Module 3

LET'S GET COOKING!

3.1 Flavor Balance & Pairing

3.1.1 The Five Basic Tastes

To understand flavor and how we can influence it, we must understand a bit about how taste works. Through taste we can perceive 5 different primary flavors: **salty**, **sweet**, **bitter**, **sour** and **umami**. Taste is also influenced by aroma, temperature, texture and appearance. The first impression of a dish is visual and aromatic: it can either get us excited to eat or take our appetite completely away.

The general rule for achieving a perfectly balanced dish or dessert is to bring into balance the primary flavors, as well as other key elements such as fat components, temperature and texture. Because each ingredient can potentiate, minimize or dissolve other present aromas and flavors, playing with them and pairing them correctly is key.

Recipes almost always need to be adjusted. Every time you make a dish or dessert it can taste different, because ingredients taste different depending on the season, location and harvest. It's practically impossible to replicate the exact same flavor achieved by whomever designed the recipe in the first place. But that is normal: and it offers you a good chance to explore.

To improve our abilities, we need to let go of preconceptions about how to cook: allow yourself to use the recipe as a general guide. Starting from the recipe, you must focus on adjusting, reducing, adding gradually, tasting as you go and – most importantly – trusting your instincts. Nobody knows the flavor you're after better than yourself.

Here are the five basic tastes and some of the most important elements to consider when creating a delicious dish or dessert:

1. Salty

Particularly in the world of pastry, salt plays a key role that sometimes goes unnoticed. When we try a dessert and feel it's not sweet enough, our first instinct is to add more sugar to make it sweeter. But in most cases, the best solution is to start by adding a pinch of salt.

This tiny mineral is one of the most powerful flavor enhancers. By adding salt we amplify all the flavors present that weren't perceptible before. Salt unlocks the most palatable aromas and helps mask more unpleasant ones. This is why salt works so well with any ingredient, including chocolate. Season all of your creations with salt, even the ones you would never think of. Start with a pinch, taste and adjust, adding gradually until you get that pop of flavor. With time and experience you will learn the right amount to use.

Sources:
Salt (I use mainly pink Himalayan salt and Maldon sea-salt flakes), miso, tamari, fermented vegetables, pickles, seaweed, cheese...

2. Sweet

Although lifetime experiences may change our sensations, enjoying the taste of sweetness is an innate human response. The ability to identify sweetness probably evolved to allow organisms to detect available glucose sources, our brain's fuel. Sweetness powerfully induces consumption and even motivates certain behaviors, suggesting the importance of this flavor for many species, even apart from humans.

Just like salt, adding a bit of sweetener makes other flavors more palatable, especially when we want to balance bitterness. But be aware! It's very easy and common to overdo, and thus end up with an excessively sweet dessert.

Sources:
Sweeteners (coconut sugar, coconut nectar, maple syrup, honey...), dried fruit (dates, apricots, raisins...), fresh and ripe fruit, spices (vanilla, cinnamon, nutmeg...), cereals (oats, rice...).

3. Bitter

It is believed that the ability to detect bitterness has evolved to protect humans from toxic plants and other substances, which often have a bitter taste. Yet the truth is, there are many popular foods with a bitter taste, such as coffee, beer or dark chocolate. It's a flavor usually corrected with salt, and learning to enjoy it requires time and patience.

Whereas milk chocolate, which contains a lot of sugar (in commercial chocolates especially, sugar amounts are ridiculously high) leaves us craving more, the bitterness of dark chocolates persists on the palate for much longer, leaving us satisfied and eliminating the temptation to eat large quantities. Great pastry chefs of our time reject the notion of pastry being necessarily sweet. Learning to adjust bitterness, keeping it present but under control, is one of the keys to achieving greater richness and depth in our desserts.

Sources:
Pure cacao, coffee, matcha tea, citrus peel, grapefruit, olives, beer...

4. Sour

Sourness is a taste sensation that reflects acidity; it is evoked only by the hydronium ion of acidic compounds. Acid acts as a bridge for all other elements: while salt enhances and fat binds, acid balances all of them out. An ingredient is considered to be acid when it has a pH lower than 7. Acid balance is a spectrum with different flavors and concentrations, therefore you must adjust accordingly as you cook. Acid can also trigger chemical reactions that affect texture and color.

Sources:
Citric fruits, some leafy greens, pure cacao, coffee, tea, yogurt, vinegar, wine, tomato...

5. Umami

Considered the fifth taste, umami is the hardest one to describe. Its name comes from the Japanese words Umai and mi, meaning "delicious" and "taste" respectively. It's generally translated as "pleasant savory taste," and refers to intense and delicious flavors.

Apart from its own particular taste, what makes umami so interesting is its ability to balance and uplift other ingredients.

