

FLAVOUR GROUPS

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SPICE | *profiles*

*Discover all you need to know about the world's top spices
with in-depth science and practical advice, and begin
your culinary adventure with innovative recipes.*

CINNAMON

Sweet | Aromatic | Warm

BOTANICAL NAME

Cinnamomum verum

ALSO KNOWN AS

Ceylon cinnamon, "true" cinnamon.

MAJOR FLAVOUR COMPOUND

Cinnamaldehyde.

PARTS USED

Dried bark of tender shoots.

METHOD OF CULTIVATION

Trees are coppiced at 18–24 months of age and the stump covered, causing it to grow like a bush. New shoots are removed at the base and stripped for their bark.

COMMERCIAL PREPARATION

Inner layers of bark are dried in the sun and rolled together by hand into long "quills", which are graded and cut.

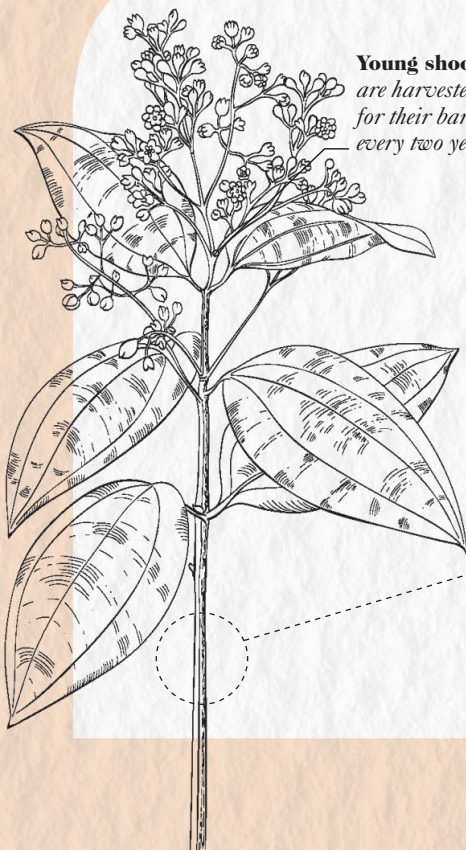
NON-CULINARY USES

In perfumery and as a natural antiseptic.

The plant

Cinnamon is a small evergreen tree in the laurel family, found in the wild growing in wet tropical forests.

Young shoots
are harvested
for their bark
every two years



Powder

Ground spice quickly loses its flavour. Buy it in small quantities, keep in an airtight container in a cool, dark place, and use within 6 months.

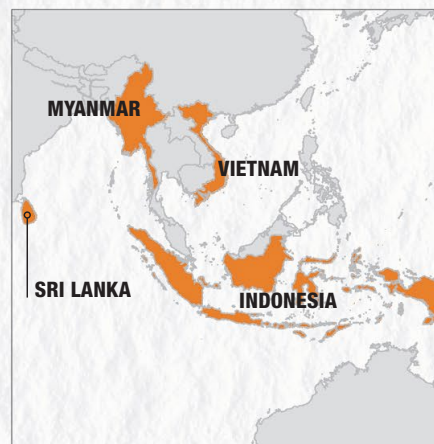
Whole

Cinnamon sticks will keep their flavour for up to a year. Lighter brown, thinner, more fragile sticks are higher quality.



Spice story

From 1600 BCE, ancient Egyptians used a type of cinnamon for incense and as an embalming spice, importing it from Asia via African traders. It is not known for certain whether this was cinnamon from Sri Lanka or Chinese cassia. From the 8th century CE, Arab merchants dominated the trade and invented tall tales to protect their sources and high prices. In one such myth, giant birds were said to gather the bark from an unknown land, using it to make nests on high cliffs, and the only way to collect it was to lure the birds away with large pieces of meat. The real source remained a mystery to Europeans until the Portuguese found cinnamon trees growing in Sri Lanka in the early 1500s, and promptly occupied the island. They in turn were ousted by the Dutch, who then fought the British for centuries over control of the territory and lucrative trade.



