

The Many Health Benefits of Fennel

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✓ Fact Checked

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STORY AT-A-GLANCE

- › Common fennel is a perennial plant in the carrot family. All but the roots are used in traditional culinary and medicinal preparations. The plant is native to the Mediterranean and is believed to have been part of Jewish meals since biblical times
- › Although from the same family and similar in taste, anise and fennel are from different plants and have slightly different flavor profiles. Anise is more pungent and often found in Chinese Five Spice powder while fennel seeds have a less sweet licorice flavor that lends itself to savory dishes
- › Fennel bulbs are low in calories and are a rich source of fiber and anethole, which gives the plant the distinctive flavor and has anti-inflammatory, anticarcinogenic, immunomodulatory, neuroprotective, chemoprotective and antithrombotic properties
- › Fennel seed has anti-infective properties effective against conjunctivitis, and has been incorporated into natural remedies to treat dry cough, pneumonia, bronchitis and asthma. It also has mild diuretic properties
- › Animal studies link fennel extract to the treatment of dementia and Alzheimer's disease. The seeds also have a long history as a digestive aid as they lower cramping, bloating and gas while promoting motility and peristalsis. The seeds have traditionally been used as a galactagogue, helping to increase breast milk supply

Common fennel (*Foeniculum vulgare*) is a perennial plant in the carrot family that is grown for the edible leaves, shoots, seeds and bulbs. It's likely the plant was first cultivated in Israel,¹ and is believed to have been part of Jewish meals since biblical

times. The plant is native to the Mediterranean area, where the seeds are used as a spice, insect repellent and medicine, and the shoots and feathery fronds are added to salad.

Pliny the Elder mentions fennel several times in his encyclopedia, "Natural History," as a treatment for uterine health, stomach aches, and to care for "stings of serpents."²

Although the plant has become an invasive species in parts of the U.S., it can be grown in pots, which may help contain the spread.³

The plant appreciates cool weather and temperatures above 75 degrees Fahrenheit can induce bolting, or premature seeding.⁴ It likes full sun, well-draining soil and should be planted in the early spring or fall months. If the seed heads are collected before they shatter, it may also help prevent the spread of the plant. Although the plant can reach 6 feet in height, it often is ready for harvest when it's shorter than that.⁵

Traditionally, the medicinal value of fennel has benefited nursing women and people with gastrointestinal disorders; it has even been used as a mild diuretic to help reduce edema. However, some people don't like the licorice-like flavor of the fennel plant, which tastes like anise.

Is It Anise or Fennel?

Although anise and fennel are similar in taste and the plants are from the same family, that is where the similarity ends. While fennel produces a bulb at the base that is edible, anise grows as a bush that produces the seed, and only the anise seed is edible.⁶

Both plants are native to the Mediterranean and both have a licorice flavor derived from anethole, an essential oil found in the seed. Many cooks use the seeds interchangeably, but anise is more pungent and often found in Chinese five spice powder. Fennel seeds have a less sweet licorice flavor that lends itself to savory dishes.

Fennel is a versatile plant and much of it can be eaten.⁷ The bulb can be trimmed, the outer layer peeled, and the bulb cut in half lengthwise through the middle of the root. The core can be tough on larger bulbs but is often tender in younger plants.

The fennel bulb and stocks can be eaten raw or roasted, caramelized, grilled or candied. Cooking the vegetable tends to reduce the licorice flavoring. The stems can be tossed over coals when grilling fish and the fronds make a garnish on fish or salad.