It can be found naturally in many foods, although the artificial Monosodium Glutamate (MSG) has become the most known and controversial form, used in many Asian restaurants to make their food more delicious.

Sources:
Miso, soy or tamari sauce, tomatoes, shiitake mushrooms, kombu seaweed, asparagus, cured cheese (especially parmesan cheese), cured ham...

3.1.2 Fat & Temperature

Fat

Stepping away from the myth, plenty of fats are not only healthy but crucial to the proper functioning of the human body. Fat is one of the fundamental building blocks of all food, together with carbohydrates, protein and water. Fat is responsible for storing energy and transporting vitamins and even flavor, intensifying our experience. Choose fat accordingly, depending if it's used just for seasoning, as a medium for cooking, or as the main ingredient.

Sources:
Cacao (paste, butter, powder), oil (olive, sunflower, avocado, almond), coconut products (oil, butter, milk, fresh or dry pulp), nuts and avocado.

Temperature

Another factor to consider when pairing foods is temperature. Will you serve the dish hot or cold? Cooked or raw?

Temperature affects flavor, color and texture. For example: low temperatures can affect the flavor and aroma of chocolate. That's why it's a good idea to take the truffles out of the fridge a few minutes before eating them to intensify the flavors.

3.1.3 Pairing Chocolate

Chocolate is wonderful paired with many other foods, not just sweets. For example, in Mexico cacao is used to make *mole*, a traditional sauce made with nuts, spices, chili, and cacao, served with savory dishes.

Chocolate can be paired successfully with wines, cheese, spices, coffee and fruits. When combining your chocolate with other ingredients, you should always consider the type of chocolate you want to use.

Types of chocolate

- **Dark chocolate -** This is the one that generally has more varietals and complexities of flavor. Much like wine or coffee, the taste of the cacao will reflect the terroir on which it was grown. For example, cacao from Madagascar tastes different from cacao from Ecuador. It will also be affected by roasting (if roasted) and fermentation processes. Dark chocolate is bitter, although its bitterness can vary from being quite sweet (at around 50 - 60% cacao) to more bitter (at 80 - 100% cacao). Bitter chocolate pairs well with acidic and bitter ingredients like berries, orange, ginger, mint... Also with spicy ones like pepper or chili, and salty like Maldon sea-salt flakes.
- **Milk chocolate -** This type can be harder to work with, simply because of the added dairy, or dairy alternative, which makes it more difficult to temper. Milk chocolate is great for making ganaches, since it's creamy and sweet. Coffee, florals and nuts pair very well with milk chocolate.
- **White chocolate -** This type is mainly made of cacao butter and sugar and it contains no cacao solids. As white chocolate is already very sweet, it goes well with salty, bitter and sour flavors, in particular berries, citrus, tea, sesame seeds and salt flakes.

3.2 Special Ingredients & Alternatives

Unrefined sugars, superfoods, essential oils and natural colorants. Let's have a look at these special ingredients and their possible alternatives:

3.2.1 Sweeteners

In my recipes I don't use any type of refined sugar: white sugar, cane sugar, powdered sugar, corn syrup, rice syrup, agave, xylitol or stevia, among others.

It's very important to understand the differences between refined sugars and sugars naturally present in food, as this is a very controversial and misunderstood topic. When we choose to follow a healthier diet, and specifically talking about desserts, understanding the ingredients that we use and where they come from is the difference between having a "not as bad" treat or being able to really enjoy a healthy dessert.

At the end of each module, you will find references to all the scientific articles used for the data provided. These have been researched and contributed for use in this course by Inmaculada Bañón, PhD in Molecular Biology.

Before getting deeper into sugars, I want to make a special mention of veganism: many people are motivated by ethics to adopt a vegan philosophy and avoid the consumption of animal products. As someone who has been vegan for many years, these people have all my respect and support. However, it's important to point out that, in an extreme scenario, one can be vegan eating just Oreos and chips. This example, rather extreme and absurd, shows that a vegan diet does not necessarily imply eating healthy: it is perfectly possible to consume vegan sweets that have a much worse impact on our health than their traditional non-vegan versions. If we wish to do so, we can responsibly expand our thinking and consume desserts that are not only free from animal abuse, but also healthy, environmentally conscious, and delicious.

Types of sugar

Generally speaking, sugars are carbohydrates divided in two groups:

→ **Simple sugars or monosaccharides:** glucose or dextrose, fructose and galactose. Found naturally in fruits and honey.

→ **Complex sugars or disaccharides:** sucrose, maltose and lactose. Found in refined sugars and dairy. They are white granulated sugar, cane sugar, cane syrup, coconut sugar, among many others.

In a strict sense, all of them are sugars and all are processed by our organism as energy. But it's how they're processed, and especially the package in which we consume them, that makes the difference.

