concentrations may go up to **1% to 2%**.

3. **White Pepper Extract**:

* **0.05% to 0.5%** by weight. White pepper extract, which has a milder flavor than black pepper extract, is typically used at **0.05% to 0.2%** to add a subtle pepper flavor without overpowering the other ingredients. In some cases, it may be used at concentrations up to **0.5%** for more noticeable flavor in sauces, soups, and seasonings.

4. **Pepper Extract in Sauces and Dressings**:

* **0.05% to 0.5%** by weight. In products like salad dressings, marinades, and sauces, pepper extract is used to provide a subtle heat and flavor. Depending on the sauce’s intended flavor profile, pepper extract is generally used in small amounts, from **0.05% to 0.2%**, but it can be used at up to **0.5%** for spicier, bolder flavors.

5. **Seasoning Blends (Spice Mixes, Seasoning Salts)**:

* **0.1% to 1%** by weight. Pepper extract is often included in seasoning blends to provide background heat and spice. In these mixes, it is usually present at **0.1% to 0.5%**, though higher concentrations (up to **1%**) may be used in more intense seasoning blends, such as those for spicy snacks or meat rubs.

6. **Snack Foods (Chips, Pretzels, Popcorn)**:

* **0.05% to 0.5%** by weight. For spicy snack foods like flavored chips, pretzels, or popcorn, pepper extract is used to deliver heat and flavor. The concentration typically ranges from **0.1% to 0.3%** for a mild heat, but in extra-spicy products, it can be as high as **0.5%**.

7. **Processed Meats (Sausages, Jerky, Cured Meats)**:

* **0.05% to 0.3%** by weight. Pepper extract, especially black or white pepper, is often used in processed meats to enhance flavor. The concentration is typically around **0.05% to 0.2%**, but for spicier products like peppered jerky, it can be used at up to **0.3%**.

8. **Hot Sauces and Spicy Condiments**:

* **0.1% to 2%** by weight. Hot sauces and spicy condiments, such as sriracha or chili-infused ketchup, often use chili pepper extract for intense heat. In such products, the concentration of pepper extract can vary from **0.1% to 1%** depending on the desired heat level, but for extremely hot sauces, the extract concentration can go up to **2%**.

9. **Health Supplements (Capsules, Powders)**:

* **0.5% to 2%** by weight. In dietary supplements like fat-burning pills or metabolism boosters, pepper extract (especially capsicum or chili pepper extract) is used for its potential thermogenic properties (increasing metabolism). The concentration of pepper extract in supplements can range from **0.5% to 2%**, depending on the intended potency.

Key Considerations:

* **Heat Level**: The amount of pepper extract used is often determined by the desired level of heat or spiciness in the product. Chili pepper extracts can be much stronger than black pepper, so their usage concentration will often be higher in spicy products.
* **Flavor Profile**: In addition to heat, pepper extracts also contribute a distinct flavor, which can vary from the sharpness of black pepper to the fruitiness of certain chili peppers.
* **Capsaicin Content**: In chili pepper extracts, the amount of capsaicin (the compound responsible for the heat) is a key factor that determines the level of spiciness in the final product. This is particularly relevant in sauces, snacks, and supplements designed for heat-seeking consumers.

Summary:  
Pepper extract is typically used in commercial food products at **0.05% to 2%** by weight, depending on the desired flavor intensity and heat level. Black pepper extract is generally used in lower concentrations (around **0.05% to 0.5%**) for flavor enhancement, while chili pepper extracts are used at higher concentrations (up to **2%**) for heat, especially in hot sauces, spicy snacks, and health supplements.

[3:58](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732089504360429)

BeeChoo Liang

Pineapple extract is commonly used in commercial food products for its natural sweetness, tropical flavor, and potential health benefits (such as the presence of bromelain, an enzyme that may aid digestion). It is typically used to enhance flavor or provide a natural alternative to artificial flavorings, and it can also be used for color enhancement, particularly in juices and beverages.  
Typical Amounts of Pineapple Extract in Commercial Food Products:

* **General range**: **0.1% to 3%** by weight, depending on the intended use (flavor, color, or health benefits).

Here are some common applications and typical usage amounts for pineapple extract:  
1. **Beverages (Juices, Smoothies, Health Drinks)**:

* **0.1% to 0.5%** by weight. Pineapple extract is commonly used in beverages such as fruit juices, smoothies, or health drinks. It is typically used in small amounts, around **0.1% to 0.3%**, to enhance the pineapple flavor without overpowering the drink. In products where a stronger pineapple flavor is desired, concentrations of up to **0.5%** may be used.

2. **Confections (Candies, Gummies, Jellies)**:

* **0.1% to 1%** by weight. Pineapple extract is also used in confectionery products like candies, gummies, and jellies. The extract imparts a tropical flavor that is both sweet and tangy. In these products, pineapple extract is typically used at **0.1% to 0.3%** for a subtle flavor, but it can be used in higher concentrations (up to **1%**) in pineapple-flavored products or more intensely flavored treats.

3. **Baked Goods (Cakes, Muffins, Cookies)**:

* **0.1% to 0.3%** by weight. In baked goods such as cakes, muffins, cookies, and pastries, pineapple extract is used to deliver a hint of tropical flavor. It is generally used at low concentrations (around **0.1% to 0.3%**) to avoid overpowering the other ingredients, though higher concentrations may be used for products specifically marketed as pineapple-flavored.

4. **Frozen Foods (Ice Cream, Sorbet, Frozen Yogurt)**:

* **0.1% to 0.5%** by weight. Pineapple extract is used in frozen desserts like ice cream, sorbet, and frozen yogurt to impart a natural pineapple flavor. The concentration is typically **0.1% to 0.3%** for a subtle enhancement, but for products specifically targeting pineapple as the main flavor, it may be used up to **0.5%**.

5. **Dairy Products (Yogurt, Smoothie Drinks, Milkshakes)**:

* **0.1% to 0.5%** by weight. Pineapple extract is sometimes added to dairy products like yogurt, smoothie drinks, or milkshakes. In these products, it is typically used at **0.1% to 0.3%** to provide a mild pineapple flavor. Higher concentrations (up to **0.5%**) may be used for more pronounced flavor.

6. **Sauces, Dressings, and Condiments**:

* **0.1% to 0.5%** by weight. Pineapple extract can be added to sauces, dressings, or condiments, especially those with tropical or fruit-forward flavors, such as sweet and sour sauce, salad dressings, or marinades. The typical concentration is **0.1% to 0.3%**, but it can go up to **0.5%** for stronger pineapple notes.

7. **Snacks (Chips, Trail Mix, Granola Bars)**:

* **0.1% to 0.3%** by weight. In snack products like granola bars, trail mix, or fruit-flavored chips, pineapple extract can be used to add a sweet and tropical flavor. It is typically used at concentrations of **0.1% to 0.3%**, but higher levels (up to **0.5%**) can be used for more pronounced flavor, particularly in fruit-centric snacks.

8. **Health Supplements (Powders, Capsules)**:

* **0.5% to 3%** by weight. Pineapple extract may be used in health supplements, particularly those focused on digestion, due to the presence of bromelain, an enzyme found in pineapple. In these products, the extract is typically used at concentrations of **0.5% to 2%**, but higher levels (up to **3%**) might be used in products marketed for their digestive benefits.

Key Considerations:

* **Flavor**: Pineapple extract adds a tropical, sweet-tart flavor, which is the main reason for its use in food products. The extract provides a natural alternative to artificial pineapple flavoring.
* **Color**: In addition to flavor, pineapple extract may contribute to the color of the food product, especially in beverages and confections. However, it is not as intensely colored as other fruit extracts, such as beet or pomegranate extract.
* **Health Benefits**: Pineapple extract is sometimes included for its potential health benefits, such as the presence of bromelain, an enzyme known for its anti-inflammatory and digestive benefits.

Summary:  
Pineapple extract is typically used in commercial food products at **0.1% to 3%** by weight, depending on its purpose (flavor, color, or health benefits). For flavor enhancement, pineapple extract is most commonly used in the range of **0.1% to 0.5%** in beverages, baked goods, dairy products, and snacks. Higher concentrations, up to **3%**, may be used in health supplements or in products with a stronger pineapple flavor.

[3:59](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732089573673579)

BeeChoo Liang

Plum extract is used in commercial food products for its sweet, tart flavor and natural fruit essence. It's typically used to enhance the flavor profile of beverages, desserts, sauces, and other food items where a subtle fruitiness is desired. The concentration of plum extract varies based on the type of product, the desired intensity of flavor, and whether it's being used for its flavor or color.  
Typical Amounts of Plum Extract in Commercial Food Products:

* **General range**: **0.1% to 2%** by weight, depending on the product type and desired flavor strength.

Here are some common applications and typical usage amounts for plum extract:  
1. **Beverages (Juices, Smoothies, Soft Drinks, Health Drinks)**:

* **0.1% to 0.5%** by weight. Plum extract is commonly used in fruit juices, smoothies, and health drinks to impart a fruity, sweet-tart flavor. It’s typically used at **0.1% to 0.3%** to create a subtle plum note in mixed fruit juices or smoothies. In products where plum is the primary fruit flavor, concentrations of up to **0.5%** may be used.

2. **Confections (Candies, Gummies, Jellies, Chewing Gum)**:

* **0.1% to 1%** by weight. In confectionery products like candies, gummies, and fruit-flavored jellies, plum extract adds a sweet, slightly tangy flavor. It is typically used in smaller amounts, around **0.1% to 0.3%** for a mild plum flavor, but can be used at higher levels (up to **1%**) in more intensely flavored products, such as those that are marketed as plum-flavored.

3. **Baked Goods (Cakes, Muffins, Cookies)**:

* **0.1% to 0.3%** by weight. In baked goods like cakes, muffins, and cookies, plum extract is used to add a fruity note. The amount typically ranges from **0.1% to 0.3%**, providing a gentle plum flavor that complements the other ingredients without overwhelming them.

4. **Frozen Foods (Ice Cream, Sorbet, Frozen Yogurt)**:

* **0.1% to 0.5%** by weight. Plum extract can be used in frozen desserts such as ice cream, sorbet, or frozen yogurt to provide a natural fruit flavor. In these products, it is typically used at **0.1% to 0.3%** for a light, refreshing plum flavor, though it can be used up to **0.5%** for a stronger presence of plum.

5. **Dairy Products (Yogurt, Smoothie Drinks, Milkshakes)**:

* **0.1% to 0.3%** by weight. Plum extract is sometimes added to dairy products like yogurt or milkshakes to offer a mild, fruity flavor. The concentration is usually in the range of **0.1% to 0.3%**, but higher amounts (up to **0.5%**) may be used for more pronounced plum flavor in yogurt drinks or fruit-flavored milks.

6. **Sauces, Dressings, and Condiments**:

* **0.1% to 0.5%** by weight. Plum extract is used in sauces, dressings, or condiments for its slightly tangy and sweet flavor. It’s often found in products like barbecue sauces, vinaigrettes, and marinades. The concentration typically ranges from **0.1% to 0.3%**, although for a more noticeable plum flavor, it may be used up to **0.5%**.

7. **Health Supplements (Powders, Capsules)**:

* **0.5% to 2%** by weight. Plum extract is sometimes included in dietary supplements due to its potential antioxidant content and digestive benefits. In these products, it is typically used at **0.5% to 1%**, but in more concentrated supplement formulations, it could reach **2%**.

8. **Snacks (Granola Bars, Trail Mix, Fruit Snacks)**:

* **0.1% to 0.5%** by weight. In snack foods, especially fruit-based snacks like trail mix, granola bars, and fruit bars, plum extract can be used to enhance the natural fruit flavor. It is typically used at **0.1% to 0.3%** but may be used at up to **0.5%** in products marketed as plum-flavored.

Key Considerations:

* **Flavor Profile**: Plum extract adds a combination of sweet and tart notes, often complementing other fruit flavors. It can be used to enhance or balance the flavor of products.
* **Color**: In some cases, plum extract can contribute a mild purplish tint to food products, though it is less potent than extracts from berries like blueberry or grape.
* **Health Benefits**: Plum extract is sometimes included in functional foods due to the presence of antioxidants, vitamins, and fiber, and it may be marketed for digestive health benefits.

Summary:  
Plum extract is typically used in commercial food products at concentrations of **0.1% to 2%** by weight. For beverages, baked goods, dairy products, and snacks, it is usually used in the range of **0.1% to 0.5%** to provide a subtle flavor. In health supplements or products with more pronounced plum flavor, the extract can be used at higher concentrations, up to **2%**.

[4:00](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732089653418019)

BeeChoo Liang

Pea extract, derived from yellow or green peas, is commonly used in commercial food products for its mild flavor, nutritional content (including protein), and functional benefits. It can be used in plant-based products, protein supplements, and as a flavor enhancer or texture modifier in various food applications.  
Typical Amounts of Pea Extract in Commercial Food Products:

* **General range**: **0.1% to 5%** by weight, depending on the product and its purpose (flavor, texture, or nutritional content).

