

Zingiberaceae



*Zingiber Officinale*  
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*Zingiber officinale. Rosc.*

## Zingiber Officinale

### **Name and Family:**

*Zingiber officinale* ROSCOE, commonly known as ginger, is part of the zingiberaceae family. William Roscoe, an English botanist in 1807, named it.

It comes in a variety of different forms:

Jamaica or white African ginger is light brown, has a short rhizome that is very pungent.

Cochin is a red-gray color and has a very short rhizome.

Green ginger is an immature rhizome that has not been dried.

Ratoon is uncultivated ginger.

Black or white ginger refers to whether it has been peeled or not.

### **Description:**

An aromatic perennial that grows between 2 and 4 feet tall. The stalk is green and surrounded by narrow leaves 6 to 12 inches long, ending in lance shapes that annually die down. Flowering stalks end in an oblong spike from which bloom yellow-green, purple lipped flowers. Flowers are rarely seen in cultivated plants. The plant arises from a thick, tuberous rhizome that protrudes in joints to creep underground. The rhizome is tan in color and knotty.

### **Origin and Habitat:**

Originally believed to have come from China, ginger is now grown in every major tropical country.

Ginger requires a tropical climate with high humidity to grow. It should be partially shaded from the sun. Fresh roots 1 to 2 inches long should be planted in early spring, (after the cut ends of the root have dried), in moist soil. Once the roots and stalks have begun to grow, the plant should be heavily watered and fed monthly. Roots can be harvested at anytime, but it takes several months for them to reach a good size and it is recommended that roots be allowed to grow for 12 months before harvesting. Plants are dormant during the winter and rhizomes may rot in cold, wet soil.

### **Economic impact:**

*“It has been cultivated for so long that its exact origin is unclear. Cultivated for millennia in both China and India, it reached the West at least two thousand years ago, recorded as a subject of a Roman tax in the second century after being imported via the Red Sea to Alexandria. Tariff duties appear in the records of Marseilles in 1228 and in Paris by 1296. Ginger is known in England before the Norman Conquest, as it is commonly found in the 11th century Anglo-Saxon leech books. Ginger is detailed in a 13th century work, “Physicians of Myddvai,” a collection of recipes and prescriptions written by a physician, Rhiwallon, and his three sons, by mandate of Rhys Gryg, prince of South Wales (who died in 1233). By the 13th and 14th centuries it was familiar to English palates, and next to pepper, was the most popular spice. A pound of ginger was then valued at the price of one sheep.”(13)*

Ginger is still a major commodity in today’s world market.

The major world producers include: India, Nigeria, Indonesia, China, Thailand, and the Philippines. While the world’s biggest importers include Japan, United States, and England. American imports its ginger from China, several Caribbean Islands, Nigeria, Indonesia, Thailand, Brazil, and Australia. In 2000 Japan, the world’s largest importer, alone imported over 104,000 metric tons of ginger. The estimated world trade value for ginger in 2000 was almost \$157million.

**Parts used:**

Medicinally only the rhizome is used, however some cultures prepare and consume the shoots and leaves as well.

**Constituents:**

Pungent	Resin	Mucilage
Volatile oils	Starch	

**Medicinal uses and properties:**

Ginger's primary use and fame comes from its antinausea and antiemetic properties, however there is an Indian proverb that states, "Every good quality is contained in ginger." (3) and from the Philippines "Ginger is the root of all good things". (17) Ginger has a number of proven applications as well as many other uses over the centuries of which there have been no studies done.

Ginger has an affinity for the stomach, spleen, heart, lungs and kidneys.

**Antinausea, Antiemetic**- Danish researchers studied a group of 30 pregnant women, 70% of the participants reported significant relief from nausea when taking ginger. Italian researchers studied a group of 60 passengers on a boat with history of seasickness, 50% of those given Dramamine reported nausea relief, while 70% of those given ginger had the same effect.

"...placebo-controlled, double-blind study involving 60 women who had undergone gynecological surgeries found that the effect of ginger on nausea was similar to that of metoclopramide. Both ginger and metoclopramide significantly lowered the incidence of nausea after surgery compared to the placebo group. In another study, similar results were confirmed with a larger group of patients (120 women) undergoing the same surgical procedure" (19)

In 1990, the American Phytotherapy Research Laboratory studied a group of 36 volunteers with a history of motion sickness. They were given either Dramamine or ginger then set in motorized chairs and instructed to stop the chairs when they felt sick. The ginger group lasted 57% longer in the chairs than those who took Dramamine. Swedish Navy researchers studied 80 cadets who sailed in turbulent waters. 72% of those taking ginger experienced less seasickness.

**Antifungal**- Gardeners World (UK) October 2000- Indian plant pathologists have found for treating powdery mildew in peas, that powdered rhizome of *Zingiber officinale*, and *Acorus calamus*, are more effective for controlling mildew than commonly used chemical fungicides, and also have a stimulatory effect on plant growth and yield.