For instance, natural sugar found in fruits comes in a package from which we also obtain fiber, water, antioxidants, vitamins, minerals and phytonutrients that are extremely beneficial for our health. In contrast, refined sugars have been obtained through an industrial process of purification or refining (in which, by the way, a product known as "bone char," made with animal bones, is often employed) that affects the nutritional values and antioxidant potentials of sugar.

Refined sugars have been linked to a higher risk of type 2 diabetes mellitus, obesity and cardiovascular disease (1, 2), and might increase rheumatoid arthritis (3). High intake of refined sugar and low intake of natural antioxidants also modulate inflammation and appear to be linked to increased risk of breast cancer and mortality (4) and higher mortality after colorectal cancer diagnosis (5).

We're not only eliminating any possible benefit (that's why they are often called "empty calories," because they contribute zero to our body), but also increasing the risks of incurring scientifically proven negative consequences to our health.

Another important point: we process natural and refined sugar in different ways, each of them affecting us in a distinctly. On the one hand, refined sugar does not contain any fiber to slow down its absorption, so it passes directly into the bloodstream. This causes the body to release insulin, responsible for transporting sugar to the tissues. As a result, we've had an energy peak followed by a rapid fall that leaves us craving more sugar again right away, thus entering a vicious circle.

On the other hand, fiber contained in a piece of fruit (important exception would be juice, if we remove the pulp) causes us to digest natural sugar slowly, processing it and storing it, providing a more durable and stable energy source. At the same time, we're also getting the benefits from all the other nutrients of the food with which we are consuming it.

Many alternatives to refined sugars like raw cane sugar, brown sugar and dark and blackstrap molasses contain higher levels of antioxidants, offering the potential benefit of antioxidant activity (6).

Syrups are also a good alternative to refined sugars. A few examples are date syrup, that contains polyphenols which have antiangiogenic properties, anti-inflammatory and antibacterial activity (7, 8). Maple syrup, rich in antioxidant phenolic compounds (9) and inulin (10). Inulin has prebiotic properties. Prebiotics change the configuration and activity in the gastrointestinal microbiota conferring positive effects in the prevention of different diseases like inflammatory bowel disease (11).

This is a list of the sweeteners I personally use:

Dry sweeteners

→ Medjool dates
→ Coconut sugar
→ Date sugar
→ Maple sugar
→ Monk fruit (luo han guo)

Liquid sweeteners

→ Maple syrup
→ Coconut nectar

→ Date syrup
→ Yacon syrup
→ Raw honey

Finally, non-nutritive artificial sweeteners are widely used as sugar alternatives. However, I would avoid using them since their potential impact to human health remains ambiguous, and they are now recognized as emerging contaminants with high water persistence, and are chemically stable in the environment (12, 13).

Honey

Honey deserves a special mention. Some of the recipes in this course contain honey, and I always suggest which is the best vegan alternative depending on the recipe. Since the vast majority of honey available on the market comes from animal exploitation, and that's something that my own and Aurea's philosophy oppose, here are several aspects to consider.

First, when I talk about honey, I always mean raw organic honey obtained in perfect harmony with bees. Since this is not common practice, I'm fully aware that this type of honey is scarce and expensive. Personally, if I have to choose between refined sugar or raw honey produced by conscious beekeepers (aware of the environment and the welfare of bees), I always choose the second. I know for a fact this isn't always an available option, and there are many alternatives when that's the case. One way or the other, it's worth checking out what we know about honey, so that you can make the decision:

The properties of honey in comparison to any type of refined sugar are totally indisputable from any biological and chemical perspective.

Honey has great antioxidant capacity (14). Its intake has been related to attenuating risks in pathologies like atherosclerosis or protective effect in the cardiovascular system, nervous system, respiratory system against asthma and bacterial infections, and in the gastrointestinal system (15, 16).

It's important to note that we're talking about raw and unrefined honey.

Thermal processing can negatively affect its antibacterial activity (17) reducing the potential benefits of its intake.

Owing both to the exploitation of bees and its generally bad quality, I would never recommend consuming 98 % of the available honey on the market. My responsibility is to share with you the objective data so that you can make your own decision, depending on your situation, your values, your personal or professional goals. Whenever possible, I sincerely wish that your decision will be the result of combining what's best for you, for the planet and for all the beings that inhabit it.

3.2.2 Oils & Fat Sources

We've already covered how important it is for our body to consume fats, as long as they are good-quality fats.

In pastry in general, and most importantly in raw desserts, fats enhance flavor and provide creaminess. They also give stability to many desserts, allowing them to maintain the right consistency at different temperatures.

Oils

All the oils and fat sources used to develop the recipes of this course have been obtained through a cold-pressed process, thus maintaining all the oil's properties and benefits.