Here are some common applications and typical usage amounts for pea extract:  
1. **Plant-Based Protein Products (Meat Alternatives, Protein Bars, Shakes)**:

* **1% to 5%** by weight. Pea extract is often used in plant-based meat alternatives (such as veggie burgers, sausages, or nuggets) due to its protein content and ability to mimic the texture of animal proteins. For plant-based protein bars, shakes, or meal replacements, pea extract may be included at **1% to 5%** to contribute to the overall protein content.

2. **Beverages (Protein Drinks, Smoothies, Health Drinks)**:

* **0.5% to 2%** by weight. In protein drinks or smoothies, pea extract is used to enhance the protein content without introducing a strong flavor. It is generally used at **0.5% to 2%** by weight, although higher concentrations can be used in products specifically designed for high-protein diets.

3. **Dairy Alternatives (Plant-Based Milk, Yogurt, Ice Cream)**:

* **0.5% to 2%** by weight. Pea extract is widely used in plant-based dairy alternatives, such as pea milk, yogurt, or ice cream, due to its neutral taste and ability to mimic the creaminess of dairy. In these products, it is typically used at **0.5% to 2%** to provide texture, nutrition, and flavor enhancement.

4. **Snacks (Protein Snacks, Energy Bars, Chips)**:

* **0.5% to 2%** by weight. In protein-rich snacks, such as energy bars, protein chips, or snack bars, pea extract is added to boost protein levels. These products often use **0.5% to 2%** of pea extract, though some formulations with higher protein content might include amounts closer to the upper end of this range.

5. **Baked Goods (Bread, Muffins, Cookies)**:

* **0.1% to 0.5%** by weight. Pea extract can be incorporated into baked goods for its mild flavor and nutritional benefits, particularly for products aimed at boosting protein intake. In these products, it is typically used at lower concentrations (**0.1% to 0.3%**) for subtle flavor enhancement, though higher amounts (**up to 0.5%**) may be used for products targeting higher protein content.

6. **Soups and Sauces (Broths, Gravies, Ready Meals)**:

* **0.1% to 1%** by weight. In ready-to-eat meals or broths, pea extract can be used to enhance the texture and flavor of soups, sauces, and gravies. It can also serve as a natural thickening agent. The concentration in these products is typically **0.1% to 0.5%**, though it could be used up to **1%** in products where a thicker consistency or higher protein content is desired.

7. **Frozen Foods (Vegetable Dishes, Plant-Based Meals)**:

* **0.5% to 2%** by weight. Pea extract is used in frozen foods, such as frozen vegetable dishes, plant-based meals, or protein-rich entrees, to improve texture and add nutritional value. In these products, it is typically used in amounts of **0.5% to 2%** to help with protein fortification.

8. **Health Supplements (Protein Powders, Capsules)**:

* **1% to 5%** by weight. In dietary supplements, particularly those focused on muscle recovery or plant-based protein, pea extract may be used at concentrations ranging from **1% to 5%** to contribute to protein intake, though it could be included at higher concentrations in protein powders specifically formulated for athletes or bodybuilders.

Key Considerations:

* **Nutritional Value**: Pea extract is rich in plant-based protein, making it a common ingredient in vegan or vegetarian products, protein powders, and plant-based meat alternatives. It is also a source of essential amino acids and fiber.
* **Flavor**: Pea extract has a neutral to mildly vegetal flavor, making it a good choice for adding protein or functional benefits without overpowering other flavors. However, higher amounts can sometimes impart a slight "pea" taste, which is often masked in heavily flavored products like plant-based meats or smoothies.
* **Texture**: Pea extract can enhance the texture of products, adding creaminess or improving mouthfeel, especially in plant-based dairy products and protein shakes.

Summary:  
Pea extract is typically used in commercial food products at concentrations ranging from **0.1% to 5%** by weight, depending on the intended use. For protein-rich applications like plant-based meats, protein bars, and shakes, concentrations are typically higher, around **1% to 5%**. For beverages, dairy alternatives, baked goods, and snacks, it is usually used in the range of **0.1% to 2%** to boost protein content, improve texture, and enhance the nutritional profile without overwhelming the product's flavor.

[4:02](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732089725635189)

BeeChoo Liang

Peach extract is commonly used in commercial food products to provide a natural peach flavor, sweetness, and aroma. It is especially popular in beverages, baked goods, confections, and dairy products. The concentration of peach extract can vary depending on the product type, the intensity of flavor desired, and whether the extract is used for flavor, color, or other functional properties.  
Typical Amounts of Peach Extract in Commercial Food Products:

* **General range**: **0.1% to 3%** by weight, depending on the product type and purpose (flavor, color, or texture).

Here are some common applications and typical usage amounts for peach extract:  
1. **Beverages (Juices, Soft Drinks, Teas, Smoothies)**:

* **0.1% to 0.5%** by weight. Peach extract is commonly used in beverages like fruit juices, soft drinks, iced teas, and smoothies to impart a fresh, sweet peach flavor. Typically, it is used at **0.1% to 0.3%** for subtle flavor enhancement, but it can be used up to **0.5%** for stronger peach notes in products marketed as "peach-flavored."

2. **Confections (Candies, Gummies, Jellies, Chewing Gum)**:

* **0.1% to 1%** by weight. In confectionery products such as candies, gummies, jellies, or chewing gum, peach extract is used to create a peachy flavor profile. The extract is typically used at **0.1% to 0.3%** in mixed fruit-flavored products, though it can be used in higher concentrations (up to **1%**) in products where peach is the main flavor.

3. **Baked Goods (Cakes, Muffins, Cookies, Pies)**:

* **0.1% to 0.3%** by weight. In baked goods, peach extract is used to subtly enhance the flavor of cakes, muffins, cookies, and pies. It is generally used at **0.1% to 0.3%** to add a mild peach flavor, although higher concentrations (up to **0.5%**) may be used for more intense flavor in specific products, such as peach cobblers or fruit-filled pastries.

4. **Frozen Foods (Ice Cream, Sorbet, Frozen Yogurt)**:

* **0.1% to 0.5%** by weight. Peach extract is used in frozen desserts like ice cream, sorbet, and frozen yogurt to provide a fruity, summery flavor. It is commonly used in amounts of **0.1% to 0.3%** for a mild peach taste, but can be used up to **0.5%** for products marketed specifically as peach-flavored.

5. **Dairy Products (Yogurt, Smoothie Drinks, Milkshakes)**:

* **0.1% to 0.3%** by weight. In dairy products like yogurt, smoothies, or milkshakes, peach extract can add a refreshing, fruit-forward flavor. The concentration is typically **0.1% to 0.3%** to complement the dairy flavor without overpowering it, though higher concentrations (up to **0.5%**) might be used for peach-centric products.

6. **Health Supplements (Powders, Capsules, Functional Beverages)**:

* **0.5% to 3%** by weight. Peach extract may be used in health supplements, particularly those that focus on digestive health or antioxidant benefits. In these products, concentrations can range from **0.5% to 2%**, with some supplements using higher levels (up to **3%**) for a more pronounced peach flavor and potential health benefits.

7. **Sauces, Dressings, and Condiments**:

* **0.1% to 0.5%** by weight. Peach extract is sometimes used in fruit-based sauces or salad dressings, particularly those that are tangy or sweet, like peach barbecue sauce or vinaigrette. In these applications, it is typically used at **0.1% to 0.3%**, though up to **0.5%** may be used in products where a stronger peach flavor is desired.

8. **Snacks (Granola Bars, Fruit Bars, Trail Mix)**:

* **0.1% to 0.3%** by weight. In snacks such as granola bars, fruit bars, or trail mix, peach extract can provide a fruity flavor to enhance the overall taste of the product. The typical usage rate is **0.1% to 0.3%**, but higher levels (up to **0.5%**) may be used for peach-flavored snacks.

Key Considerations:

* **Flavor Profile**: Peach extract provides a fresh, sweet, and slightly tangy fruit flavor, which is ideal for tropical or fruit-focused products. It works well in combinations with other fruit flavors such as pear, apple, or citrus.
* **Color**: While peach extract may contribute a subtle orange hue to certain products, it is not as intense in color as other fruit extracts (like beet or pomegranate) and is typically used for flavor enhancement rather than color.
* **Health Benefits**: Peach extract may offer some antioxidant properties due to the vitamins and polyphenols in peaches. However, it is generally used more for flavor rather than for any significant health claims.

Summary:  
Peach extract is typically used in commercial food products at concentrations of **0.1% to 3%** by weight. It is commonly used at **0.1% to 0.5%** in beverages, baked goods, dairy products, and frozen desserts to provide a light peach flavor. In products where peach is the primary flavor (such as peach-flavored drinks or candies), concentrations may range from **0.5% to 1%**, and in health supplements or functional beverages, it may be used at higher concentrations, up to **3%**.

[4:05](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732089959128729)

BeeChoo Liang

Milk thistle extract is primarily used in commercial food products for its antioxidant properties, particularly due to its active ingredient **silymarin**, which is believed to support liver health and provide other health benefits. It is typically used in dietary supplements, functional foods, and beverages.  
Typical Amounts of Milk Thistle Extract in Commercial Food Products:

* **General range**: **0.1% to 2%** by weight, depending on the specific product and its intended use (e.g., functional food, dietary supplement, or beverage).

Here are common applications and typical usage amounts for milk thistle extract:  
1. **Dietary Supplements (Capsules, Tablets, Powders)**:

* **100 mg to 300 mg per serving**. In dietary supplements, especially those focused on liver health or detoxification, milk thistle extract is commonly included in amounts of **100 mg to 300 mg per serving**. The concentration can vary depending on the formulation, but in supplement form, the extract is often standardized to contain a certain percentage of silymarin, such as **80%** or higher.
* The equivalent in terms of weight for the extract is typically **0.1% to 1%** in the total product formulation, but this can depend on the potency of the extract (for example, higher-concentration silymarin extracts may require smaller amounts).

2. **Functional Beverages (Detox Drinks, Health Shots)**:

* **0.1% to 0.5%** by weight. In health drinks, detox beverages, or functional water shots, milk thistle extract is used to provide liver-supporting benefits. The typical concentration of milk thistle extract in beverages is in the range of **0.1% to 0.3%**. For more potent products marketed for detox or liver health, the concentration may be up to **0.5%**.

3. **Food Products (Bars, Snacks, Smoothies)**:

* **0.1% to 0.3%** by weight. In functional food products such as health bars, protein bars, smoothies, or meal replacements, milk thistle extract may be included to add health benefits related to liver support or antioxidants. The typical usage amount in these foods is between **0.1% and 0.3%** by weight, though higher concentrations may be used in products specifically designed for liver health.

4. **Baked Goods (Cookies, Muffins, Breads)**:

* **0.1% to 0.5%** by weight. Milk thistle extract is sometimes added to functional baked goods, such as cookies, muffins, or breads, to support wellness claims like antioxidant content. It is typically used in **0.1% to 0.3%** concentrations, though higher amounts (up to **0.5%**) may be used in products focused on providing liver health benefits or detoxification support.

5. **Cosmetic or Beauty Products (Supplements for Skin Health)**:

* **0.1% to 0.5%** by weight. While not a common food product, milk thistle extract is also used in beauty supplements and skin-health products. These may contain **0.1% to 0.5%** milk thistle extract to take advantage of its antioxidant properties, though the extract's use is primarily in the supplement or topical form.

6. **Herbal Tea and Infused Drinks**:

* **0.1% to 0.3%** by weight. In herbal teas or infused beverages, milk thistle extract may be added for its purported health benefits. The concentration is typically lower in these products, ranging from **0.1% to 0.3%** by weight.

7. **Vegan and Plant-Based Products**:

* **0.1% to 0.3%** by weight. Milk thistle extract can also be used in plant-based or vegan functional foods to add health benefits, particularly in detox or wellness-focused products. The typical amount in such foods is around **0.1% to 0.3%** by weight.

Key Considerations:

* **Health Benefits**: Milk thistle extract, especially silymarin, is commonly included in products due to its potential liver-protective and antioxidant properties. These claims are often emphasized in dietary supplements and functional foods.
* **Standardization**: The concentration of active compounds, particularly **silymarin**, can vary depending on the extract's potency. Standardized extracts may allow for more consistent dosing in products.
* **Flavor Profile**: Milk thistle extract has a mild, slightly bitter taste, which is generally masked in most commercial food products with added sweeteners or other flavorings, especially in beverages and supplements.

Summary:  
Milk thistle extract is typically used in commercial food products at concentrations ranging from **0.1% to 2%** by weight. It is most commonly found in dietary supplements and functional beverages, often in the range of **0.1% to 0.5%** for general health benefits. Higher amounts may be used in products marketed specifically for liver health or detoxification. The extract's inclusion is generally aimed at providing antioxidant support, with emphasis on its active ingredient **silymarin**.