**Antioxidant**- Ginger was used for marinating meats back when there were no refrigerators, as it slowed the process of meat turning rancid do to oxidation of fats. "oxidative stress induced by malathion (a pesticide) into rats was overcome by introducing ginger into the rats' diets.

The antioxidant activity of *Zingiber officinale* was shown to be as effective as vitamin C in lowering lipid peroxidation in rats by influencing the enzymatic blood level of superoxide dismutase, catalase, and glutathione peroxidase.

The lipid peroxidation lowering associated with ginger consumption was also demonstrated in apolipoprotein E-deficient mice (i.e., mice that are prone to develop atherosclerosis). Mice that consumed ginger (250 mcg of extract/day) in their drinking

water showed a significant reduction in their basal concentration of LDL-associated lipid peroxides” (19)

**Antibacterial-** The enzymes in ginger that help break down proteins also kill bacteria such as *Escherichia coli*, *Proteus vulgaris*, *Salmonella typhimurium*, *Staphylococcus aureus* and *Streptococcus viridans*. In China, seafood dishes are seasoned with ginger because it is considered to antidote shellfish poisoning while Japan serves their sushi with raw ginger, (though this is mainly due to its antihelminthic properties). The antibacterial and antifungal properties of ginger are synergistic when added to honey.

**Antihelminthic-** “Datta, A, and Sukal, N. 'Antifilarial effects of *Zingiber officinale* on *Dirofilaria immitis*.' *Journal of Helminthology* 61 (1987): 268-70- Filariae, which affect at least 80 million people worldwide, were effectively reduced in dogs by an extract of ginger by approximately 98% without any reported toxic effects.”(17)

“Tietze, P.E., and Tietze, P.H. 'The roundworm, *Ascaris lumbricoides*.' *Primary Care Clinics in Office Practice* 18, no. 1 (Mar 1991): 25-41- *Ascaris lumbricoides* kills approximately 20000 people annually and affects approximately 1 billion worldwide. Effectively inhibited by ginger extract.”(17)

“Kucera, M. *Nigerian Journal of Pharmacy* 6 (1975): 121- *Schistosoma*, which is becoming increasingly prevalent in the USA, is considered the second major parasitic disease in the world. This infection is particularly insidious in that the parasite is capable of ingesting as many as 330,000 red blood cells per hour in a laboratory mouse. Ginger completely abolished the infectivity in its early phases, and in young children, ginger extract was found to significantly reduce the egg count in the urine indicating a systemic action.” (17)

**Anticoagulant-** Ginger reduces platelet aggregation as well as working as a blood thinner.

**Antiinflammatory-** Altman RD, Marcussen KC. Effects of a ginger extract on knee pain in patients with osteoarthritis. *Arthritis Rheum.* 2001 Nov; 44(11): 2461-2. - In the 247 evaluable patients, the percentage of responders experiencing a reduction in knee pain on standing was superior in the ginger extract group compared with the control group.

Analysis of the secondary efficacy variables revealed a consistently greater response in the ginger extract group compared with the control group, when analyzing mean values: reduction in knee pain on standing, reduction in knee pain after walking 50 feet

**Antispasmodic-** Helps prevent abdominal cramping and treats indigestion.

Relief of menstrual cramps has been a use of ginger for Chinese women for centuries.

**Anti ulcer-** Ginger does not cure ulcers, but research points to possible prevention of ulcers. Ginger does help to relieve the symptoms of ulcers. It has been prescribed for this purpose in Chinese medicine.

**Analgesic-** Danny Kingsley. Ginger has painkilling properties: research. ABC Science Online. Thursday, 6 December 2001- A study on rats, in collaboration with the University of Queensland, showed that ginger helped withstand pain in the form of heat applied to the rats' tails.

Ginger is commonly used in a hot compress to alleviate tooth pain and gargle for sore throats.

China has been using ginger to relieve hangovers. As well as currently being used for migraine relief.

As an essential oil it is used in massages to reduce muscular pain and fatigue.

**Aromatic, Sialagogue**– Promotes the production of gastric juices, bile, and saliva through its strong taste and smell. This helps increase appetite as well as absorption of nutrients.

**Carminative**- Prevents and treats indigestion as well as relieves gas in the forms of flatulence and belching.

**Diaphoretic**- The warming sensations of ginger cause sweating which can help release toxins in the body or aid in breaking a fever.

**Emmenagogue**- In Chinese medicine ginger has been used to promote menstruation.

**Expectorant**- Has been given for centuries by the Chinese for colds and flu and has been known to be used for respiratory problems such as asthma.

**Rubefacient**- Often used in massages as an essential oil, it helps bring blood to the surface through vasodilatation of the capillaries.