Extra-virgin Olive Oil (EVOO)

Vitamin E and its great antioxidant power (thanks to the high presence of polyphenols) stand out among all the benefits EVOO has for our health. Its consumption increases levels of HDL cholesterol (known as good cholesterol) and helps to prevent degenerative diseases such as Alzheimer's. It is essential that the oil has been obtained from the first cold pressing of the olives.

EVOO is liquid at room temperature and brings flavor, aroma and creaminess to desserts. Its fruity and slightly spicy flavor is ideal in dark chocolate creams and ganaches.

Extra-virgin Coconut Oil

It is obtained by pressing the coconut pulp, and as with any other oil, its properties will be affected by the extraction and refining process to which it is subjected. We call virgin or raw coconut oil the one obtained through the first cold pressing of fresh coconut pulp, without heat or any refining process to alter its color or flavor. Although its high content of saturated fats has sometimes placed it on the lists of non-recommended oils, it's been scientifically proved that the fatty acids contained in virgin coconut oil help to reduce cholesterol, in addition to having antiviral and antibacterial properties.

Coconut oil is solid at temperatures below 24 °C (75 °F), so it is a good alternative for creams and ganaches when we seek a semi-solid and stable consistency at room temperature.

Virgin coconut oil has a pleasant coconut flavor and aroma that will not affect the final flavor of most elaborations, as long as it is used in the right proportions. To avoid this subtle coconut flavor and aroma, you have the option of using deodorized coconut oil, which is basically a refined oil that has been heated to high temperatures. However, if you want to keep your desserts as healthy as possible this is an alternative I wouldn't recommend.

Raw Coconut Butter

It is obtained after dehydrating and grinding the fresh pulp of ripe coconuts. It has a similar consistency to spreadable butter. It can also be prepared at home by processing dehydrated coconut (either flakes or shredded coconut) with a small amount of coconut oil, which will help to obtain a creamy butter.

At room temperature, it is a semi-solid paste that I recommend using only in desserts for which you want a final coconut flavor.

Raw Cacao Butter

Extracted from the cacao pod, cacao butter is a yellowish paste obtained after pressing the cacao paste. It is the essential fat in any chocolate confection.

Its melting temperature is around 35 °C (95 °F), so it is solid at room temperature. For this reason, cacao butter is the best option when making raw desserts that need to keep their shape and consistency at room temperature. It provides a pleasant and delicate chocolate aroma and flavor, which is important to consider before using it as the main source of fat in a recipe.

It is also widely used in cosmetics, as it is rich in vitamins and has moisturizing and antioxidant properties.

When using your high-speed blender, it is very important that the oil or fat is always streamed in progressively at the end. This favors the emulsion and incorporation with the rest of the ingredients. It is also essential that temperature of the oil or fat when added, is similar to the temperature of the mixture in which it is to be incorporated. Otherwise the emulsion will not form and the oil will separate.

Other Fat Sources

Nuts

A fundamental ingredient in vegan pastry, they are used to replace many dairy products, providing creaminess. Raw, soaked, in the form of milk or butter, nuts are used to make creams, ganaches, truffles and more.

Cashews and almonds are two of the most versatile nuts. Thanks to their high fat content and delicate flavor, they can be used in combination with virtually any ingredient.

Avocado

This popular fruit is rich in healthy fats, vitamins, potassium and folic acid. In addition, it has no cholesterol and its high oleic acid content makes it a very beneficial ingredient for the heart.

At its optimum ripening point, it is a great alternative for making creams or mousses. However, it is important to take into account its color and only use it in recipes where it is possible to mask its flavor. In desserts, it is ideal in combination with ingredients such as cacao, lime and coconut.

Coconut Milk

Canned coconut milk with at least 50 % coconut content is used in recipes where the goal is to obtain very thick and stable consistencies that keep their shape at room temperature, and have a nice coconut flavor. Whipped using an electric hand-whisk, it is a great alternative to conventional whipped cream.

3.2.3 Superfoods

These special foods are considered *Superfoods* because they contain significantly higher quantities of vitamins, minerals and antioxidants among other benefits.

When talking about superfoods it's important to keep in mind the concept of bioavailability, which in food refers to the ability of our body to absorb certain nutrients. There are dietary factors that limit our ability to absorb nutrients due to their chemical composition or high concentration. Because they are so nutrient-rich, it's a good idea to use superfoods sparingly and in small quantities, so that our bodies can absorb them properly.