Region of cultivation

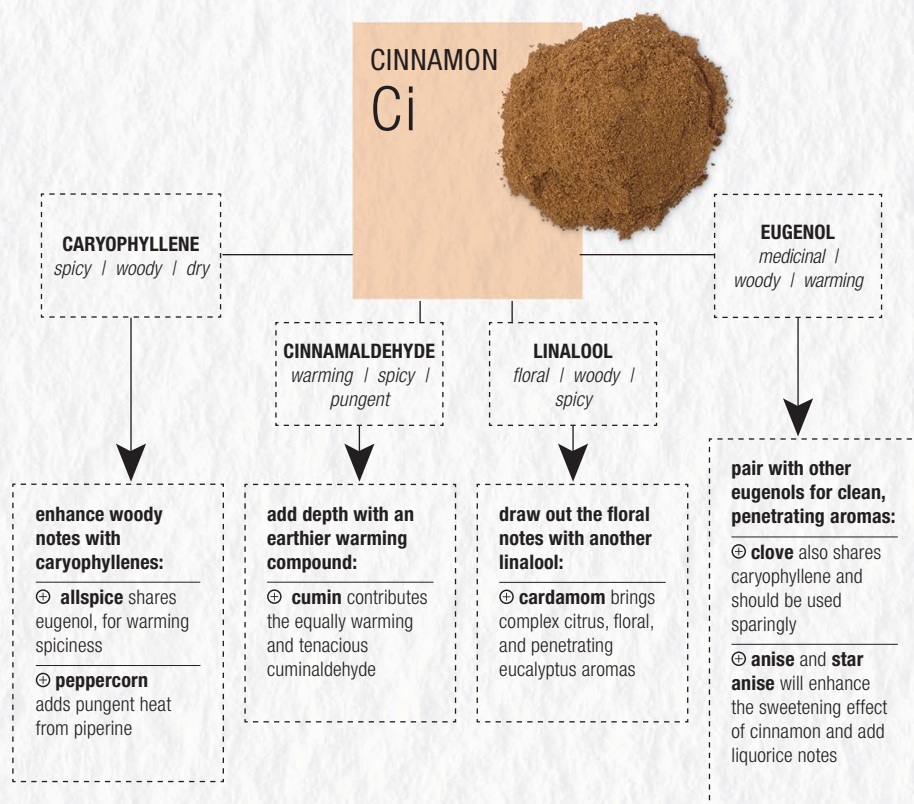
Cinnamon is native to the island of Sri Lanka and is now also notably cultivated in Myanmar, Vietnam, Indonesia, and the islands of the Seychelles off the coast of East Africa.

Kitchen creativity

Cinnamon does not in itself taste sweet, but rather it enhances the perception of sweetness in other ingredients. This makes it perfect for sweet bakes and desserts, and for drawing out sweet notes in savoury dishes.

BLENDING SCIENCE

Cinnamaldehyde is the main flavour compound and is sensed by temperature receptors on the tongue, giving cinnamon a warming quality that makes it a good partner for other warming spices. Make further connections through the woodiness of caryophyllene, the penetrating aroma of eugenol, and the floral notes of linalool.



FOOD PARTNERS

- ⊕ **Fruit** Mix cinnamon powder with sugar and scatter over peaches, figs, apples, and pears before baking or grilling, or add to the batter for a plum or cherry clafoutis.
- ⊕ **Sweet bakes** Use ground cinnamon to flavour Nordic buns, Italian *panforte*, or French *pain d'épices*.
- ⊕ **Tomatoes and aubergines** A cinnamon-infused tomato sauce makes an excellent topping for baked aubergines.
- ⊕ **Red meats** Add a stick or two to a lamb tagine, an Iranian *khorek* beef stew, or the stock of a fragrant Vietnamese beef *pho* noodle soup.
- ⊕ **Pigeon** Cinnamon is the main flavouring in Moroccan *pastilla* pigeon pie with filo pastry.