Vitamin and Antioxidant Components Support Health

The vitamin and nutrient content in fennel bulbs and seeds contribute to supporting overall health and have specific benefits, such as digestive health and anticancer properties. According to the U.S. Department of Agriculture, nutrients in fennel bulbs and seeds include:

Vitamin/Nutrient	Recommended Daily Allowance⁸ Women - Men	1 Cup sliced Fennel bulb⁹	1 Tbs. Fennel seeds¹⁰
Calories		27	20
Protein		1.08 grams (gm)	0.916 gm
Calcium	1,000 mgs	42.6 milligrams (mg)	69.6 mg
Iron	8 mg	0.635 mg	1.07 mg
Magnesium	310 - 400 mg	14.8 mg	22.3 mg
Potassium	2,600 - 3,400 mg	360 mg	98 mg
Phosphorus	700 mg	43.5 mg	28.2 mg
Zinc	8 - 11 mg	0.174 mg	0.215 mg
Copper	900 micrograms (µg)	0.057 mg (57 µg)	0.062 mg (62 µg)

Folate	400 µg	23.5 µg	Not listed
Vitamin C	75 - 90 mg	10.4 mg	1.22 mg
Vitamin A	700 - 900 µg	41.8 µg	0.406 µg

The combination of nutrients in fennel seed offers mild diuretic properties, which may be one of the reasons weight loss formulas include the seed.¹¹ In the past, it's been used as an appetite suppressant and has been incorporated into natural remedies to treat dry, hacking coughs, as well as asthma, pneumonia and bronchitis.

Fennel seed also has anti-infective properties effective against conjunctivitis. A decoction of the seed strained through a paper filter has been used as an eye wash for sore and bloodshot eyes. The essential oil derived from fennel seed has been useful to improve energy levels and incorporated into facial products for mature skin. This includes soaps, creams and lotions.

Kaempferol and quercetin are ubiquitous polyphenols in fruit and vegetables,¹² which are beneficial in the fight against cardiovascular disease, which remains the leading cause of death worldwide. Fennel leaves have higher levels of quercetin in milligrams per 100 gm of fresh weight than other plant sources tested, except for dill.

Fennel is also rich in anethole, which helps give the plant its distinctive flavor. The compound has been widely used within the food industry and across the cosmetics and pharmaceutical industries. Studies have also revealed the compound may play a role in several chronic diseases due to the anti-inflammatory, anticarcinogenic, immunomodulatory, neuroprotective, chemoprotective and antithrombotic properties modulated across ion channels.^{13,14}

Fennel bulbs are also rich in prebiotic fiber,¹⁵ that helps support gut microbiota and promotes optimal brain and psychological health.¹⁶ Adding prebiotic fiber to your diet improves your gut microbiome and thus may impact brain development and function.

Animal studies¹⁷ have also linked common fennel in the treatment of dementia and Alzheimer's. The extract was used in mice for eight consecutive days and found to ameliorate the amnesic effect of chemically induced memory deficits in mice. The powerful antioxidants found in the fennel bulb, such as vitamin C and quercetin, helped to reduce levels of inflammatory markers in an animal model.¹⁸

More Health Benefits From Fennel and Fennel Seeds

Fennel seeds have a long history as an effective digestive aid.¹⁹ They appear to help lower digestive cramping, bloating and gas. Volatile oils in the fennel seed help encourage motility and peristalsis, while the aromatic oils have antispasmodic and carminative properties.

Fennel tea is made by crushing dried seeds and adding them to boiling water. By increasing motility and reducing muscle spasms, drinking fennel tea may help prevent acid reflux and improve digestion. Since the fennel seeds help reduce stomach cramps and lower gas and bloating, they could potentially help relieve the symptoms of irritable bowel syndrome (IBS) and act as a muscle relaxant to ease cramping.