[4:12](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732090327905519)

BeeChoo Liang

Astragalus extract, derived from the **Astragalus membranaceus** plant, is commonly used in functional foods and beverages for its potential health benefits. It is known for its immune-boosting, antioxidant, and adaptogenic properties. Astragalus extract is often included in products marketed as supporting immune health, energy, or overall wellness.  
Typical Amounts of Astragalus Extract in Commercial Food Products:  
The amount of astragalus extract used in commercial food products can vary widely depending on the product's intended purpose, potency of the extract, and desired health benefits. The general range is **0.1% to 2%** by weight, with most products falling closer to the lower end of this range.  
Here are common applications and typical usage amounts for astragalus extract:  
1. **Dietary Supplements (Capsules, Tablets, Powders)**:

* **100 mg to 500 mg per serving**. In dietary supplements, astragalus extract is commonly included in amounts of **100 mg to 500 mg per serving**, depending on the product’s intended potency and health benefits. The extract is typically standardized to contain a specific percentage of active compounds (such as astragalosides), and the extract concentration in the final product can range from **0.1% to 1%** by weight.
* For example, a supplement may contain **100 mg of astragalus extract** per capsule, which typically represents about **0.1%** to **0.3%** of the total product weight.

2. **Functional Beverages (Health Drinks, Teas, Energy Drinks)**:

* **0.1% to 0.5%** by weight. In functional beverages like health drinks, teas, or energy drinks, astragalus extract is usually added for its adaptogenic and immune-supporting properties. The typical concentration is **0.1% to 0.3%**, though higher amounts up to **0.5%** might be used in products specifically targeting immune support or wellness.
* For example, an astragalus-infused herbal tea might contain **0.2% to 0.5%** of the extract by weight.

3. **Smoothies and Protein Bars**:

* **0.1% to 0.3%** by weight. In smoothies, protein bars, or meal replacement bars, astragalus extract is used to enhance the product’s functional benefits, particularly for energy and immune support. It is typically used in amounts between **0.1% and 0.3%** by weight, as these products generally contain a variety of active ingredients.

4. **Health Foods (Granola, Snacks, Superfood Blends)**:

* **0.1% to 0.5%** by weight. In health foods like granola, snack bars, or superfood blends, astragalus extract may be added to enhance the product’s immune-boosting or antioxidant properties. The typical concentration is around **0.1% to 0.3%**, although in some products, especially those marketed as "immune-boosting," it can go up to **0.5%**.

5. **Cosmetic or Beauty Products (Supplements, Creams, Lotions)**:

* **0.1% to 1%** by weight. Astragalus extract is also used in some beauty products (such as skincare creams, lotions, or supplements) for its purported antioxidant and skin-rejuvenating properties. The typical usage amount in cosmetics is **0.1% to 1%** by weight, depending on the formulation and intended effect.

6. **Herbal Teas**:

* **0.1% to 0.5%** by weight. For tea blends, particularly those targeting immune health or stress reduction, astragalus extract is often included at **0.1% to 0.3%** by weight. Higher concentrations of **0.5%** are possible in specialized blends focused on providing maximum benefits from adaptogens.

7. **Soups and Broths**:

* **0.1% to 0.5%** by weight. In functional soups or broths, especially those marketed for their immune-supporting properties, astragalus extract can be used in small amounts, typically between **0.1% and 0.3%**. The extract may be used in combination with other herbs or functional ingredients to create a wellness-focused product.

Key Considerations:

* **Health Claims**: Astragalus is often marketed for its immune-supporting, anti-aging, and antioxidant properties. As a result, products containing astragalus extract often focus on promoting general wellness, energy, or immune health.
* **Standardization**: The potency of astragalus extract can vary. Standardized extracts are often used to ensure consistent amounts of active ingredients (such as astragalosides), which are thought to be responsible for the herb's health benefits.
* **Taste and Flavor**: Astragalus extract has a slightly sweet, mild taste, but it is often combined with other herbs or flavors to balance its flavor profile in food and beverage products.

Summary:  
Astragalus extract is typically used in commercial food products at concentrations ranging from **0.1% to 2%** by weight. In dietary supplements, it is typically used in the range of **100 mg to 500 mg per serving**, while in functional beverages, smoothies, and health foods, the extract is often included at **0.1% to 0.5%** by weight. For products targeting immune support or wellness, higher concentrations of **0.5% to 1%** may be used. Its mild taste and health benefits make it suitable for use in a variety of functional foods and beverages.



BeeChoo LiangBeeChoo Liang  [5:01 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732093279621179)

Pork extract is a flavoring agent made by concentrating the natural flavors from pork, often used to enhance savory taste profiles in commercial food products. It is commonly used in processed meats, broths, soups, sauces, and seasonings to impart a rich, meaty flavor.  
Typical Amounts of Pork Extract in Commercial Food Products:  
The amount of pork extract used in food products can vary based on the product type, desired intensity of flavor, and specific culinary requirements. Typically, pork extract is used in small amounts, ranging from **0.1% to 5%** by weight, depending on the product's formulation.  
Common Applications and Typical Usage Amounts:  
1. **Savory Sauces, Gravies, and Broths:**

* **0.1% to 2%** by weight. In sauces, gravies, and broths, pork extract is often used to enhance the savory, meaty flavor. The typical concentration is around **0.1% to 0.5%** by weight, though for stronger pork-flavored broths or gravies, it can reach up to **2%**.

2. **Processed Meats (Sausages, Ham, Bacon, and Canned Meats):**

* **0.1% to 1%** by weight. In processed meats, pork extract is often used as a flavor enhancer to reinforce the meat's natural taste. The extract may be included in amounts from **0.1% to 0.5%** for mild flavoring, with stronger flavors in some formulations reaching up to **1%**.

3. **Seasoning Mixes and Snack Foods (chips, savory snacks):**

* **0.1% to 0.5%** by weight. Pork extract is sometimes used in seasoning blends for snacks such as chips or savory crackers, where it is added to create a meaty or savory profile. It is usually present in low concentrations of **0.1% to 0.5%** due to the potency of the flavor.

4. **Soups and Ready-to-Eat Meals:**

* **0.1% to 1%** by weight. Pork extract can be used in canned soups or ready-to-eat meals to boost the depth of flavor. The concentration is generally around **0.1% to 0.3%**, but for more intensely flavored soups, it can go up to **1%**.

5. **Ramen and Instant Noodles:**

* **0.1% to 0.5%** by weight. In instant noodle flavor packets, pork extract is often included as part of the seasoning to impart a rich, savory flavor. The extract is generally included in amounts ranging from **0.1% to 0.3%** by weight, though it can go higher for more intense pork flavor.

6. **Marinades and Meat Glazes:**

* **0.5% to 1%** by weight. In marinades and meat glazes, pork extract can be used to enhance the overall savory flavor profile. Typically, it is included in amounts between **0.5% and 1%** for a strong meaty flavor that complements the other ingredients in the glaze or marinade.

7. **Frozen and Chilled Meals:**

* **0.1% to 1%** by weight. In frozen or chilled meals, especially those with pork as a main ingredient (like pork stir-fries or pork-based casseroles), pork extract may be used to intensify the meaty flavors. The amount typically falls in the **0.1% to 0.5%** range but can go up to **1%** for more pronounced pork flavor.

Key Considerations:

* **Flavor Intensity**: Pork extract is potent, so it is used sparingly to enhance the umami or savory aspects of food without overwhelming the overall flavor profile.
* **Application**: The specific amount used depends on whether the product is primarily designed to showcase the pork flavor (like in certain broths or sausages) or whether it's used subtly as a flavor enhancer in combination with other ingredients.
* **Formulation Variations**: Pork extract can be combined with other flavoring agents (like yeast extract, salt, or spices) to create a balanced, complex taste.

Summary:  
Pork extract is typically used in commercial food products at concentrations ranging from **0.1% to 5%** by weight, with most applications using **0.1% to 1%** for flavor enhancement. It is found in products such as broths, processed meats, seasonings, soups, and sauces, where it provides a rich, savory, and umami flavor. The exact amount depends on the specific product, its flavor requirements, and whether the extract is intended to be a primary or secondary flavor component.

[5:05](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732093515158579)

BeeChoo Liang

Portobello mushroom extract is commonly used in commercial food products to enhance savory, umami flavors, and provide depth to dishes, especially in vegan and vegetarian products as a meat alternative. Portobello mushrooms have a rich, meaty taste, which makes their extract an ideal ingredient for flavoring sauces, soups, broths, and plant-based products.  
Typical Amounts of Portobello Mushroom Extract in Commercial Food Products:  
The concentration of portobello mushroom extract used in food products generally ranges from **0.1% to 5%** by weight, depending on the type of product and the desired flavor intensity. Below are common applications and typical usage amounts:  
1. **Savory Sauces, Gravies, and Soups**:

* **0.1% to 1%** by weight. In sauces, gravies, and soups, portobello mushroom extract is used to impart a rich, earthy, and umami flavor. It is typically added at **0.1% to 0.5%** for subtle enhancement, but in recipes where the mushroom flavor is more prominent, it can go up to **1%**.

2. **Plant-Based Meat Alternatives (Burgers, Sausages, Meatballs)**:

* **0.5% to 2%** by weight. In plant-based products like burgers or sausages, portobello mushroom extract is often used to replicate the savory, umami flavors found in meat. The extract helps add a depth of flavor that mimics the richness of traditional meats. The amount typically ranges from **0.5% to 2%**, depending on the intensity of the mushroom flavor desired.

3. **Snack Foods (Chips, Savory Crackers, Popcorn)**:

* **0.1% to 0.5%** by weight. In savory snacks like chips, crackers, or popcorn, portobello mushroom extract can be used to add depth and umami to the seasoning blends. The typical concentration is **0.1% to 0.3%**, but it can go up to **0.5%** in products where the mushroom flavor is a key component.

4. **Frozen Foods (Ready Meals, Stir-Fries, Pizza)**:

* **0.1% to 1%** by weight. In frozen meals like ready-to-eat pizzas, stir-fries, or casseroles, portobello mushroom extract is often used to enhance the overall flavor profile, providing a rich, savory note. The extract is typically included at **0.1% to 0.5%** but can be used at higher concentrations (up to **1%**) in mushroom-flavored dishes or in products with mushroom as a key ingredient.

5. **Baked Goods (Muffins, Bread, Rolls)**:

* **0.1% to 0.5%** by weight. Portobello mushroom extract can be used in savory baked goods to introduce an earthy flavor, especially in recipes like savory muffins or bread. The extract is generally used in low amounts, around **0.1% to 0.3%**, but can go up to **0.5%** in recipes where a more pronounced flavor is desired.

6. **Health Foods and Supplements**:

* **0.1% to 0.5%** by weight. In functional health products or supplements, portobello mushroom extract may be added for its potential antioxidant and immune-supporting properties. The concentration in these products is generally low, around **0.1% to 0.3%**, but can go up to **0.5%** in capsules or powders marketed for mushroom-based health benefits.

7. **Vegan and Vegetarian Products (Mushroom-based Dips, Spreads, and Patés)**:

* **0.5% to 2%** by weight. In vegan and vegetarian dips, spreads, or patés, portobello mushroom extract is used to provide a meaty, savory flavor. The extract is typically used at **0.5% to 1%**, but for products designed to highlight the flavor of mushrooms, it can be used up to **2%**.

Key Considerations:

* **Flavor Profile**: Portobello mushroom extract is known for its rich, earthy, and umami flavor, making it ideal for adding depth to savory dishes or providing a "meaty" taste in plant-based products.
* **Umami and Savory Notes**: Mushroom extracts are commonly used to enhance umami flavors, which are particularly valuable in vegan, vegetarian, and plant-based formulations where the goal is to replicate the taste of meat.
* **Potency**: Mushroom extracts are potent, so small amounts are usually sufficient to achieve the desired flavor in most products.
* **Product Type**: The amount used can depend on whether the product is a main entrée (such as plant-based meat products) or a side dish or snack (such as chips or seasoning mixes). The higher the proportion of the product dedicated to achieving a mushroom flavor, the more extract will be used.

Summary:  
Portobello mushroom extract is typically used in commercial food products at concentrations ranging from **0.1% to 5%** by weight. In savory dishes like sauces, soups, and plant-based products, it is usually used at **0.1% to 1%** for subtle flavor enhancement, while in more mushroom-forward products like plant-based meats or vegan spreads, the extract can be used at **0.5% to 2%**. The extract’s rich, umami-packed flavor makes it popular in both savory foods and functional health products.

[5:07](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732093665772749)

BeeChoo Liang

Psyllium extract is commonly used in commercial food products for its high fiber content, particularly for promoting digestive health and supporting bowel regularity. Psyllium husk extract is often incorporated into food products to increase their fiber content, act as a thickener, or provide functional benefits such as improving gut health.  
Typical Amounts of Psyllium Extract in Commercial Food Products:  
Psyllium extract is typically used in amounts ranging from **0.5% to 5%** by weight, depending on the type of product and its intended function. The specific amount of psyllium extract added to a product can vary based on the desired fiber content and the product's target health benefits. Below are some common applications and the typical usage amounts:  
1. **Fiber-Enriched Foods (Cereal, Granola, Baked Goods)**:

* **0.5% to 3%** by weight. Psyllium extract is frequently used in high-fiber cereals, granola bars, bread, and other baked goods to increase the fiber content. The typical concentration is around **0.5% to 2%** by weight, but for products specifically marketed as high-fiber or digestive health products, it may be used at **3%** or higher.