BLENDS TO TRY

Use and adapt these recipes for classic blends featuring cinnamon:

- Advieh* p27
- Burmese garam masala* p48
- Jamaican jerk rub* p64
- Mole mix* p65
- Mulling spice* p73

RELEASE THE FLAVOUR

The taste components in cinnamon need time to escape from its woody matrix, and the critical flavour compound, cinnamaldehyde, does not dissolve in water.



Add early in cooking to give flavours time to suffuse the dish.



Fat and alcohol will help disperse cinnamaldehyde.



Steam is also a carrier of cinnamaldehyde, so boil vigorously with a lid on the pan.

CASSIA

Sweet | Peppery | Astringent

BOTANICAL NAME

Cinnamomum cassia, *C. loureirii*, *C. burmanii*

ALSO KNOWN AS

Chinese cinnamon (*C. cassia*), Vietnamese/Saigon cinnamon (*C. loureirii*), Indonesian/Java/Korintje cinnamon (*C. burmanii*).

MAJOR FLAVOUR COMPOUND

Cinnamaldehyde.

PARTS USED

Dried bark, unripe fruits ("buds").

METHOD OF CULTIVATION

The bark is harvested every second year in the monsoon season from trees that are at least four years old.

COMMERCIAL PREPARATION

Strips of inner bark are dried in the sun and curl up naturally, forming thick shards; buds are dried.

NON-CULINARY USES

In perfumes; in Chinese medicine to treat diarrhoea and dyspepsia.

The plant

Cassia comes from an evergreen tree in the laurel family, and is closely related to cinnamon.

Leaves and buds are also aromatic, unlike "true" cinnamon

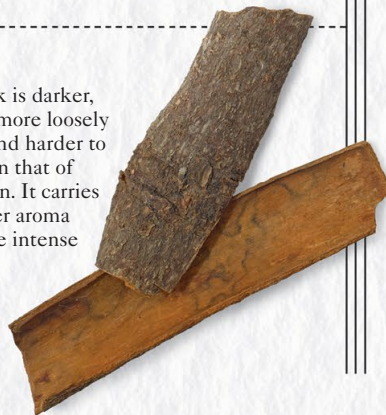
Bark is coarse and greyish brown

Buds

The dried unripe fruits resemble cloves and are used in the Far East as a pickling spice.

Bark

The bark is darker, thicker, more loosely coiled, and harder to snap than that of cinnamon. It carries a stronger aroma and more intense flavour.



Spice story

Cassia was used for medicinal purposes in ancient China from 2700 BCE, and was among the first spices to reach the Mediterranean via the ancient trade routes. The Egyptians used cinnamon as a culinary spice and for its health properties, but it is unclear whether they used cinnamon or cassia. Persians knew cassia and cinnamon as *darchini*, and used them in savoury and sweet dishes. By the 5th century BCE, cassia had been identified as distinct from cinnamon. Medieval English and French cookbooks referred to cassia and cinnamon as "canella", but cassia's coarser flavour saw its status demoted: in his 15th-century book of manners, *Book of Nurture*, John Russell wrote that "Synamone is for lords, canelle for common people". Today, cassia accounts for nearly 50 per cent of the world's cinnamon supply, and is a key spice in China and Southeast Asia. It is popular in North America, where most "ground cinnamon" is actually cassia.