Here you'll find some of the most common superfoods:

- **Matcha -** Literally means "powdered tea" in Japanese, comes from the green tea plant and since it's the whole leaf powdered, it contains a greater amount of antioxidants and caffeine. Before harvesting, farmers cover the plant for 20-30 days to shield it from sunlight, which increases chlorophyll and antioxidants. Among its many benefits, its high antioxidant power is far superior to any other green tea. Its flavor, color and aroma vary from one type to another.
  You can usually find two grades of matcha on the market: culinary and ceremonial. Always use ceremonial grade matcha tea, because it is of higher quality, with a sweeter flavor, rich in umami and with a vibrant green color perfect to use in any dessert.
- **Lucuma -** Also called "Gold of Incas", this exotic fruit is used very often in Peruvian desserts as a sweetener. Rich in vitamins, minerals, antioxidants, proteins and fiber, it also happens to be a great natural sweetener and an ideal sugar substitute, especially for people suffering from diabetes owing to its low GI (glycemic index). It has a sweet taste similar to maple syrup.
- **Maca -** Grown in the Andes, maca is the root of a cruciferous plant that has a long history of medicinal use in Peru. This powerful superfood enhances one's mood, boosts energy, regulates hormones, and reduces stress and fatigue. With a malt-like flavor similar to caramel, it's ideal to use in chocolate, caramel or vanilla desserts.
- **Mesquite -** Comes from the mesquite trees that are native to Central America and the southwest US. The dried and powdered pods have a high fiber, protein, vitamin and mineral content and very low GI, which turns it into a great natural sweetener. It has a caramel-like flavor that combines perfectly with cacao and vanilla.
- **Baobab -** Native to Africa, it has great nutritional value. Dried and powdered, the baobab fruit's pulp is an excellent source of iron, fiber, calcium, potassium, magnesium and vitamin C. It prevents anemia, strengthens bones, regulates blood pressure and slows skin aging. It has a bittersweet taste and can be used in smoothies or desserts.
- **Moringa -** This superfood comes from a tree native to India, whose leaves are powdered and are similar in color to matcha. It's a great source of vitamins A and C, proteins and iron, which is why its consumption helps with anemia. It has a slightly bitter taste and is used both in desserts and in savory dishes.
- **Spirulina -** This greenish and bluish seaweed grows in tropical and subtropical regions. It's often used as a nutritional supplement, especially for athletes, since it helps muscle recovery and improves performance due to its high content of protein, fiber, vitamins and minerals. It can be added to many recipes as a powder, but always in small quantities as it has an intense flavor and aroma.
- **Chia seeds -** These tiny nutrient-packed seeds are full of omega-3 fatty acids, high fiber and antioxidants, and they help support cardiovascular health. They are a great addition to vegan baked goods due to their ability to mimic eggs, thanks to their great absorption capacity.

- **Flax seeds -** In addition to improving the cardiovascular system, it has been proven that these fiber-packed seeds help lower cholesterol levels, and improve the functioning of the intestine. Although they can be used in countless recipes, I often use them ground and mixed up with liquid to replace eggs in baked desserts.
- **Hemp seeds -** Although these are the seeds from the Cannabis plant, they do not contain any psychoactive compounds. Instead, they are very rich in vitamins, omega-3 and 6, as well as containing all 9 essential amino acids making it a complete protein. They have a delicate and creamy taste, which makes them perfect for plant-based milk or truffle decoration.
- **Bee pollen -** Considered one of the greatest superfoods, when used correctly, bee pollen acts as a natural antibiotic (just like raw honey). It offers great allergy relief, improves performance and supports the immune system. It consists of a mixture of flower pollen, nectar, enzymes, honey, wax and bee secretions. Bee pollen is great sprinkled on a bar or bonbons, on smoothies, truffles, etc.
- **Carob -** It comes from the pod of the carob tree and has been recently considered a superfood thanks to the properties of D-pinitol, a component found in carob pods. It has been found that its properties help to prevent diseases such as cancer and diabetes. It has a naturally sweet taste and a very low fat content. In pastry, it's often used as a substitute for cacao, as well as a stabilizer or thickener.

3.2.4 Essential Oils

Essential oils are basically highly concentrated pure plant essences. Unlike extracts, essential oils do not contain alcohol. The main reason I recommend their use is purely practical: they are a fantastic way to add flavor to your creations without altering the ratio of other ingredients, providing a lot of flavor in tiny doses without changing the amount of liquid (they barely contain water).

Since they are the concentrated version of the fresh ingredient, they seem to have many health benefits, but much more research is needed in order to corroborate many of the properties attributed to them. In any case, be sure to always use high-grade organic oil that is safe for consumption (sometimes called food grade).

It's critical to add essential oils gradually and in small quantities, until you get the flavor and intensity you are looking for. Because they are much stronger than extracts, you need very little (a few drops) to add flavor.

3.2.5 Natural Coloring

For obvious reasons, I recommend that you use only natural colorants. In general, artificial colors contain a large number of preservatives, mostly extracted from animal or chemical sources. Their use and potential dangers are controversial, and are often related to problems such as asthma, insomnia, allergies, hypersensitivity and hyperactivity. Children are the biggest consumers of these artificial products, since they are widely present in sodas, candy and industrial pastries, among many others.