2. **Dietary Supplements (Fiber Supplements, Capsules, Powders)**:

* **1% to 5%** by weight. In dietary supplements, psyllium extract is often included at higher concentrations to provide a significant fiber boost. The extract can be found in capsules, powders, or fiber drinks, with typical concentrations ranging from **1% to 5%**. Higher concentrations may be used for products specifically intended to support digestive health.

3. **Gluten-Free Products (Bread, Muffins, Pancakes)**:

* **0.5% to 2%** by weight. In gluten-free baked goods, psyllium extract can be used as a binding agent and to improve the texture, mimicking the effects of gluten. It is typically used in small amounts, ranging from **0.5% to 2%** by weight, depending on the product and the desired consistency.

4. **Functional Beverages (Smoothies, Fiber Drinks)**:

* **0.5% to 1.5%** by weight. Psyllium extract is also used in functional beverages like fiber drinks or smoothies that are marketed for digestive health. The typical amount used in these products is **0.5% to 1%** by weight, although it can go up to **1.5%** in drinks specifically designed for high fiber intake.

5. **Processed Foods (Soups, Sauces, and Dressings)**:

* **0.1% to 0.5%** by weight. In processed foods like soups, sauces, or dressings, psyllium extract may be used as a thickening agent or to add fiber. The typical concentration in these products is **0.1% to 0.3%**, though higher concentrations up to **0.5%** may be used in specific formulations.

6. **Health and Weight Loss Foods (Meal Replacements, Snacks)**:

* **1% to 3%** by weight. In meal replacements or snacks marketed for weight management or digestive health, psyllium extract is often included to increase fiber content and promote satiety. Typical amounts range from **1% to 3%** by weight, depending on the product's purpose and whether it is targeting a specific health benefit.

Key Considerations:

* **Fiber Content**: Psyllium extract is valued for its ability to provide soluble fiber, which can help regulate digestion, improve bowel movements, and support gut health. The typical daily recommended fiber intake for adults is about **25–38 grams**, and psyllium is often added to products to help meet this requirement.
* **Functionality**: Besides providing fiber, psyllium extract is also used as a gelling or thickening agent in some food products. It can absorb water and form a gel-like consistency, which is especially useful in gluten-free baking or functional beverages.
* **Tolerance and Serving Size**: Psyllium extract is generally safe in moderate amounts, but higher levels may cause gastrointestinal discomfort. As such, the amounts used in commercial products are typically formulated to be within tolerable levels for most consumers.

Summary:  
Psyllium extract is commonly used in commercial food products at concentrations of **0.5% to 5%** by weight. For fiber-enriched foods, it is typically used in the range of **0.5% to 3%**, while in dietary supplements or weight loss products, higher concentrations of **1% to 5%** are more common. It is used in a variety of products such as fiber-enriched baked goods, gluten-free foods, functional beverages, and dietary supplements, with its primary function being to boost fiber content and support digestive health.

[5:09](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732093759672649)

BeeChoo Liang

Purple sweet potato extract is used in commercial food products primarily for its vibrant color and natural sweetness, as well as for its nutritional benefits. It is rich in antioxidants (such as anthocyanins) and dietary fiber, which makes it a popular choice for health-focused products. The extract can be used in a variety of food applications, including baked goods, beverages, snacks, and supplements.  
Typical Amounts of Purple Sweet Potato Extract in Commercial Food Products:  
The amount of purple sweet potato extract used in commercial food products typically ranges from **0.1% to 5%** by weight, depending on the product type, its intended purpose (e.g., flavor enhancement, coloring, or nutritional benefit), and the desired intensity of the extract’s effects. Below are some common applications and typical usage amounts:  
1. **Beverages (Juices, Smoothies, Energy Drinks)**

* **0.1% to 2%** by weight. In beverages like juices, smoothies, or energy drinks, purple sweet potato extract is often used to provide a natural color and a subtle sweetness, along with potential health benefits from antioxidants. The extract is typically used in amounts ranging from **0.1% to 1%** by weight, but in more vibrant or specialty drinks, it could go up to **2%**.

2. **Snacks (Chips, Crackers, Popcorn)**

* **0.1% to 0.5%** by weight. In snack foods like chips, crackers, or popcorn, purple sweet potato extract can be used to enhance color and provide a mild, natural flavor. It is generally used in small quantities, around **0.1% to 0.3%** by weight, but could go up to **0.5%** for a stronger flavor or color enhancement.

3. **Baked Goods (Muffins, Bread, Cakes, Cookies)**

* **0.1% to 2%** by weight. In baked goods like muffins, bread, cakes, or cookies, purple sweet potato extract is used both for its color (to create appealing hues) and for its mild flavor. The typical concentration is between **0.1% and 1%** by weight, but for products where the extract’s color or flavor is a primary feature, it may be used at **2%**.

4. **Desserts (Ice Cream, Puddings, Jellies, Gelato)**

* **0.2% to 3%** by weight. In desserts, purple sweet potato extract can be used to enhance color and add sweetness without overpowering the product. The extract is often used at **0.2% to 1%** by weight, but in products where the flavor or color is a feature (e.g., purple sweet potato ice cream or pudding), it may be included at **2% to 3%**.

5. **Functional Foods and Supplements**

* **1% to 5%** by weight. Purple sweet potato extract is sometimes included in functional foods or dietary supplements marketed for their antioxidant or fiber content. In these products, the extract can be used at concentrations from **1% to 5%** by weight, depending on the intended health benefits and serving sizes.

6. **Sauces, Dressings, and Condiments**

* **0.1% to 0.5%** by weight. In sauces, dressings, and condiments, purple sweet potato extract is used mainly for color enhancement and a slight sweetness. The typical usage is around **0.1% to 0.3%** by weight, although it can reach **0.5%** in products where color is a more prominent feature.

7. **Ready-to-Eat Meals (Casseroles, Stir-Fries)**

* **0.1% to 1%** by weight. In ready-to-eat meals such as casseroles, stir-fries, and other prepared dishes, purple sweet potato extract may be used for color and flavor enhancement. It is typically used in amounts ranging from **0.1% to 0.5%**, but higher concentrations up to **1%** may be used in specific recipes.

Key Considerations:

* **Color**: The vibrant purple color of the sweet potato extract is one of its most attractive features, especially in products like beverages, snacks, and desserts. The extract is typically used in small amounts to achieve a natural, appealing hue.
* **Flavor**: Purple sweet potato extract has a mildly sweet flavor, so it is often used in foods and beverages where a subtle, natural sweetness is desired. It is often paired with other flavor enhancers like vanilla or cinnamon.
* **Nutritional Benefits**: Purple sweet potatoes are rich in antioxidants (mainly anthocyanins), which are valued for their potential health benefits. This makes the extract popular in health-focused products.
* **Functionality**: Beyond flavor and color, purple sweet potato extract is also used as a source of dietary fiber and to provide functional benefits, such as supporting digestive health.

Summary:  
Purple sweet potato extract is commonly used in commercial food products at concentrations ranging from **0.1% to 5%** by weight, depending on the desired outcome. For color and flavor enhancement, it is typically used at **0.1% to 2%**, with **0.5% to 1%** being common in many product categories. In health-focused or functional products, it may be used at higher concentrations, up to **5%**, to emphasize the antioxidant and fiber content. The extract is particularly popular in beverages, snacks, baked goods, and desserts, where its vibrant color and subtle sweetness are valued.

[5:12](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732093923405949)

BeeChoo Liang

Purple sweet potato juice extract is typically used in commercial food products for its vibrant color, natural sweetness, and potential health benefits, including its antioxidant content (especially anthocyanins). It is commonly used in a range of products, including beverages, snacks, baked goods, and health foods.  
Typical Amounts of Purple Sweet Potato Juice Extract in Commercial Food Products:  
The amount of purple sweet potato juice extract used in food products generally ranges from **0.1% to 5%** by weight, depending on the product type and the intended function (color enhancement, flavor, or nutritional value). Below are typical applications and the usual concentrations:  
1. **Beverages (Juices, Smoothies, Energy Drinks)**

* **0.1% to 2%** by weight. In beverages such as juices, smoothies, or functional energy drinks, purple sweet potato juice extract is used primarily for its color and mild sweetness. The typical concentration ranges from **0.1% to 1%** by weight, though it can go up to **2%** in beverages where the color or flavor from the extract is a key component.

2. **Snacks (Chips, Crackers, Popcorn)**

* **0.1% to 0.5%** by weight. In snacks like chips, crackers, or popcorn, purple sweet potato juice extract is typically used to provide color and enhance the visual appeal of the product. It is used in small quantities, usually **0.1% to 0.3%** by weight, though higher concentrations up to **0.5%** may be used to achieve a more pronounced color.

3. **Baked Goods (Muffins, Bread, Cakes, Cookies)**

* **0.1% to 1%** by weight. In baked goods like muffins, bread, cakes, and cookies, purple sweet potato juice extract is used both for color and to impart a subtle sweetness. The typical concentration is around **0.1% to 0.5%** by weight, but in more vibrant or specialty products, the extract can be used up to **1%**.

4. **Desserts (Ice Cream, Puddings, Gelato)**

* **0.2% to 3%** by weight. In desserts, the extract is used to add color and flavor, especially in products like ice cream, puddings, or gelato. The typical range is **0.2% to 1%** by weight, but for products where the purple sweet potato flavor or color is a prominent feature, the extract can be used up to **3%**.

5. **Functional Foods and Supplements**

* **1% to 5%** by weight. Purple sweet potato juice extract is sometimes added to health-focused products or supplements for its antioxidant properties and dietary fiber. In these products, it may be used at higher concentrations, generally ranging from **1% to 5%** by weight, depending on the intended health benefits and the size of the product.

6. **Sauces, Dressings, and Condiments**

* **0.1% to 0.5%** by weight. In sauces, dressings, or condiments, purple sweet potato juice extract is typically used to enhance color and add a slight sweetness. The concentration is usually **0.1% to 0.3%** by weight, though it can reach up to **0.5%** for products where the color plays a larger role.

7. **Ready-to-Eat Meals (Stir-fries, Casseroles)**

* **0.1% to 0.5%** by weight. In ready-to-eat meals or prepared dishes, purple sweet potato juice extract can be used for color enhancement and to provide a subtle flavor. The extract is generally used in small amounts, typically **0.1% to 0.3%**, although some products may use it up to **0.5%** for a more noticeable effect.

Key Considerations:

* **Color**: Purple sweet potato juice extract is highly valued for its vibrant purple hue, which is often the primary reason for its inclusion in many products. The amount used is usually tailored to achieve the desired color intensity.
* **Flavor**: The extract has a mild, natural sweetness, and it can subtly enhance the flavor profile of a product without being overpowering.
* **Nutritional Benefits**: Purple sweet potatoes are rich in antioxidants, specifically anthocyanins, which contribute to their color and may provide health benefits such as anti-inflammatory effects and support for heart health. This makes the extract appealing for health-focused products.
* **Functionality**: In addition to color and flavor, purple sweet potato juice extract can also contribute fiber and other nutritional components, making it useful in functional foods.

Summary:  
Purple sweet potato juice extract is used in commercial food products at concentrations typically ranging from **0.1% to 5%** by weight. For color enhancement and flavor, it is generally used at **0.1% to 2%** in beverages, baked goods, and snacks. For more vibrant products, such as desserts or health-focused foods, it can be used at higher concentrations of **2% to 5%**. The extract is valued for its ability to provide natural color, mild sweetness, and nutritional benefits, particularly antioxidants.



BeeChoo LiangBeeChoo Liang  [5:21 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732094515990749)

Rhodiola root extract, derived from the Rhodiola rosea plant, is commonly used in commercial food products for its adaptogenic properties, which are believed to help the body cope with stress and improve endurance. It is often included in products marketed for energy, mood enhancement, or stress relief. Rhodiola is available in various forms, including powder, liquid extract, and concentrated powder, and is used in a range of functional foods and beverages, such as energy drinks, supplements, snacks, and health bars.  
Typical Amounts of Rhodiola Root Extract in Commercial Food Products  
The amount of Rhodiola root extract used in commercial food products typically ranges from **0.1% to 5%** by weight, depending on the intended purpose and product type. Below are some typical applications and the corresponding usage amounts:  
1. **Energy Drinks and Functional Beverages**

* **0.1% to 1%** by weight. In energy drinks, smoothies, or functional beverages, Rhodiola extract is typically used to provide adaptogenic benefits (helping the body handle stress and improve mental clarity). The typical concentration is around **0.1% to 0.5%**, but in some products where its effects are more emphasized, it can be used up to **1%** by weight.