Region of cultivation

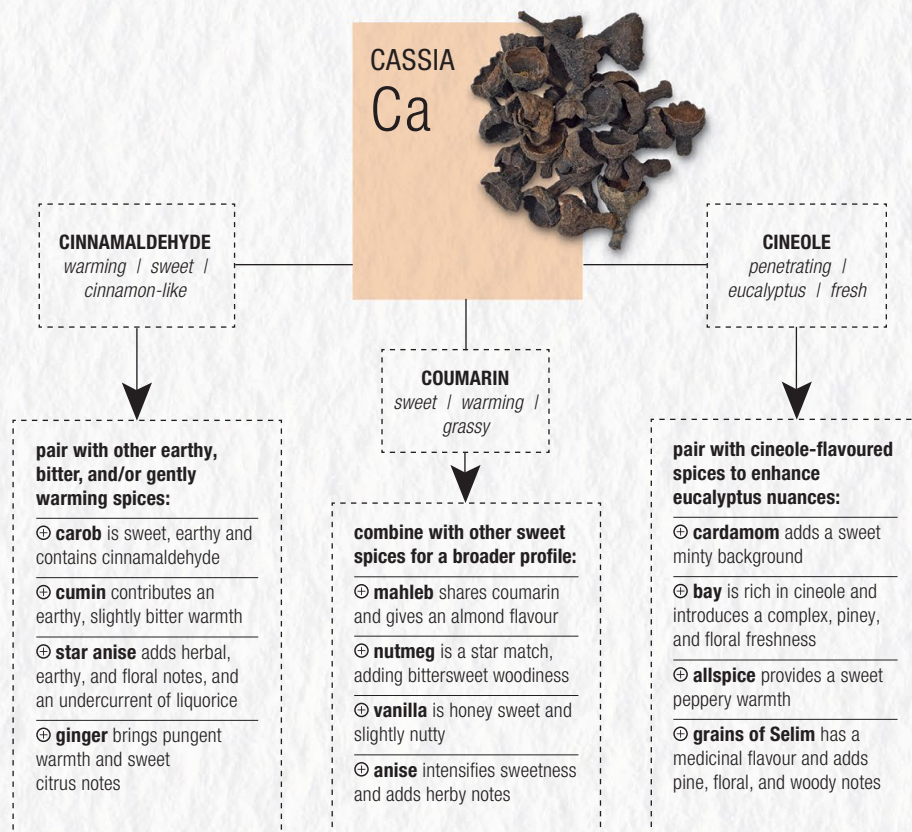
Cassia is native to the wet tropical forests of southern China. It is cultivated across southern and eastern Asia, but mainly in southern China, Vietnam, and Indonesia.

Kitchen creativity

Cassia has a sweet, warming taste, but is bitter and lacks the floral, citrus notes of cinnamon. Its deeper, spicier, less subtle flavour is best suited to robustly flavoured savoury dishes, although the spice can be used in sweet baking.

BLENDING SCIENCE

Cassia's flavour profile is dominated by cinnamaldehyde, the compound that gives cinnamon and cassia their recognisable taste. Tannins, which give a mouth-puckering astringency, are also present and it contains coumarin, a phenol absent in "true" cinnamon, as well as eucalyptus-scented cineole.



FOOD PARTNERS

- ⊕ **Beef, pork** Include a piece of cassia bark with other warming spices in an Italian beef or oxtail ragu, beef rendang, or pork vindaloo.
- ⊕ **Pulses, grains** Add a piece of cassia bark to the base aromatic ingredients for a pilaf, dhal, or curry.
- ⊕ **Baking** Create the unmistakable aroma of American iced cinnamon rolls by using ground bark; add ground buds to Christmas confections, fruit cake, and spiced biscuit dough.
- ⊕ **Preserves** Infuse cucumber pickling brine, tomato chutney, or a barbecue sauce with cassia buds.

BLEND TO TRY

Use and adapt this classic blend featuring cassia:

Garam masala p40

Coumarin caution

Sweet-tasting coumarin can cause temporary liver damage if consumed in excessive amounts. Regular consumers of cinnamon-flavoured foods should therefore choose "true cinnamon" rather than cassia.

Children
3.5g (1/8 oz)



Adults
7g (1/4 oz)



Medical authorities have recommended maximum weekly quantities of cassia, above which it should not be consumed for a long period.

RELEASE THE FLAVOUR

Most flavour compounds in cassia, including dominant cinnamaldehyde, do not dissolve in water and can struggle to escape from woody bark's matrix.