Here is a list of natural colorants that you can use for giving color to your white chocolate confections:

- **Green:** Matcha tea, moringa, spirulina or chlorophyll
- **Blue:** Butterfly pea powder, blue matcha, blue spirulina
- **Brown:** Cacao powder, carob powder, coffee or coconut sugar
- **Black:** Activated charcoal powder or black tahini
- **Gray:** Activated charcoal powder, blueberries, freeze dried or dehydrated blackberries (blended into a powder)
- **Orange:** Dehydrated orange peel, dehydrated carrot powder, turmeric powder
- **Red and pink:** Freeze-dried or dehydrated raspberry or strawberry (powder), beet powder
- **Purple:** Freeze-dried or dehydrated blueberries (powder), butterfly pea powder
- **Yellow:** Saffron, green tea or turmeric

3.3 Plant-based Creamery

Nut or seed milks and butters are the basic preparations that we will use in almost all the recipes. Therefore, it's important to have them ready before you start preparing your desserts.

They serve as dairy substitutes (milks or creams) and are essential to obtain the desired creaminess and consistency in our desserts.

The importance of soaking nuts and seeds

Before preparing a plant milk, the first step is to soak the nuts or seeds. There are several reasons for it:

1. To break down phytic acid
2. To eliminate dust and dirt
3. To make them softer and easier to blend
4. To enhance their final taste

What is phytic acid?

Both nuts and seeds have a high nutritional content, but they also contain substances called enzyme inhibitors, which interfere with our body's ability to absorb these nutrients.

Phytic acid, which is necessary for plants during the first stages of their growth, blocks all its valuable nutrients, hindering their absorption, interfering with our bodies' ability to absorb these nutrients.

Although part of this acid is neutralized during digestion, soaking the nuts helps us to absorb nutrients more easily.

Depending on the nut or seed, the required soaking time will vary. In most cases, 6-8 hours is more than enough, but my recommendation is that you plan ahead and let them soak in the fridge overnight.

Nut or Seed Milk

Ingredients


→ 1 cup of almonds, soaked for at least 6 hours (preferably overnight)
→ 3 cups of filtered water
→ Pinch of pink Himalayan salt

Method

1. Once soaked, rinse and drain the nuts thoroughly in a strainer under fresh tap water.
2. Measure one cup and place them in the jar of the blender along with 3 cups of water and a pinch of salt.
3. Blend for 45-60 seconds until no pieces of nuts are left.
4. Place a nutmilk bag over a large bowl and pour the content of the blender inside.
5. Close the bag tightly so the liquid doesn't spill, and drain the milk by squeezing with your hands from the top downwards until there is just pulp left.
6. Pour the milk into a glass bottle (preferably with a tight lid to preserve it longer), label it with the date and store it in the fridge until you need it.

3 days in the fridge. If you add 1 teaspoon of lemon juice you can extend its shelf life up to 5 days

— To make milk I follow a 3:1 ratio (triple the amount of water to nuts or seeds)
— To make cream (which I use in many recipes) the ratio I use is 2:1 (two cups of water for each cup of nuts)

After a few hours, it's normal that milk separates into two layers due to sedimentation. Just shake the container before using the milk. If you wish to prevent the milk from separating you can add half a teaspoon of lecithin.

Different types of plant milk

- **Nuts** (almond, hazelnut, cashew, Brazil nuts, walnuts, pecan nuts, macadamia, pistachio...)
  All these require soaking for at least 6-8 hours. Each nut has its particular flavor which will be reflected in the milk. For example: Brazil nuts are perfect for coffee desserts, while hazelnut milk works well in chocolate desserts.

- **Seeds** (pumpkin, sunflower, sesame, hemp...)
  These are a great alternative when you wish to go nut-free. Some require a short soaking time, a couple of hours, while hemp does not need soaking at all and can be blended directly with water. Seed milks generally have a stronger, more pronounced flavor than nut milks, as well as being less creamy. Keep that in mind and adjust accordingly. For instance: pumpkin seed milk has a subtle bitter taste and greenish color, while hemp milk has a light taste and white color that works well with any dessert.

- **Grains** (oats, quinoa, rice...)
  Plant milks made from cereals are another great alternative to nut milks. Keep in mind that some cereals, such as quinoa or rice, must be boiled first and then blended as usual. Oats, on the other hand, do not need soaking or cooking and milk can be made directly from dry oat flakes (previously rinsed and drained). All these are very creamy milks and can be kept in the fridge for 3 days.

- **Coconut**
  You can make coconut milk from fresh coconut pulp or coconut flakes. Although the ideal is to make it from fresh fruit in order to obtain a creamy and dense milk, that's not always possible. An alternative is to directly blend (without soaking) water and coconut flakes in a ratio 2:1 (water to flakes). Keep in mind that this milk has less fat content than a coconut milk made straight from the fruit, so very often we'll need to use packaged coconut milk (with a minimum content of 50 % coconut).