2. **Supplements and Health Bars**

* **0.5% to 3%** by weight. Rhodiola root extract is often included in dietary supplements, health bars, or protein bars aimed at promoting stress reduction and improving energy levels. The concentration typically ranges from **0.5% to 3%** by weight, though some products may contain higher amounts, especially if marketed as high-potency or superfood bars.

3. **Snacks and Functional Foods**

* **0.1% to 1%** by weight. In snacks or other functional foods (e.g., granola, trail mixes, or cookies), Rhodiola extract is usually included for its adaptogenic properties and may be used in small amounts (typically around **0.1% to 0.5%**) to provide benefits without significantly altering the flavor or texture of the product. In some cases, it may be used up to **1%** to provide a more noticeable effect.

4. **Beverages (Herbal Teas, Cold Brew Coffee)**

* **0.1% to 1%** by weight. In beverages like herbal teas or cold brew coffee, Rhodiola extract is used for its mood-enhancing and stress-relieving properties. The typical concentration is **0.1% to 0.5%** by weight, although it can be used up to **1%** if the beverage is marketed as an energy or wellness drink.

5. **Smoothies and Powdered Drink Mixes**

* **0.5% to 2%** by weight. In powdered drink mixes or smoothie blends, Rhodiola extract is added to support energy and mental clarity. The typical concentration in these products ranges from **0.5% to 1%**, but can be as high as **2%** for products that are designed to deliver higher adaptogenic effects.

6. **Chocolate and Confectionery Products**

* **0.1% to 0.5%** by weight. Some health-focused chocolates or confectionery products may incorporate Rhodiola extract for its adaptogenic properties. The extract is typically used in small amounts, typically **0.1% to 0.3%** by weight, as its flavor profile can be quite strong.

Key Considerations:

* **Flavor**: Rhodiola root extract has a distinctive, slightly bitter flavor that may be noticeable in some products, especially when used in higher concentrations. Many manufacturers aim to balance this with other flavorings, like sweeteners, to mask the bitterness.
* **Adaptogenic Effects**: Rhodiola extract is included primarily for its adaptogenic benefits, which help improve mental clarity, reduce fatigue, and support resilience to stress. It is often used in products marketed as energy boosters or stress relievers.
* **Potency**: Rhodiola extracts can vary in potency, with some concentrated extracts containing higher levels of active compounds (such as rosavin and salidroside). The typical recommended dose for Rhodiola supplements is often in the range of **200 mg to 600 mg** per day, but the concentration in food products may be lower due to taste and formulation considerations.

Summary:  
Rhodiola root extract is typically used in commercial food products at concentrations ranging from **0.1% to 5%** by weight, depending on the application. In beverages and snacks, it is often used at lower levels (**0.1% to 1%**) for its adaptogenic effects. In dietary supplements or health-focused bars, the concentration may be higher, ranging from **0.5% to 3%**, to provide more significant benefits. Its inclusion is mainly aimed at enhancing energy, mental clarity, and stress resilience, although the extract's flavor may need to be carefully balanced with other ingredients.

New

[5:22](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732094527929939)

BeeChoo Liang

Red chile extract is used in commercial food products primarily for its intense flavor and color, as well as its potential health benefits, including its capsicum content, which may provide a spicy kick and antioxidant properties. Red chile extract is popular in sauces, snacks, seasonings, and health supplements, and is often valued for both its heat and its natural coloring ability.  
Typical Amounts of Red Chile Extract in Commercial Food Products  
The amount of red chile extract used in commercial food products typically ranges from **0.1% to 2%** by weight, depending on the intended use, desired flavor intensity, and product category. Below are some typical applications and the corresponding usage amounts:  
1. **Sauces, Salsas, and Hot Sauces**

* **0.1% to 1%** by weight. Red chile extract is commonly used in sauces, salsas, and hot sauces to provide heat and a red color. The concentration typically ranges from **0.1% to 0.5%** by weight for mild to medium heat levels. For products marketed as very hot or spicy, the concentration may increase up to **1%** by weight.

2. **Seasonings, Spices, and Rubs**

* **0.1% to 0.5%** by weight. In spice blends, seasonings, and dry rubs, red chile extract is often included to add a flavorful heat. The typical amount used is **0.1% to 0.3%** by weight, but in some cases, the concentration could reach up to **0.5%** for a more robust flavor or heat profile.

3. **Snacks (Chips, Crackers, Popcorn)**

* **0.05% to 0.2%** by weight. Red chile extract is often used in snacks such as chips, crackers, or popcorn to provide a spicy kick and red color. The amount is typically quite small, around **0.05% to 0.2%** by weight, to avoid overwhelming the snack with too much heat while still delivering flavor and color.

4. **Beverages (Energy Drinks, Smoothies, Flavored Waters)**

* **0.1% to 0.5%** by weight. In functional beverages or energy drinks that aim to provide a spicy kick or promote metabolism, red chile extract may be used. The concentration is generally **0.1% to 0.3%** by weight to give a mild heat without overpowering the drink, although some beverages may contain up to **0.5%** for a stronger effect.

5. **Prepared Meals and Ready-to-Eat Foods**

* **0.1% to 0.5%** by weight. In ready-to-eat meals like frozen foods, microwaveable meals, or packaged soups, red chile extract may be included for flavor and color. The concentration typically ranges from **0.1% to 0.3%**, though it may go up to **0.5%** for products intended to have a spicier taste profile.

6. **Confectionery and Candy (Spicy Candies)**

* **0.1% to 0.5%** by weight. In certain types of confectionery, especially spicy or chili-infused candies, red chile extract is used to provide heat. The typical concentration is between **0.1% and 0.3%** by weight, though it can go up to **0.5%** for products marketed as spicy treats.

7. **Health and Dietary Supplements**

* **0.5% to 2%** by weight. Red chile extract, particularly capsaicin (the active compound responsible for the heat), is sometimes used in dietary supplements aimed at promoting metabolism, fat burning, or circulation. The concentration in supplements is typically higher, ranging from **0.5% to 2%** by weight, depending on the desired potency and effect.

Key Considerations:

* **Heat Level**: The heat level of red chile extract can vary depending on the type of chile used and its concentration of capsaicin. Food manufacturers adjust the amount of extract used based on the desired spice level, which can range from mildly spicy to very hot.
* **Color**: Red chile extract also contributes to the natural red or orange color of food products, especially sauces, snacks, and beverages. In such cases, it may be used at lower concentrations to provide color without overpowering the flavor.
* **Flavor Balance**: Red chile extract has a strong flavor, so it is usually used in moderate amounts to avoid dominating the taste profile. In products where the focus is on spice, higher amounts may be used, but generally, it is combined with other spices and ingredients to create a balanced flavor.

Summary:  
Red chile extract is typically used in commercial food products at concentrations ranging from **0.1% to 2%** by weight. For sauces, snacks, and seasonings, the typical range is **0.1% to 0.5%**, providing flavor and color without overwhelming the product. In beverages or health supplements, the amount may be higher, ranging from **0.1% to 1%**, and in supplements, it can go up to **2%** for its potential health benefits, like metabolism enhancement. The amount depends on the desired heat level, flavor intensity, and product type.

[5:24](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732094679392159)

BeeChoo Liang

Red fruit extracts are used in commercial food products primarily for their vibrant color, antioxidant properties, and natural sweetness or flavor. Common red fruits used in extracts include strawberries, raspberries, cherries, pomegranates, and red grapes, among others. These extracts are often included in beverages, snacks, desserts, and dietary supplements.  
Typical Amounts of Red Fruit Extract in Commercial Food Products  
The amount of red fruit extract used in commercial food products typically ranges from **0.1% to 5%** by weight, depending on the intended application. Below are some typical use cases and the corresponding usage amounts:  
1. **Beverages (Juices, Smoothies, Functional Drinks)**

* **0.1% to 2%** by weight. In beverages such as juices, smoothies, flavored waters, and functional drinks, red fruit extract is commonly used for both flavor and color. The concentration is typically around **0.1% to 0.5%** by weight for a subtle fruit flavor, but it can range up to **2%** by weight for more intense flavor or color impact, especially in drinks emphasizing fruitiness.

2. **Snacks (Granola Bars, Energy Bars, Trail Mixes)**

* **0.1% to 1%** by weight. In snack products like granola bars, energy bars, and trail mixes, red fruit extract is often used to enhance flavor and add natural sweetness. The typical concentration is **0.1% to 0.5%** by weight, though higher amounts up to **1%** may be used for products that focus on delivering a stronger fruit flavor or antioxidant benefits.

3. **Dairy Products (Yogurt, Ice Cream, Puddings)**

* **0.1% to 1%** by weight. In dairy products such as yogurt, ice cream, and puddings, red fruit extracts provide both flavor and color. The concentration is generally **0.1% to 0.5%** by weight, but it can go up to **1%** for a more pronounced fruit flavor or deeper color.

4. **Confectionery (Candies, Chewing Gum, Fruit Snacks)**

* **0.1% to 2%** by weight. In confectionery items such as candies, chewing gum, or fruit snacks, red fruit extracts are used to enhance flavor, provide natural color, and sometimes to add a touch of sweetness. The typical range for use is **0.1% to 1%**, although some products may use up to **2%** for stronger flavor and color.

5. **Baked Goods (Cakes, Muffins, Cookies)**

* **0.1% to 1%** by weight. In baked goods like cakes, muffins, and cookies, red fruit extracts are used to provide flavor and sometimes color. The concentration is usually between **0.1% and 0.5%** by weight, though it can be up to **1%** for products where fruit flavor is a key feature.

6. **Sauces and Dressings**

* **0.1% to 0.5%** by weight. In sauces, dressings, and marinades, red fruit extracts can be used for flavor and color enhancement. The typical amount is **0.1% to 0.3%** by weight, although it may be used up to **0.5%** in products where fruit-based flavor is a dominant component.

7. **Health and Dietary Supplements**

* **0.5% to 5%** by weight. In dietary supplements, particularly those emphasizing antioxidants or fruit-based nutrition, red fruit extracts may be used in higher concentrations, ranging from **0.5% to 5%** by weight. These are often in the form of powders or capsules.

Key Considerations:

* **Flavor**: Red fruit extracts can be quite sweet and flavorful, so they are often used in modest amounts in food products to avoid overpowering other flavors. The exact amount will depend on the type of red fruit used and the desired intensity of the fruit flavor.
* **Color**: Red fruit extracts provide a range of colors, from deep reds to purples, depending on the type of fruit. The extract’s color may also be adjusted with pH changes or additional colorants to achieve the desired hue.
* **Antioxidant Properties**: Many red fruits, such as pomegranates, raspberries, and cherries, are rich in antioxidants like anthocyanins, which are often highlighted in functional food products.
* **Natural Sweeteners**: Some red fruit extracts can provide natural sweetness in addition to flavor and color, which can reduce the need for added sugars or artificial sweeteners.

Summary:  
Red fruit extracts are typically used in commercial food products at concentrations ranging from **0.1% to 5%** by weight. The amount depends on the product type, with typical concentrations of **0.1% to 1%** in beverages, snacks, dairy, and confectionery products. In health supplements or highly fruit-flavored products, the extract may be used in higher concentrations (up to **5%**). These extracts are valued for their natural color, flavor, and antioxidant content, making them popular in a variety of food and beverage categories.

[5:27](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732094855796079)

BeeChoo Liang

Red wine extract is used in commercial food products primarily for its antioxidant properties, as well as its potential to impart a wine-like flavor or enhance the color of the product. The extract is rich in polyphenols, such as resveratrol and anthocyanins, which are beneficial compounds known for their antioxidant effects. It is typically used in small amounts to enhance flavor, color, and health benefits.  
Typical Amounts of Red Wine Extract in Commercial Food Products  
The typical amount of red wine extract used in food products generally ranges from **0.1% to 2%** by weight, depending on the type of product and its intended purpose. Below are typical use cases and the corresponding usage amounts:  
1. **Beverages (Juices, Functional Drinks, Wines)**

* **0.1% to 1%** by weight. In beverages like juices, smoothies, and functional drinks, red wine extract is often used to add flavor, color, and antioxidant benefits. The concentration is typically **0.1% to 0.5%** by weight for a subtle effect, but in some functional drinks emphasizing health benefits, it could go up to **1%** by weight.

2. **Snacks (Granola Bars, Energy Bars, Trail Mixes)**

* **0.1% to 0.5%** by weight. Red wine extract can be used in snacks like granola bars, energy bars, or trail mixes to offer antioxidant properties and a mild wine flavor. The typical usage is **0.1% to 0.3%** by weight, although in products marketed for their health benefits, it may be used at higher levels, up to **0.5%**.

3. **Confectionery (Candies, Chocolate, Gums)**

* **0.1% to 1%** by weight. In confectionery products, red wine extract can be used to add a touch of wine flavor, especially in chocolate or candies marketed as gourmet or premium. The extract is typically used in small amounts, around **0.1% to 0.3%**, although for a more pronounced flavor, it could go up to **1%**.