Cassia bark is best ground in an electric grinder

Grind cassia just before use to minimize the loss of flavour oils by evaporation.



Include fats and/or alcohol in a dish to help disperse flavour compounds.



Steam disperses cinnamaldehyde and a water-based dish can be infused with flavour if boiled in a lidded pan.

CLOVE

Sweet | Astringent | Camphorous

BOTANICAL NAME

Syzygium aromaticum

ALSO KNOWN AS

Nail spice: the common name in many languages translates as “nail spice”, due to its shape.

MAJOR FLAVOUR COMPOUND

Eugenol.

PARTS USED

Flower bud.

METHOD OF CULTIVATION

Twice a year, the flower buds are picked by hand when they have just turned pinky-red and are almost ready to open.

COMMERCIAL PREPARATION

The buds are dried in the sun until they turn dark brown and harden.

NON-CULINARY USES

To flavour *kretek* cigarettes in Indonesia; in some dental products; and to treat nausea, indigestion, and inflammation.

Unpicked buds develop into crimson flowers with a creamy froth of stamens

Round tops are the unopened petals of the flower

Glossy, bay-like leaves are also aromatic

The plant

The clove tree is a tropical evergreen, which flourishes in volcanic, loamy soil. Flowers are produced after five years, but the tree can remain productive for 100 years.

Whole

Look for cloves that are plump, not shrivelled or broken, and where the majority retain their rounded tops. Test for quality by pressing the “stem” with a fingernail: oil should ooze out.

Powder

Ground cloves quickly lose their flavour, so it is better to buy whole cloves and grind as required. Twelve whole cloves are roughly equivalent to a teaspoon of ground.

Spice story

The Moluccas (now Maluku) of Indonesia were once renowned as the Spice Islands thanks to a trio of indigenous spices – cloves, nutmeg, and mace – which were cultivated there, and nowhere else, for almost two millennia. Courtiers addressing the Emperor during the Chinese Han dynasty (206 BCE–220 CE) used cloves to sweeten their breath, and the Romans, who named the spice *clavus* (Latin for nail), used it as an incense and perfume. In the Middle Ages, clove took off as a culinary spice in the West. At first the Republic of Venice had a virtual monopoly of the lucrative trade, but the Portuguese, Dutch, Spanish, and English fought a series of wars to seize control, with the Dutch eventually winning out. In the 18th century, Frenchman Pierre Poivre managed to smuggle clove seedlings to Mauritius.



Region of cultivation

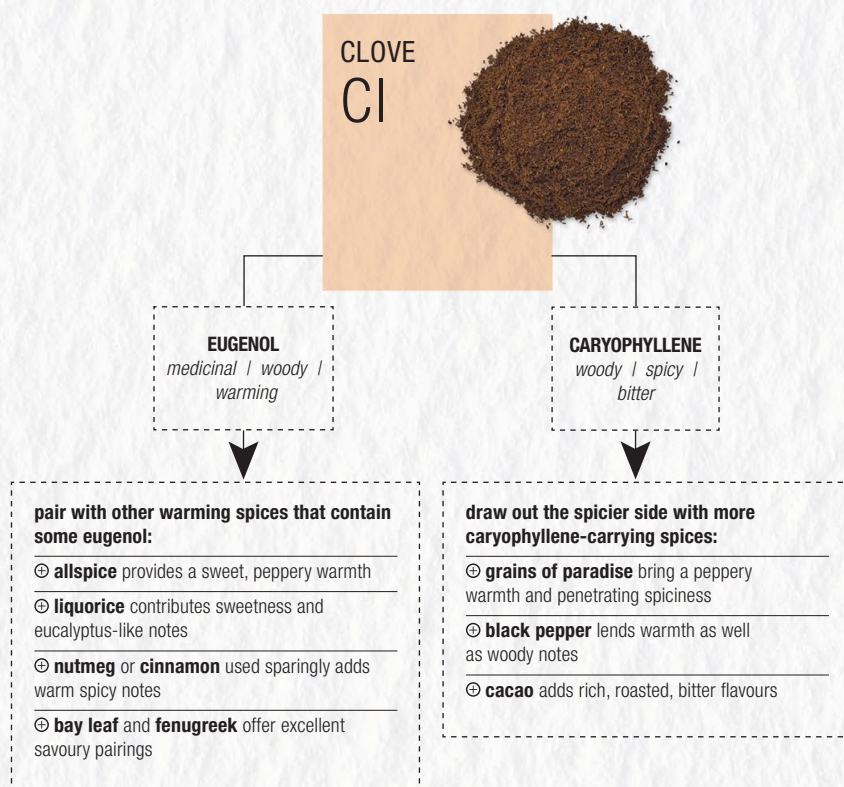
Indonesia is the largest producer of cloves, although most of the crop is used by the local *kretek* cigarette industry. Other major producers are Madagascar and Tanzania, with lesser amounts from India, Sri Lanka and Pakistan.