The impact that consuming fennel bulb has on heart disease is related to the prebiotics that help improve gut health. Fennel seeds are rich in potassium, which can help balance your sodium-potassium ratio and have a positive influence on blood pressure. In postmenopausal women, fennel increased sexual satisfaction and reduced painful intercourse,²⁰ and fennel vaginal cream improved arousal, lubrication, sexual satisfaction and orgasm after eight weeks.²¹

Lifestyle and wellness coach Luke Coutinho shared a fennel tea recipe with the Times of India to help promote sleep. It includes making fennel tea with dried seeds and adding dashes of freshly ground nutmeg and cinnamon, and then drinking it at bedtime.²²

Fennel tea also has antimicrobial and antiviral properties, so drinking some tea when you feel a cold coming on may help your body fight the pathogens.²³ Fennel tea may be

one of the original ways people used to freshen their breath. The antibacterial properties may help kill oral pathogens that cause your breath to smell bad.²⁴

Fennel seeds have traditionally been used as a galactagogue, helping to increase breast milk supply.²⁵ Fennel seeds are used in traditional medicine and are included in several over-the-counter proprietary mixtures believed to help increase milk supply. It is believed to boost milk production by competing with dopamine that binds with prolactin first.²⁶ By preserving prolactin's milk stimulation properties, the anethole in fennel seed helps boost production.

Health Benefits of Indian Cooking Spice Asafoetida

Asafoetida is an Indian cooking spice made from the gum of a type of giant fennel. The name translates into "rotten resin,"²⁷ which aptly describes the unpleasant odor reminiscent of rotting food and sweaty feet. If you can get past the scent while cooking, it has been long used in lieu of garlic and onions in Indian food.

Asafoetida also can reduce gas and bloating, and sometimes is paired with bean-based dishes for that reason.²⁸ In 2009,²⁹ researchers found it was more effective at killing the H1N1 influenza virus than the commercially manufactured antiviral drug, amantadine.

Asafoetida also contains several chemicals shown to have anti-inflammatory, anticancer and antimutagenic activities. As reported in the Pharmacognosy Review:³⁰

"Dried resin, administered orally to Sprague–Dawley rats at doses of 1.25 and 2.5% w/w of the diet, produced a significant reduction in the multiplicity and size of palpable N-methyl-N-nitrosourea-induced mammary tumors, and a delay in mean latency period of tumor appearance. Oral administration to mice increased the percentage of life span by 52.9%. Intraperitoneal administration did not produce any significant reduction in tumor growth."

Similarly, a study³¹ published in the Journal of Ayurveda and Integrative Medicine in 2017 confirmed asafoetida resin had antitumor effects against breast cancer. According to the researchers:

“Our results showed that treatment with asafoetida was effective in decreasing the tumor weight and tumor volume in treated mice. Apart from the antitumor effect, asafoetida decreased lung, liver and kidney metastasis and also increased areas of necrosis in the tumor tissue respectively.”

As with fennel bulb and fennel seed, asafoetida lowers blood pressure,³² has significant smooth muscle relaxant and anticoagulant effects, and certain compounds may have the ability to inhibit acetylcholinesterase,³³ which may prove useful against Alzheimer's disease.

Some People Should Avoid Fennel, Seeds or Oil

The fennel bulb has a crunchy texture and mildly sweet flavor. When purchasing fennel, look for a firm white or pale green color. If the buds are flowering, the plant has gotten overripe.

Fennel and fennel seeds are gentle, but there are instances when fennel can cause an allergic reaction on the skin and in the respiratory tract.³⁴ The essential oil can be toxic in high doses and should be avoided during pregnancy as it has estrogen-like activities. Individuals with estrogen-sensitive conditions, such as breast cancer or other tumors, should also avoid consuming the essential oil.

Other high-sensitivity reactions can include over-excitement of the nervous system and seizures in a sensitive individual. People with Parkinson's, multiple sclerosis and epilepsy should avoid using the essential oil. Fennel may also slow blood clotting, so people with bleeding disorders or on blood thinners should not use fennel.

When drinking fennel tea or using other products with essential oil, avoid ultraviolet light exposure as it can increase the risk of burns. If a mother or breastfed infant is allergic to carrots, celery, or other plants in the Apiaceae family, the mother should also avoid fennel to reduce the risk of a possible cross-allergic reaction as the compounds cross into the breast milk.

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