4. **Sauces and Dressings**

* **0.1% to 0.5%** by weight. In sauces, dressings, and marinades, red wine extract is used for its flavor and color properties. The typical amount is between **0.1% and 0.3%** by weight. For products that emphasize a deeper wine-like flavor, the concentration can be as high as **0.5%**.

5. **Dairy Products (Yogurt, Ice Cream, Puddings)**

* **0.1% to 0.3%** by weight. Red wine extract is sometimes used in dairy products such as yogurt, ice cream, or puddings, especially in gourmet or health-focused versions. The extract is generally used in small amounts, between **0.1% and 0.3%** by weight, to enhance flavor or provide antioxidant benefits without overpowering the product.

6. **Baked Goods (Cakes, Muffins, Cookies)**

* **0.1% to 0.5%** by weight. In baked goods, red wine extract may be used for both flavor and color enhancement, especially in gourmet or health-conscious products. The typical amount is around **0.1% to 0.3%** by weight, though in some higher-end products, it can reach **0.5%**.

7. **Health and Dietary Supplements**

* **0.5% to 2%** by weight. In dietary supplements, particularly those marketed for their antioxidant properties or heart health benefits, red wine extract is used in higher concentrations, ranging from **0.5% to 2%**. This is especially common in supplements containing resveratrol or other polyphenols from red wine.

Key Considerations:

* **Flavor**: Red wine extract contributes a wine-like flavor, but it is typically mild and not as intense as the flavor of actual wine. It can enhance the overall flavor profile without dominating the taste of the product.
* **Color**: Red wine extract provides a natural red or purplish color, which is often used to enhance the appearance of foods, particularly in sauces, jams, and desserts.
* **Antioxidants**: The primary health benefit associated with red wine extract is its high content of antioxidants, particularly resveratrol, which is known for its potential to support heart health and fight oxidative stress. This makes it a popular ingredient in health-focused food products.

Summary:  
Red wine extract is typically used in commercial food products at concentrations ranging from **0.1% to 2%** by weight, depending on the intended application. It is most commonly used in beverages, snacks, sauces, and functional foods for its flavor, color, and antioxidant benefits. For subtle flavor and color effects, it is typically used at **0.1% to 0.5%**, but in health supplements or gourmet products, it may be used at concentrations up to **2%**. The extract adds a wine-like flavor, a deep red color, and potential health benefits without being overpowering in the final product.

[5:30](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732095054148089)

BeeChoo Liang

Sardine extract, a type of fish extract made from sardines, is typically used in commercial food products for its rich umami flavor and nutritional benefits, such as omega-3 fatty acids, protein, and other trace nutrients. It is primarily utilized in savory foods like soups, sauces, and seasonings, as well as in some pet foods.  
Typical Amounts of Sardine Extract in Commercial Food Products  
The amount of sardine extract used in food products can vary depending on the product type and its intended function (flavor, nutrition, etc.). Below are some general guidelines on how much sardine extract is typically used:  
1. **Soups and Broths**

* **0.5% to 2%** by weight. Sardine extract is often used in soups, broths, and ready-made sauces for its rich, savory umami flavor. The typical usage ranges from **0.5% to 1%** by weight for a mild flavor, but for more pronounced fish or umami flavors, it could be used up to **2%**.

2. **Seasoning and Sauces (Fish Sauce, Marinades, Gravies)**

* **0.1% to 5%** by weight. In seasoning mixes, fish sauces, marinades, or gravies, sardine extract is commonly used for flavor enhancement. The concentration can range from **0.1% to 1%** in less intense applications, but in products designed to deliver a strong fish flavor or umami boost, it may be used at levels closer to **2% to 5%**.

3. **Prepared and Canned Meals**

* **0.1% to 2%** by weight. Sardine extract is often incorporated into prepared or canned meals to provide a savory, rich flavor profile. The amount used is typically between **0.1% and 1%** for subtle seasoning, with higher concentrations of **2%** in products where a more intense fish flavor is desired.

4. **Snack Foods (Seasoned Chips, Crackers)**

* **0.1% to 1%** by weight. Sardine extract can be used in savory snacks like seasoned chips or crackers to boost flavor. The amount typically ranges from **0.1% to 0.5%** by weight to provide a fishy umami taste without overpowering the snack's other flavors, though it can go up to **1%** in stronger-flavored varieties.

5. **Pet Foods (Dog and Cat Food)**

* **0.5% to 2%** by weight. Sardine extract is sometimes included in pet foods, especially fish-based recipes, for its protein content and omega-3 fatty acids. The amount typically ranges from **0.5% to 2%** by weight, depending on the formulation and the health benefits being emphasized.

6. **Health and Nutritional Supplements**

* **1% to 10%** by weight. In some health supplements that highlight omega-3 fatty acids, protein, or other nutrients from fish, sardine extract may be used at higher concentrations, typically ranging from **1% to 5%** for capsule forms, but it can be up to **10%** in specialized formulations.

Key Considerations:

* **Flavor**: Sardine extract imparts a strong, savory, and slightly fishy flavor, so it is used in modest amounts to avoid overpowering the product. It's often utilized to enhance the overall umami profile of the food.
* **Nutritional Benefits**: Sardine extract is rich in omega-3 fatty acids, protein, and trace nutrients such as vitamins and minerals. This makes it a desirable ingredient in health-focused products, especially for its potential heart-healthy benefits.
* **Salt Content**: Sardine extract, particularly in the form of fish sauces, can be salty, so the quantity used should be balanced with other ingredients in the formulation to maintain taste and nutritional balance.

Summary:  
Sardine extract is typically used in commercial food products at concentrations ranging from **0.1% to 5%** by weight, depending on the application. It is commonly found in soups, sauces, seasonings, snacks, and pet foods, where it provides a savory, umami-rich flavor. The exact amount used depends on the product type, with **0.5% to 2%** being common in savory foods and up to **10%** in nutritional supplements.

[5:34](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732095289603539)

BeeChoo Liang

Sweet potato extract is primarily used in commercial food products for its natural sweetness, flavor, and nutritional benefits, including its rich content of vitamins, minerals, and antioxidants (like beta-carotene). It is found in a variety of food and beverage applications, such as beverages, snacks, baked goods, and functional foods.  
Typical Amounts of Sweet Potato Extract in Commercial Food Products  
The amount of sweet potato extract used in food products can vary depending on the product's intended purpose, such as flavor enhancement, color, or nutritional benefits. Typical usage amounts range from **0.1% to 5%** by weight. Below are common applications and typical concentrations:  
1. **Beverages (Juices, Smoothies, Functional Drinks)**

* **0.1% to 2%** by weight. In beverages like juices, smoothies, and functional drinks, sweet potato extract is used for both flavor and color. The typical concentration is **0.1% to 0.5%** for subtle flavor, though it may reach **2%** for more pronounced sweetness or color (especially in smoothies and health drinks emphasizing natural ingredients).

2. **Snacks (Granola Bars, Energy Bars, Chips, Crackers)**

* **0.1% to 1%** by weight. Sweet potato extract can be used in snacks like granola bars, energy bars, or sweet potato chips to enhance flavor and provide nutritional benefits. The extract is typically used in amounts ranging from **0.1% to 0.5%** by weight, though some products may use **up to 1%** for a stronger sweet potato flavor or natural sweetness.

3. **Baked Goods (Cakes, Muffins, Cookies)**

* **0.1% to 1%** by weight. In baked goods such as cakes, muffins, and cookies, sweet potato extract is often used to enhance flavor and contribute natural sweetness. The typical usage is **0.1% to 0.5%** by weight, although in sweeter or health-focused baked goods, the extract can be used up to **1%**.

4. **Dairy Products (Yogurt, Ice Cream, Puddings)**

* **0.1% to 1%** by weight. Sweet potato extract is used in dairy products like yogurt, ice cream, and puddings to add natural sweetness and flavor. It is typically used in small amounts, around **0.1% to 0.5%** by weight, though it can be higher in products that are marketed as being more health-focused or containing natural ingredients.

5. **Sauces, Dressings, and Condiments**

* **0.1% to 0.5%** by weight. In sauces and dressings, sweet potato extract can add a mild, sweet flavor that complements savory ingredients. The concentration is typically **0.1% to 0.3%** by weight for flavor enhancement, although it may be used up to **0.5%** for a more pronounced sweetness.

6. **Health and Nutritional Supplements**

* **0.5% to 5%** by weight. In dietary supplements, particularly those emphasizing natural sources of vitamins or antioxidants, sweet potato extract may be used in higher concentrations. The typical range is **0.5% to 2%** by weight, though it could be as high as **5%** in formulations designed to provide a significant amount of nutritional content from sweet potatoes, such as in capsules or powders.

7. **Cereals and Meal Replacements**

* **0.1% to 1%** by weight. In cereals, breakfast bars, and meal replacement products, sweet potato extract may be used for its flavor and nutritional value. Typical concentrations are around **0.1% to 0.5%** by weight, with higher levels reaching **1%** for more intense flavor or nutritional claims.

Key Considerations:

* **Natural Sweetness**: Sweet potato extract is used as a natural sweetener, providing mild sweetness without the need for refined sugars. This makes it a popular choice in health-conscious products or those targeting a clean label.
* **Color**: Sweet potato extract can contribute to the product's color, providing a warm orange or golden hue, particularly in baked goods, beverages, or desserts.
* **Nutritional Benefits**: Sweet potato extract is rich in beta-carotene (a precursor to vitamin A), fiber, and antioxidants. This makes it attractive for functional foods and products marketed with health benefits, such as those targeting immune support or digestive health.
* **Flavor Profile**: The flavor of sweet potato extract is subtly sweet with a mild earthy undertone. It's typically used in combination with other flavoring agents to balance sweetness and provide a more complex flavor profile.

Summary:  
Sweet potato extract is typically used in commercial food products at concentrations ranging from **0.1% to 5%** by weight. It is most commonly used in beverages, snacks, baked goods, dairy products, and health supplements. The typical amounts in food products are generally **0.1% to 1%** by weight, while health supplements or products emphasizing the nutritional benefits of sweet potatoes may use higher concentrations up to **5%**. Sweet potato extract provides natural sweetness, color, and nutritional benefits, making it a popular ingredient in health-focused and clean-label products.

[5:36](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732095383609049)

BeeChoo Liang

Sweet cherry extract is commonly used in commercial food products for its distinct fruity flavor, natural sweetness, and antioxidant properties. It is used in a variety of products, such as beverages, snacks, desserts, and health supplements. The concentration of sweet cherry extract varies depending on the application, desired flavor profile, and health benefits.  
Typical Amounts of Sweet Cherry Extract in Commercial Food Products  
The typical amount of sweet cherry extract used in food products generally ranges from **0.1% to 5%** by weight. The exact amount depends on the type of product and its intended purpose. Below are common applications and typical usage amounts:  
1. **Beverages (Juices, Smoothies, Functional Drinks)**

* **0.1% to 2%** by weight. In beverages like juices, smoothies, and functional drinks, sweet cherry extract is used to impart the characteristic cherry flavor and natural sweetness. The typical concentration is **0.1% to 0.5%** by weight for subtle flavor, though it can go up to **2%** for a more pronounced cherry taste.

2. **Snacks (Granola Bars, Energy Bars, Fruit Snacks)**

* **0.1% to 1%** by weight. Sweet cherry extract is used in snacks like granola bars, energy bars, or fruit snacks to enhance the flavor with a fruity cherry note. The typical amount is **0.1% to 0.3%** by weight, though it can reach **1%** in products where a stronger cherry flavor is desired.

3. **Confectionery (Candies, Gummies, Chocolate, Jellies)**

* **0.1% to 1%** by weight. In confectionery products such as candies, gummies, chocolates, or fruit jellies, sweet cherry extract adds a rich cherry flavor. The concentration typically ranges from **0.1% to 0.5%** for subtle flavor, but it may go up to **1%** for more intense cherry taste.

4. **Dairy Products (Yogurt, Ice Cream, Puddings)**

* **0.1% to 1%** by weight. Sweet cherry extract is used in dairy products like yogurt, ice cream, and puddings to provide a natural cherry flavor. The amount used is typically **0.1% to 0.5%** by weight, though it can be higher (up to **1%**) in products that focus on a pronounced cherry flavor or are marketed as gourmet or premium.

5. **Baked Goods (Cakes, Muffins, Cookies)**

* **0.1% to 1%** by weight. Sweet cherry extract is used in baked goods such as cakes, muffins, or cookies to provide flavor. The typical concentration is **0.1% to 0.3%** by weight, though it can go up to **1%** in products that emphasize cherry as a key flavor.

6. **Sauces, Dressings, and Condiments**

* **0.1% to 0.5%** by weight. In sauces, dressings, or fruit-based condiments, sweet cherry extract can be used for flavor enhancement, especially in products that pair well with the fruity sweetness of cherries. The typical concentration is **0.1% to 0.3%** by weight, though higher concentrations of **0.5%** may be used for a more intense flavor.