Kitchen creativity

Clove's powerful flavour is usually tamed by blending it with other similarly warming spices to soften its dominance. Antiseptic properties make it a common spice for pickling, but use sparingly.

BLENDING SCIENCE

Clove has the highest eugenol content of any spice; this perfumed, warming phenol compound has a eucalyptus-like scent and a sweetening effect on the tongue. Woody caryophyllene is the other compound useful for pairing, and the flavour profile is rounded off with green banana-like methyl amylketone and minty methyl salicylate.



FOOD PARTNERS

- ⊕ **Tomatoes and red cabbage** Add a pinch to tomato sauce or when braising red cabbage.
- ⊕ **Peaches** The fruit shares eugenol, making it a natural partner. Preserve in a sugar syrup infused with cinnamon, fresh ginger, and whole cloves (2–3 per peach).
- ⊕ **Beef and pork** Season a beef stew, pork braise, or classic French *pot-au-feu* with a few whole cloves, or use them in the masala for a Keralan beef curry.
- ⊕ **Milk** Add a clove or two to milk before scalding it to make a white sauce or an Indian *kheer* or *payasam* pudding.
- ⊕ **Hot drinks** Infuse tea or coffee with a whole clove for sweetness without the calories. Cloves are also an essential aromatic in mulled wine or cider.

BLENDS TO TRY

Try these recipes for classic blends featuring clove, or why not adapt them with some blending science?

Pilau masala p34

Vindaloo paste p44

Finnish gingerbread spice p72

RELEASE THE FLAVOUR

Clove's main flavour compounds, eugenol and caryophyllene, are oil based. They evaporate very quickly once released, and barely dissolve in water.



Use whole cloves or grind just before adding to the recipe.



Add early to give ample time for the flavour to diffuse out of the woody matrix.



Alcohol

Oil

Some oil/fat and/or alcohol is needed to distribute the flavour compounds.

ALLSPICE

Warm | Peppery | Sweet

BOTANICAL NAME

Pimenta dioica

ALSO KNOWN AS

Jamaican pepper, clove pepper, pimento.

MAJOR FLAVOUR COMPOUND

Eugenol.

PARTS USED

Dried berries; occasionally fresh leaves.

METHOD OF CULTIVATION

Twigs bearing bunches of berries are handpicked from trees in summer, when the berries are mature but still green.

COMMERCIAL PREPARATION

Berries are “sweated” (see vanilla curing, p100) and then dried for several days in the sun, or artificially, before being picked.

NON-CULINARY USES

Essential oil in perfumes and cosmetics; flavouring agent in medicines; pesticide and fungicide; antiseptic and digestive aid.

The plant

Allspice is an evergreen tree in the myrtle family. It starts fruiting by the age of 7 or 8 years, and continues for up to 100 years.