What to do with the pulp?

Pulp is the residue of blended nuts, seeds or grains that remains in the nut-milk bag after straining.

We can use this pulp in several ways:

→ **Wet:** You can use your pulp as it comes out from the nut-milk bag by adding it in cookie recipes, protein balls, smoothies or to make creamy cheeses. If you are not going to use it right away, store it in a closed container in the fridge and consume it within 5 days. You can also freeze it for 2 months.

→ **Dry:** You can dehydrate your pulp for about 12 hours at a temperature not above 46 °C (115 °F), to keep it raw. Once dehydrated and completely dried, blend it in your food processor or blender and turn it into flour. This flour can be used for baking and for raw desserts. Just remember that it will be very dry, since we've extracted the fatty part of the nut, so I advise that you use it in baked rather than in raw desserts.

Flavor your milks!

Apart from the essential pinch of salt, there are many other ingredients you can add to your plant milk when you wish to consume it as it is, instead of using it in desserts.

Here are some ideas:

- **Sweeteners:** Maple syrup, honey... any option works. My recommendation is to add one or two dates in the blender before straining the milk, so you get rid of any date skin.
- **Lemon juice:** Adding just half or one teaspoon won't change the milk's flavor, but it will make the milk last longer.
- **Spices:** Cinnamon, vanilla, clove... spices contribute to enrich flavor.
- **Superfoods:** Cacao, maca, matcha... you can choose one or a combination, just remember to keep it simple and take their flavors into account before combining them. For example: add cacao powder and half a teaspoon of maca and/or mesquite to an almond milk sweetened with dates.
- **Lecithin:** It's an emulsifier with the sole purpose of stabilizing the milk by preventing natural separation. You can find either soy or sunflower lecithin, in granulated or liquid form (the latter is more effective as a smaller amount is required in order to achieve the same effect).
- **Fat:** Adding one or two teaspoons of coconut oil or cacao butter (previously melted) will increase the creaminess of your plant milk, and also prevent natural separation. Add it at the end to facilitate emulsification.

Hot Chocolate

Ingredients

- 2 cups almond milk
- 3-4 Medjool dates
- 3 Tbsp raw cacao powder
- 1 Tbsp (approximately two pistoles) raw cacao butter
- 1 + ½ tsp maca
- ½ tsp pure vanilla extract
- A pinch of pink Himalayan salt

Method

1. Start by peeling and pitting your dates (soak them in warm water if necessary).
2. Pour the almond milk in the jar of your blender along with the dates, cacao, maca, vanilla and salt. Blend for at least a minute, until the mixture starts heating up.
3. Add the cacao butter (it doesn't have to be melted, because it will melt due to the temperature of the chocolate), and keep blending until the right temperature is achieved. Time needed will vary depending on the power of your blender.
4. Enjoy it hot!

You can add one or two teaspoons of chia seeds to thicken your chocolate even more.

3 days in the fridge

4 **Soak your almonds overnight and prepare fresh nut milk in the morning. Once ready, set a side one cup and store it in the fridge to use it in future recipes. Pour the remaining milk in your high-speed blender and flavor it as you like, using one of the ideas I suggested above (sweeteners, superfoods...).**

Which ingredients have you used? Should it be enjoyed chilled or hot? Send us a picture!

** Remember that nut milks and creams last between 3 to 5 days in the fridge, so you will need to make more fresh milk throughout the course.*

Nut or Seed Butter

Types

- **Raw:** It is made with nuts and seeds that are unroasted. The process is longer and occasionally requires adding small quantities of oil in order to help the blending process and obtain creamy consistencies. Macadamia nuts are a good example of nuts that don't require the addition of any oil, due to their high fat content.
- **Sprouted:** This process takes longer but the result is a much healthier butter. In this case, you first soak the nuts for at least 8 hours, and then dehydrate them for 12-16 hours at 46 °C (115 °F) until completely dry. Sprouted butter has the additional benefit that phytic acid has been eliminated from the nuts or seeds, thus increasing nutrients, boosting bioavailability and absorption.
- **Toasted:** Creamier, with a more intense flavor and aroma, the roasting process is faster and does not require the addition of any oil. Toast the nuts at 180 °C (350 °F) for approximately 15 minutes until golden brown. Add them to the food processor while they are still hot to make the process faster.