7. **Health and Nutritional Supplements**

* **0.5% to 5%** by weight. In health supplements that emphasize antioxidant benefits or other health properties of cherries (such as anti-inflammatory benefits), sweet cherry extract may be used in higher concentrations. The typical range is **0.5% to 2%** by weight, although it can go up to **5%** in specialized formulations like powders, capsules, or gummies designed for health benefits.

8. **Cereals and Meal Replacements**

* **0.1% to 1%** by weight. In breakfast cereals, cereal bars, or meal replacement products, sweet cherry extract is sometimes used to add flavor and color. The typical usage is **0.1% to 0.5%** by weight, with concentrations up to **1%** for products that emphasize cherry flavor.

Key Considerations:

* **Flavor**: Sweet cherry extract provides a vibrant, fruity, and mildly sweet flavor, making it ideal for a variety of products where a natural cherry taste is desired without using fresh cherries. The amount used typically balances the need for flavor enhancement without overpowering the product.
* **Color**: Cherry extract can also contribute to the product’s color, providing a reddish or pinkish hue, which is especially desirable in beverages, desserts, and candy.
* **Antioxidant Content**: Sweet cherries are rich in antioxidants, particularly anthocyanins, which are linked to health benefits like anti-inflammatory effects and cardiovascular support. Products with sweet cherry extract often emphasize these benefits, especially in health-focused or functional food products.

Summary:  
Sweet cherry extract is commonly used in commercial food products at concentrations ranging from **0.1% to 5%** by weight, depending on the product type. It is most frequently used in beverages, snacks, confectionery, dairy products, and health supplements. The typical range for most food products is **0.1% to 1%**, while higher concentrations may be used in health supplements or products marketed for their antioxidant or functional benefits. The extract imparts a natural, sweet cherry flavor and may also contribute color and nutritional value to the finished product.



BeeChoo LiangBeeChoo Liang  [5:42 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732095752102279)

Tarragon extract is used in commercial food products to impart a distinct herbal, slightly sweet, and anise-like flavor. It is commonly found in sauces, dressings, marinades, seasonings, and various other culinary products. The amount of tarragon extract used in food products varies depending on the application, the desired intensity of flavor, and the type of product.  
Typical Amounts of Tarragon Extract in Commercial Food Products  
Generally, tarragon extract is used at concentrations ranging from **0.1% to 1%** by weight in food products. However, the exact amount will depend on the product's specific formulation and the intended flavor profile.  
1. **Sauces and Dressings (Salad Dressings, Marinades, Gravies)**

* **0.1% to 0.5%** by weight. Tarragon extract is often used in sauces, salad dressings, and marinades for its unique herbal and slightly licorice-like flavor. Typical usage is between **0.1% and 0.3%** by weight, but can go up to **0.5%** for a more pronounced flavor.

2. **Seasoning Mixes and Spice Blends**

* **0.1% to 1%** by weight. In seasoning blends or spice mixes, tarragon extract is used in small amounts to enhance the overall flavor profile of the product. The concentration typically ranges from **0.1% to 0.3%**, though it can be used in amounts up to **1%** in certain specialty blends.

3. **Ready Meals and Convenience Foods**

* **0.1% to 0.5%** by weight. Tarragon extract is used in ready-to-eat meals or frozen foods to add depth to sauces, gravies, or pre-seasoned vegetables. The typical concentration is between **0.1% and 0.3%** by weight, though it may go up to **0.5%** in dishes where a more prominent herbal flavor is desired.

4. **Beverages (Herbal Teas, Flavored Waters)**

* **0.1% to 0.5%** by weight. In beverages like herbal teas or flavored waters, tarragon extract may be used to impart a refreshing herbal note. The concentration typically ranges from **0.1% to 0.3%**, but can go as high as **0.5%** for a more noticeable flavor.

5. **Baked Goods and Confectionery**

* **0.1% to 0.3%** by weight. While less common, tarragon extract can be used in certain baked goods or confectionery products for a subtle herbal note. The amount typically ranges from **0.1% to 0.3%** by weight, depending on the flavor profile desired.

6. **Vegan and Vegetarian Products (Meat Alternatives, Plant-Based Foods)**

* **0.1% to 0.5%** by weight. In plant-based or vegetarian products, tarragon extract can be used to enhance flavor, especially in plant-based sauces or "meat" alternatives. The typical concentration is between **0.1% and 0.3%**, though it may be higher in specialized products at **up to 0.5%**.

7. **Functional Foods (Herbal Supplements, Nutritional Bars)**

* **0.1% to 0.5%** by weight. In functional foods or health supplements where herbal flavors are part of the formulation, tarragon extract can be used to add flavor along with potential health benefits. The typical amount used is around **0.1% to 0.3%** by weight.

Key Considerations:

* **Flavor Profile**: Tarragon extract has a distinct flavor with hints of anise and a mild, herbal sweetness, so it is typically used in small quantities to avoid overpowering the dish. It is commonly used in products where a fresh, aromatic herbal note is desired.
* **Culinary Uses**: Tarragon extract works particularly well in French cuisine and is often found in sauces like béarnaise or salad dressings like vinaigrettes. It is also used in marinades for meats and vegetables.
* **Nutritional and Functional Benefits**: While typically used for flavor, tarragon extract can also have antioxidant and digestive health benefits, which may be emphasized in certain products.

Summary:  
Tarragon extract is typically used in commercial food products at concentrations ranging from **0.1% to 1%** by weight, depending on the type of product. In sauces, dressings, and seasoning blends, the typical range is **0.1% to 0.5%**, while in more concentrated forms like functional foods, it can go up to **1%**. It imparts a distinctive herbal, slightly sweet flavor with an anise-like note, making it ideal for applications such as savory dishes, sauces, dressings, and plant-based foods.

[5:44](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732095887023979)

BeeChoo Liang

Whole grain oat extract is used in commercial food products primarily for its health benefits, including its fiber content, beta-glucan, and antioxidants, as well as for its ability to improve texture and flavor. It is commonly found in products targeting health-conscious consumers, such as breakfast cereals, snacks, smoothies, and functional foods. The amount of whole grain oat extract used in food products varies depending on the desired effect, the product type, and the specific benefits being emphasized.  
Typical Amounts of Whole Grain Oat Extract in Commercial Food Products  
The typical usage of whole grain oat extract in commercial food products ranges from **0.5% to 5%** by weight, though this can vary depending on the product application and the specific health benefits targeted.  
1. **Breakfast Cereals (Granola, Oatmeal, Muesli)**

* **1% to 5%** by weight. In breakfast cereals such as oatmeal, granola, or muesli, whole grain oat extract is often used for its nutritional content, particularly for fiber and beta-glucan, which is beneficial for heart health and digestion. The typical concentration is between **1% and 3%** by weight, but it can go up to **5%** in products marketed for functional benefits, like heart health.

2. **Snack Bars (Granola Bars, Protein Bars)**

* **0.5% to 2%** by weight. Whole grain oat extract is commonly used in snack bars, including granola bars and protein bars, for its fiber content, texture, and health benefits. The typical amount is between **0.5% and 1.5%**, but it may reach **2%** in bars that emphasize digestive health or high fiber content.

3. **Beverages (Smoothies, Protein Shakes, Nutritional Drinks)**

* **0.5% to 2%** by weight. In liquid products like smoothies, protein shakes, or nutritional drinks, whole grain oat extract is used to improve mouthfeel, provide fiber, and offer a mild, neutral taste. The typical concentration is **0.5% to 1%**, but it can go up to **2%** in formulations that focus on digestive health or sustained energy release.

4. **Baked Goods (Bread, Muffins, Cookies, Pancakes)**

* **0.5% to 2%** by weight. Whole grain oat extract is sometimes added to baked goods to increase fiber content, improve texture, and add a subtle oat flavor. The typical concentration ranges from **0.5% to 1.5%** by weight, although it may go up to **2%** in whole grain or functional baked goods designed to be higher in fiber or nutrition.

5. **Dairy Products (Yogurt, Smoothie Bowls)**

* **0.5% to 1.5%** by weight. In dairy-based products like yogurt or smoothie bowls, whole grain oat extract is used to add nutritional value, particularly fiber and prebiotics. The concentration is typically **0.5% to 1%**, although higher amounts of **up to 1.5%** may be used for functional dairy products focused on gut health.

6. **Functional Foods (Fortified Snacks, Health Supplements)**

* **1% to 5%** by weight. In functional foods, including fortified snacks and health supplements, whole grain oat extract can be used to boost fiber content and add additional health benefits, such as lowering cholesterol or improving digestion. The typical concentration is between **1% and 3%**, though it can go as high as **5%** in specialized products.

7. **Plant-Based Products (Vegan Meats, Dairy Alternatives)**

* **0.5% to 2%** by weight. Whole grain oat extract is commonly used in plant-based products such as dairy alternatives (e.g., oat milk) and vegan meat substitutes. It is used for texture, mouthfeel, and its nutritional profile. The concentration typically ranges from **0.5% to 1%**, but in certain products, it may be used at **up to 2%**.

8. **Pasta and Noodles**

* **0.5% to 1%** by weight. Whole grain oat extract is sometimes added to pasta and noodles for its fiber content, to improve texture, and for nutritional enhancement. The typical amount is **0.5% to 1%** by weight.

Key Considerations:

* **Health Benefits**: Whole grain oat extract is valued for its high fiber content, especially beta-glucan, which is known for supporting heart health, lowering cholesterol, and improving digestion.
* **Nutritional Value**: Besides fiber, oat extract contains vitamins, minerals, and antioxidants that can contribute to the overall nutritional profile of a product.
* **Texture and Mouthfeel**: Whole grain oat extract is also used in some products to enhance texture, creating a creamier or thicker mouthfeel in beverages or yogurt-based products.
* **Flavor**: The flavor profile of oat extract is mild, often neutral or slightly sweet, making it suitable for a wide range of applications without overpowering other ingredients.

Summary:  
Whole grain oat extract is typically used in commercial food products at concentrations ranging from **0.5% to 5%** by weight. In breakfast cereals, baked goods, and snack bars, the typical range is **1% to 3%**. It is used primarily for its nutritional benefits, such as providing fiber and beta-glucan, as well as its mild flavor and textural properties. In functional foods, beverages, and plant-based products, it may be used at concentrations of **up to 5%** to offer specific health benefits like cholesterol reduction and digestive support.



BeeChoo LiangBeeChoo Liang  [5:51 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732096261578469)

Torula yeast flavor is a flavoring agent derived from *Candida utilis*, a type of yeast. It is known for its savory, umami taste, which is similar to that of yeast extract but with a more concentrated and distinct flavor. Torula yeast flavor is commonly used in commercial food products to enhance or mimic the taste of meat, cheese, or other savory ingredients. It is popular in vegan and vegetarian products as a meat or cheese flavor substitute, as well as in a wide range of processed foods to add depth and complexity.  
Typical Amount of Torula Yeast Flavor in Commercial Food Products  
The amount of Torula yeast flavor used in food products varies depending on the specific product and the desired flavor profile, but typical concentrations fall in the range of **0.1% to 1%** by weight. The concentration can vary significantly depending on whether the flavor is being used for a subtle background note or as a primary flavor component.  
Common Applications and Typical Amounts

1. **Savory Snacks (Chips, Crackers, Popcorn)**
   * **0.1% to 0.5%** by weight. Torula yeast flavor is often used in savory snacks to enhance the overall flavor. The typical amount used is **0.1% to 0.3%** for a subtle savory note, but it can go up to **0.5%** for a stronger flavor.
2. **Seasonings and Flavoring Mixes (Bouillon, Stock Cubes, Spice Blends)**
   * **0.2% to 1%** by weight. Torula yeast flavor is frequently found in seasoning blends and bouillon products where it enhances the umami profile. For more intense savory flavor, it can be used up to **1%** by weight, though **0.2% to 0.5%** is typical.
3. **Meat Alternatives (Vegan Burgers, Sausages, Plant-Based Meats)**
   * **0.5% to 1%** by weight. In vegan or vegetarian products designed to mimic meat flavors, Torula yeast flavor is used as a key component. The typical amount is **0.5% to 1%**, depending on how strong the meat-like flavor needs to be.
4. **Dips and Sauces (Vegan Cheese Sauces, Dressings)**
   * **0.2% to 0.5%** by weight. In dips and sauces, Torula yeast flavor is used to provide a cheese-like or savory depth. **0.2% to 0.5%** is typical, but the amount can go higher if a more prominent flavor is desired.
5. **Ready-to-Eat Meals and Frozen Foods**
   * **0.2% to 0.5%** by weight. In prepared or frozen meals, Torula yeast flavor may be added to sauces, gravies, and pre-seasoned products to enhance their savory flavor. The typical concentration ranges from **0.2% to 0.5%**.
6. **Vegan or Vegetarian Soups and Broths**
   * **0.2% to 0.5%** by weight. Torula yeast flavor is a popular ingredient in plant-based soups and broths to add a rich, savory note. The typical range is **0.2% to 0.5%**, although it can go higher if a more intense flavor is needed.
7. **Baked Goods (Bread, Rolls, Crackers)**
   * **0.1% to 0.3%** by weight. In certain baked goods, particularly crackers or bread with savory flavors, Torula yeast flavor can be used in small amounts to add richness and complexity. The typical amount is **0.1% to 0.3%** by weight.