Berries ripen to dark purple if left on the tree, but lose most of their aroma

Glossy leaves are used in the Caribbean for stuffing meat

Powder

Ground allspice quickly loses its potency. Buy in small quantities and keep sealed in a cool, dark place for up to 6 months.

Whole

The dried berries retain their flavour well and will keep almost indefinitely sealed in a cool, dark place.

Rough surface contains tiny oil glands

Most flavour is concentrated in the wrinkled husk (or “pericarp”), not the seeds



Spice story

The Mayans of Central America were using allspice from at least 2,000 BCE to embalm their dead, alleviate arthritis, and flavour chocolate beverages, while the indigenous peoples of the Caribbean used it to preserve meat and fish. Christopher Columbus was the first European to encounter the spice, in Jamaica in 1494, but mistook it for a variety of pepper, hence its Spanish name *pimento*. From the outset, Europeans were enamoured of its preservative powers, and the spice is used as a preservative in the Scandinavian fishing industry to this day. When Russia was invaded by Napoleon in the early 19th century, the Russian troops crushed allspice berries inside their boots to ward off bacterial and fungal foot infections.



Region of cultivation

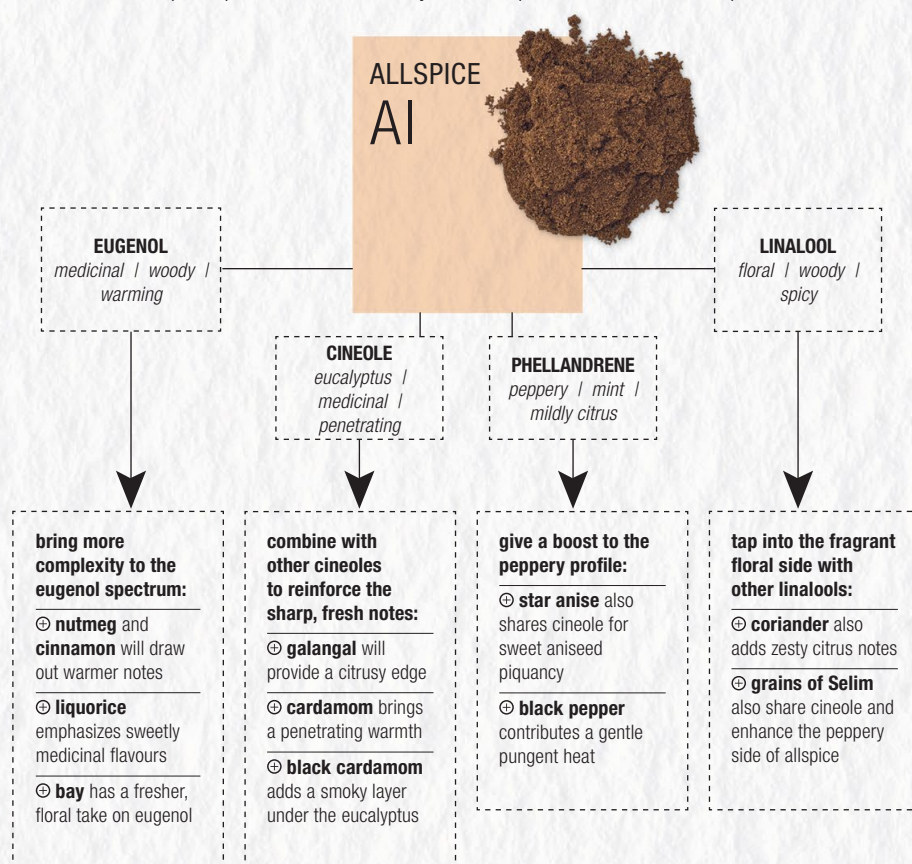
Native to the West Indies, Mexico, and Central America, allspice is mainly cultivated in Jamaica, but also in Honduras, Mexico, Guatemala, Hawaii, and Tonga.