Ingredients

→ 2 cups nuts or seeds of your choice (raw, sprouted or toasted)
→ 1-2 tsp extra virgin coconut oil, melted
→ A pinch of pink Himalayan salt

Method

1. Add the nuts and a pinch of salt to the bowl of you mini-size food processor.
2. Start by processing the nuts until they turn into flour. If they are raw, add a teaspoon of coconut oil and keep processing for about 5 minutes.
3. Stop the food processor and scrape the sides of the jar with a spatula. Allow the mixture to rest for at least 10 minutes to help the nuts or seeds to release their natural oils, so the mixture becomes increasingly creamy.
4. Continue blending, adding more oil if you need it, and alternating with resting times, until you get the consistency you want.
5. Transfer the freshly made butter into an air-tight glass container labeled with the date.

Up to 2 months in pantry, placed in a cool, dry place away from direct sunlight. During the summer months it's better to keep them in the fridge

NOTES

- Conventional food processors are not as powerful as high-speed blenders; it's difficult to obtain ultra-creamy raw butters with them.
- Before using them, it's always a good idea to stir the butters with a spoon to reincorporate the oils, which tend to rise to the surface.
- Instead of extra-virgin coconut oil, you can choose any other good-quality oil. Extra-virgin olive oil, macadamia, almond... Just keep in mind that each one will give a different flavor and aroma to your nut.
- Adding a pinch of salt is essential, but you can add bigger amounts if you want to enhance the flavor. Always remember to add it little by little, tasting until you get the flavor you desire (e.g. peanut butter is much tastier when it's slightly salty).
- Throughout the recipes we will use simple butters, but you can always add spices or superfoods to create butters and creams of different flavors. These are perfect to add on top of yogurts, chia puddings or simply spread on bread (e.g. roasted pumpkin seed butter is delicious with a hint of cinnamon and clove powder).

5 **Make the nut butters you will be using throughout the course. You will need 2 cups of cashews (make a raw and a roasted version so you can see the difference), one cup of raw macadamia nuts, and two cups of peanuts* (roasted). Remember that macadamia nuts do not need any extra oil! Send us a picture to show each butter and show us the different textures in a video.**

**** If you prefer, you can use store-bought peanut butter.***

Related Scientific Articles

1. Palacios OM et al. *Diet and prevention of type 2 diabetes mellitus: beyond weight loss and exercise.* Expert Rev Endocrinol Metab. 2019; 14(1):1-12
2. Sanders TA. *How important is the relative balance of fat and carbohydrates as sources of energy in relation to health?* Proc Nutr Soc. 2016; 75(2):147-53
3. Philippou E and Nikiphorou E. *Are we really what we eat? Nutrition and its role in the onset of rheumatoid arthritis*. Autoimmun Res. 2018; 17(11):1074-1077
4. Seiler A et al. *Obesity, dietary factors, nutrition and breast cancer risk*. Curr Breast Cancer Rep. 2018; 10(1):14-27
5. Song M et al. *Low-carbohydrate diet score and macronutrient intake in relation to survival after colorectal cancer diagnosis.* JNCI Cancer Spectr 2018; 2(4):pky077
6. Phillips KM et al. *Total antioxidant content of alternatives to refined sugar.* J Am Diet Assoc. 2009; 109(1):67-71
7. Taleb H et al. *Date syrup derived polyphenols attenuate angiogenic responses and exhibits anti-inflammatory activity mediated by vascular endothelial growth factor and cyclooxygenase-2 expression in endothelial cells*. Nutr Res
8. Taleb H et al. *The antibacterial activity of date syrup polyphenols against S.* aureus and E.coli. Front Microbiol. 2016; 26;7:198
9. Li L and Seeram NP. *Maple syrup phytochemicals include lignans, coumarins, a stilbene, and other previously unreported antioxidant phenolic compounds*. J Agric Food Chem 2010; 58(22):11673-9
10. Sun J et al. *Detection of inulin, a prebiotic polysaccharide, in maple syrup*. J Agric Food Chem 2016; 64(38):7142-7
11. Akram W et al. *Role of inulin as prebiotics on inflammatory bowel disease*. Drug Discov Ther 2019; 13(1):1-8
12. Praveena SM et al. *Non-nutritive sweeteners as an emerging contaminant in environment: a global review and risks perspectives*. Ecotoxicol Environ Saf. 2019; 15; 170:699-707
13 Luo J et al. *Ecotoxicity and environmental fates of newly recognized contaminants-artificial sweeteners: a review*. Sci Total Environ 2019; 25; 653:1149-1160

14. Musa O et al. *Honey as source of natural antioxidants*. J Apic Res 2015; 54:145-154

15. Nguyen HTL et al. *Honey and its role in relieving multiple facets of atherosclerosis*. Nutrients 2019; 11(1). pii:E167

16. Cianciosi D et al. *Phenolic compounds in honey and their associated health benefits: a review*. Molecules 2018; 23(9). pii:E2322

17. Bucekova M et al. *Microwave processing honey negatively affects honey antibacterial activity by inactivation of bee-derived glucose oxidase and defensin-1*. Food Chem 2018; 240:1131-113