Key Considerations:

* **Flavor Profile**: Torula yeast flavor is known for its rich umami, savory characteristics, making it a popular choice for imparting a meaty or cheesy flavor in both traditional and plant-based foods.
* **Health and Nutritional Benefits**: While primarily used for flavor, Torula yeast flavor is a source of protein and B vitamins, making it a beneficial addition to vegan or vegetarian products.
* **Flavor Strength**: Torula yeast flavor is highly concentrated, so only small amounts are needed to achieve the desired effect. The exact amount used depends on the strength of the flavor required and the type of product.

Summary:  
Torula yeast flavor is typically used in commercial food products at concentrations ranging from **0.1% to 1%** by weight, depending on the product and the desired intensity of the flavor. It is common in savory snacks, meat alternatives, sauces, and seasoning blends, where it contributes a rich umami or savory note. The most typical amounts used in these applications are **0.2% to 0.5%**, but in certain cases, such as in plant-based meat products or seasonings, it can be used up to **1%**.



BeeChoo LiangBeeChoo Liang  [6:05 PM](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732097114914559)

Paprika, a spice made from dried and ground peppers, is widely used in commercial food products for its flavor, color, and mild heat. The amount of paprika used in food products depends on the desired flavor profile, color intensity, and the type of product being produced.  
Typical Amounts of Paprika Used in Commercial Food Products

1. **Seasoning Blends (Spice Mixes, Seasoned Salts, Rubs)**
   * **1% to 10%** by weight. Paprika is a common ingredient in seasoning blends, often used to add a mild heat and vibrant red color. The concentration of paprika in spice blends can vary widely depending on the type of product and its intended flavor. For a milder seasoning, **1% to 3%** paprika is typical, while spicier or more flavorful blends may use **5% to 10%** or more by weight.
2. **Snack Foods (Potato Chips, Tortilla Chips, Snack Mixes)**
   * **0.5% to 3%** by weight. In snack foods, paprika is commonly used to provide color and flavor. For example, in chips or seasoning on popcorn, the typical amount used is **0.5% to 2%** by weight. In more heavily seasoned products like spicy chips or snack mixes, it can go up to **3%**.
3. **Sauces and Condiments (Ketchup, Barbecue Sauce, Salad Dressings)**
   * **0.1% to 2%** by weight. In sauces like ketchup, barbecue sauce, or dressings, paprika is often used in small amounts to add depth of flavor and color. The typical amount is **0.1% to 1%** by weight, although it could be as high as **2%** in spicier or more robust sauces.
4. **Prepared Meals (Canned Soups, Ready-to-Eat Meals)**
   * **0.1% to 1%** by weight. Paprika is often added to ready-to-eat meals, such as soups, stews, or casseroles, to enhance flavor and color. The typical concentration is **0.1% to 0.5%** for a subtle flavor boost, but it can go up to **1%** in recipes where paprika is a more prominent component.
5. **Meat Products (Sausages, Deli Meats, Processed Meats)**
   * **0.2% to 3%** by weight. Paprika is commonly used in meat products such as sausages, deli meats, and processed meats to add flavor and a characteristic reddish color. The amount used varies, with typical concentrations ranging from **0.2% to 1%** for mild seasoning, but it can be as high as **3%** in products that are specifically designed to be heavily spiced or to have a strong paprika flavor.
6. **Cheese and Dairy Products (Cheese Sauces, Cheese Spreads, Processed Cheese)**
   * **0.1% to 1%** by weight. Paprika is often used in cheese products to add color and a mild, smoky flavor. The typical amount is **0.1% to 0.5%** for a subtle effect, but it may go up to **1%** in some recipes, particularly in cheese spreads or cheese sauces where paprika is part of the flavor profile.
7. **Frozen and Pre-Cooked Foods (Frozen Dinners, Pizza)**
   * **0.1% to 0.5%** by weight. In frozen meals, especially pizza or frozen appetizers, paprika is used to add color and mild flavor. It is typically used in smaller amounts, ranging from **0.1% to 0.5%** by weight.
8. **Canned and Jarred Vegetables (Pickled Vegetables, Sauerkraut)**
   * **0.2% to 1%** by weight. Paprika can be used in canned or jarred vegetable products like pickles or sauerkraut to enhance flavor and add visual appeal. The typical concentration is **0.2% to 1%**, depending on the type of product and the intended flavor profile.
9. **Bakery Products (Bread, Crackers)**
   * **0.5% to 2%** by weight. Paprika can be added to bakery products such as crackers, bread, or savory pastries to impart a subtle flavor and color. The amount used is typically **0.5% to 2%**, depending on the flavor intensity desired.
10. **Seasoned Rice or Grain Products**
    * **0.5% to 2%** by weight. In products like seasoned rice or pilaf, paprika is used to add a mild, sweet heat and color. The typical concentration is **0.5% to 2%** by weight.

Key Factors Affecting Paprika Usage:

* **Type of Paprika**: There are different types of paprika (e.g., sweet, hot, smoked, or mild), and the specific type used will impact the concentration needed to achieve the desired flavor profile.
* **Flavor Profile**: Paprika can range from mildly sweet and smoky to moderately spicy, so the amount used will depend on the specific flavor profile of the food product.
* **Color Enhancement**: In many cases, paprika is used more for its ability to enhance the visual appeal of a product through its deep red color, sometimes in very small amounts, particularly in processed or canned foods.

Summary:  
The typical amount of paprika used in commercial food products varies widely depending on the product and its intended use. In seasoning blends, it may range from **1% to 10%** by weight, while in snack foods and sauces, it typically ranges from **0.1% to 3%**. In meat products, it can be as high as **3%**, and in more subtle applications like dairy products or ready-to-eat meals, it may be used at **0.1% to 1%** by weight. The use of paprika can add both flavor and color, and its concentration is adjusted based on the product’s needs.

[6:05](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732097141723379)

BeeChoo Liang

Plant sterols (also known as phytosterols) are naturally occurring compounds found in plants that have been shown to help lower cholesterol levels. As a result, plant sterols are often added to commercial food products to promote heart health and as a functional ingredient in fortified foods.  
Typical Amount of Plant Sterols in Commercial Food Products  
The typical amount of plant sterols used in commercial food products depends on the type of product and the intended health benefits. According to regulatory guidelines and clinical studies, the typical amounts range as follows:

1. **Functional Beverages (Juices, Smoothies, Dairy Drinks)**
   * **0.8% to 2%** by weight. Functional beverages designed to help lower cholesterol, such as fortified fruit juices, smoothies, or dairy-based drinks, typically contain **0.8% to 2%** plant sterols. This amount provides around **1.5 to 2 grams** of plant sterols per serving, which is consistent with the daily intake recommended by health organizations like the American Heart Association for cholesterol-lowering effects.
2. **Margarine and Butter Substitutes**
   * **0.5% to 2%** by weight. Plant sterols are commonly added to margarine and butter substitute products to help lower cholesterol. A typical serving of sterol-enriched margarine provides about **1 to 2 grams** of plant sterols. This corresponds to an inclusion rate of **0.5% to 2%** by weight in the product.
3. **Snack Foods (Bars, Granola, Trail Mixes)**
   * **0.5% to 1%** by weight. Plant sterols are sometimes incorporated into snack foods like granola bars or trail mixes to provide a cholesterol-lowering benefit. The typical amount used is **0.5% to 1%**, ensuring that the product contains **1 gram** of plant sterols per serving.
4. **Dairy Products (Yogurts, Cheese, Ice Cream)**
   * **0.5% to 1%** by weight. Plant sterols may be added to dairy products like yogurts, cheese, and ice cream. The amount typically used is **0.5% to 1%** by weight to achieve the recommended cholesterol-lowering dose of **1-2 grams** per serving.
5. **Cereals and Cereal Bars**
   * **0.5% to 1%** by weight. Plant sterols are occasionally added to breakfast cereals or cereal bars. The typical concentration is around **0.5% to 1%**, providing a functional benefit while not altering the product’s taste or texture significantly.
6. **Baked Goods (Bread, Muffins, Cookies)**
   * **0.5% to 1%** by weight. In baked goods, plant sterols may be added to bread, muffins, or cookies to offer a heart-health benefit. The inclusion rate is typically **0.5% to 1%** by weight, corresponding to **1 gram** of plant sterols per serving.
7. **Dietary Supplements (Capsules, Tablets, Softgels)**
   * **0.5% to 2%** by weight (depending on form). In dietary supplements, plant sterols are often formulated in capsules or tablets, typically providing **0.5 to 2 grams** per serving. While this varies, the dosage used in supplements typically ranges from **0.5% to 2%** by weight.
8. **Cooking Oils and Salad Dressings**
   * **0.5% to 2%** by weight. Plant sterols may be added to cooking oils and salad dressings to help improve heart health. The concentration is typically **0.5% to 2%**, ensuring the product contains a functional dose of plant sterols in each serving.

Health Recommendations:  
Health guidelines generally recommend a daily intake of **1.5 to 2.5 grams** of plant sterols to help reduce LDL cholesterol levels, which is why many fortified products aim to provide this amount per serving. For example, in a **functional beverage or margarine**, the amount of plant sterols would typically fall in the range of **0.8% to 2%**, which provides the necessary quantity per serving.  
Summary:  
The typical amount of plant sterols used in commercial food products varies depending on the product category. For functional foods and beverages designed to help lower cholesterol, the inclusion rate typically ranges from **0.5% to 2%** by weight, which corresponds to **1 to 2 grams per serving**. Products like margarines, dairy items, snacks, and breakfast cereals often fall into this range.

[6:08](https://12u12-innovation.slack.com/archives/DUQUC23BM/p1732097297151219)

BeeChoo Liang

Polyglycerol monostearate (PGMS) is an emulsifier and stabilizer commonly used in commercial food products. It helps improve texture, maintain emulsions, and enhance the overall quality of products by allowing oil and water to blend effectively. PGMS is typically used in small amounts because of its potent emulsifying properties.  
Typical Amounts of Polyglycerol Monostearate in Commercial Food Products

1. **Bakery Products (Cakes, Pastries, Bread)**
   * **0.1% to 0.5%** by weight. PGMS is commonly used in bakery products to improve dough handling, enhance texture, and extend shelf life. Typical usage rates range from **0.1% to 0.5%** by weight in the finished product.
2. **Processed Cheese (Cheese Spreads, Processed Cheese Slices)**
   * **0.1% to 0.5%** by weight. In processed cheese products, PGMS helps maintain smoothness and consistency. It is typically used at **0.1% to 0.5%** by weight to maintain emulsification and prevent separation.
3. **Margarine and Shortening**
   * **0.1% to 0.3%** by weight. In margarines and shortenings, PGMS helps in the emulsification of fat and water phases, improving texture and stability. The typical usage is **0.1% to 0.3%** by weight in the product.
4. **Ice Cream and Frozen Desserts**
   * **0.1% to 0.5%** by weight. PGMS is used in ice cream and frozen desserts to prevent ice crystal formation, improve texture, and help achieve a smooth consistency. Typical levels are around **0.1% to 0.5%** by weight.
5. **Confectionery Products (Chocolate, Candy Coatings)**
   * **0.1% to 0.3%** by weight. PGMS is used in chocolate and candy coatings to improve flow, texture, and gloss. It helps reduce viscosity and ensures that the chocolate coating is smooth and stable. The typical amount is **0.1% to 0.3%** by weight.
6. **Salad Dressings and Mayonnaise**
   * **0.1% to 0.5%** by weight. PGMS is used in emulsified products like salad dressings and mayonnaise to maintain stability and prevent phase separation. Typical amounts range from **0.1% to 0.5%** by weight.
7. **Dairy Products (Yogurts, Creamers, Whipped Toppings)**
   * **0.1% to 0.3%** by weight. In dairy products like yogurts, creamers, and whipped toppings, PGMS helps maintain emulsions, improve texture, and enhance mouthfeel. Usage amounts typically fall in the range of **0.1% to 0.3%** by weight.
8. **Beverages (Non-Dairy Creamers, Milk Alternatives)**
   * **0.1% to 0.5%** by weight. PGMS can be found in non-dairy creamers or milk alternatives to enhance stability and prevent separation. Typical usage is **0.1% to 0.5%** by weight.

Summary:  
Polyglycerol monostearate is used in very small amounts in food products, typically ranging from **0.1% to 0.5%** by weight, depending on the product and its desired texture, stability, and emulsification. This allows it to effectively perform its role as an emulsifier and stabilizer without altering the flavor or appearance of the food product.