Kitchen creativity

True to its name, this full-bodied, versatile spice suits both sweet and savoury dishes, and blends comfortably with other spices. Allspice forms the backbone of Jamaican cuisine and is a key component of jerk seasoning.

BLENDING SCIENCE

Allspice partners with other spices that share the phenolic compound eugenol, which carries a strongly medicinal aroma. Other cineole-bearing spices with a eucalyptus-like, penetrating quality also pair well. Lesser amounts of the lighter terpenes phellandrene, linalool, myrcene, and pinene round off the taste profile.



FOOD PARTNERS

- ⊕ **Raw fish** Combine with mustard seeds as a pickling spice for raw fish, such as herring, or in Mexican *escabeche*.
- ⊕ **Sweet vegetables** To bring out the natural sweetness in vegetables, try it in a tomato sauce or soup, a beetroot *borscht*, or puréed sweet potato.
- ⊕ **Red meats** Stir ground spice into beef stews (particularly tomato-based) and pork or game pâté mixtures.
- ⊕ **Stone fruit and rhubarb** Sprinkle a pinch of ground allspice into the pan when poaching plums, apples, pears, or rhubarb.
- ⊕ **Sweet bakes** Add a pinch to biscuit dough, ginger cake, milk puddings, or steam puddings.

BLENDS TO TRY

Try these recipes for classic blends featuring allspice, or why not adapt them with some blending science?

Arabic baharat p26

Jamaican jerk rub p64

Mulling spice p73

RELEASE THE FLAVOUR

Extra layers of smoky, roasted aromas from pyrazines can be created by cracking and toasting the whole spice before grinding.

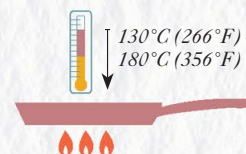


Before toasting, crush the berries lightly in a pestle and mortar to crack the shells.



Flavour compounds are concentrated in the shell

Cracking the shells helps to release the flavour oils, which are stored in tiny glands.



Toast in a dry frying pan. New flavour compounds, such as pyrazines, form above 130°C (266°F), but at 180°C (356°F) burnt flavours dominate.

ANISE

Camphorous | Sweet | Warming

BOTANICAL NAME

Pimpinella anisum

ALSO KNOWN AS

Aniseed, sweet cumin, white anise.

MAJOR FLAVOUR COMPOUNDS

Anethole, anisyl alcohol.

PARTS USED

Fleshless fruits housing small seeds.

METHOD OF CULTIVATION

Grown as an annual crop, plants are pulled up or mown when the fruits ripen.

COMMERCIAL PREPARATION

Fruits are left to dry for a week, then threshed to separate the flower heads.

NON-CULINARY USES

The essential oil is used in cough medicine, perfumes, and soaps. Also known as a traditional remedy for trapped wind and headaches.



Whole

The brown-green oval seeds are best bought whole and ground as required. Seeds will keep for up to two years in a sealed container. Wild black anise from Calabria in Italy is sweeter and less bitter than standard anise, but much harder to source.

Spice story

Records show ancient Egyptians using anise as a cure for snake bites, but it was the Romans who really developed a fondness for its intensely sweet, liquorice-like taste, drawing on anise to flavour everything from the provisions of a lowly centurion to the spiced wine *conditum* and rich cake *mustaceoe* served at special banquets. Anise endured as a popular kitchen garden plant into the Middle Ages, especially in the Pyrenees, where monks produced an anise-flavoured liqueur that the French drank as an aperitif and also added to stews and stocks. Today, several liqueurs are still flavoured with anise's essential oil, including French *pastis*, Greek *ouzo*, Turkish *raki*, and Arab *arrak*. Anise has also long been regarded as an effective aid to digestion; in India today the fruits are commonly chewed whole after meals.



Region of cultivation

Anise is cultivated widely in its native region of the eastern Mediterranean, Egypt, and the Middle East, and commercial crops are now grown as far afield as the Baltic countries and Latin America. Cultivation has also spread east to India, China, and Japan.