**Digestive tonic**- Ginger relieves indigestion, colic, flatulence or gas, stimulates appetite and helps tone the digestive tract. As with many culinary spices it has been used in cooking for hundreds of years for this specific reason.

**Cardiac/Circulatory tonic**- Ginger lowers cholesterol, which helps, reduce plaque build up in the arteries. Prevents platelet aggregation, which can help prevent blood clots that can block arteries or travel causing stroke, heart attack, or pulmonary embolism. Lowers blood pressure, which is a risk factor for heart disease, through vasodilatation, this also allows for blood to reach the surface area of the extremities in the case of cold hands and feet. Ginger increases the pumping action of the heart.

Ginger has also been given for diarrhea, infectious diseases, investigations in India have shown that ginger may also help boost the immune system, and there is suggestion that ginger may have antiviral properties as well and is used in china to fight the flu.

While animal studies do not always apply to humans, preliminary animal studies have shown that ginger reduces blood sugar levels as well as shrinking tumors. “Ginger is listed among the herbs possessing the highest antitumor activities... antitumor activity was shown to be related to its vanilloids, [6]-gingerol and [6]-paradol. The application of [6]-gingerol to the shaven backs of mice prior to applying cancer-promoting agents significantly inhibited skin cancer formation.” (19)

### **Dosages:**

Ginger can be taken as a capsule, vegetable fresh or dried, fluid extract, tablet, tincture, tea, candied, or powder form internally, though there are external uses as well.

For general use dosages usually follow as:

500-1000mg in capsule or tablet form

500mg of dried root four times a day

¼-1 teaspoon of fresh root per cup of boiling water for an infusion steeped for 5 minutes.

1 ½ teaspoons of dried root per cup of water for a decoction, left to simmer for 5-10 minutes.

1.5-5mL three times a day for tincture depending on the strength of the tincture

20-30 drops of a fluid extract.

Candied is usually suggested as a few pieces.

**Contraindications and warnings:**

High dosages have been known to cause heartburn, which can eventually lead to erosion of the esophagus and ulcers. To avoid such problems it is recommended that ginger be taken with food.

Massive doses can lead to depression of the nervous system, heart irregularities, and internal bleeding.

It should be avoided if you have allergies to the herb.

Due to the blood thinning and anticoagulant properties, ginger should not be taken if you have a bleeding disorder such as hemophilia, if you are currently taking a blood thinning medication, if you are expecting to go into surgery, or in the third trimester of pregnancy. There is some concern for pregnant women using ginger as the herb has a history of being used to promote menstruation. Chinese physicians prescribe 20 to 28 grams of the herb for this purpose while only 1 gram is used for preventing nausea. Ginger has been successfully used to prevent morning sickness for hundreds of years and there have been no documented reports of miscarriages being triggered after taking ginger in humans. In animal studies "Ginger tea was given to pregnant Sprague-Dawley rats for 20 days from the day of gestation. The rate of spontaneous loss of fetuses was double in the ginger group than in a control group. However, the surviving fetuses were heavier and more developed in the ginger group than those in the control group... This harmful effect on the fetus is perhaps linked to blood-thinning properties of ginger, which may facilitate and enhance blood flow. However, other reported experiments failed to show any harmful effect on the developing fetus in Wistar SPF rats receiving ginger extracts." (19) If you have a history of miscarriage though, you may want to be more cautious.

A physician should be consulted before taking ginger if you have gallstones.

**Folklore:**

Ginger enjoys a rich background in folklore, not just medicinally.

Pythagoras used ginger to treat snakebites.

In the middle Ages, it was used to treat the plague and in England, it was believed to protect women from incubi, evil spirits who sexually preyed upon women while they slept.

Ginger can be found mentioned in the writings of Confucius.

Sailors used to take potted ginger on long voyages with them in hopes of preventing scurvy, it did not work, but nobody got seasick. Fishermen chew the root, and then spit it into the ocean to calm storm waves.

There are stories that ginger was originally grown in the Garden of Eden.

Ginger root planted in the garden foretells the gardener's health by either dying or thriving.

The Pen Tsao Ching says that it puts a person in touch with the spiritual realm.

Indians believed that eating ginger made them presentable to the gods by leaving them smelling sweet.

Eating ginger before spell casting is supposed to increase the power of the spell.

Sprinkling dried ginger into your pocket or wallet is said to attract prosperity.

Ginger is commonly used in success and love spells.

It was once believed that ginger root would change even the most prudent women into a vixen and has a high reputation as a powerful aphrodisiac. Hawaiian stories tell of

romance bursting into bloom after touching someone with ginger root water. “In Senegal and Fouta-Djalou, the women weave belts of pounded ginger root to arouse the dormant attention of their husbands.”(17) “The belief that ginger is an aphrodisiac encouraged the Portuguese to cultivate it in West Africa. They fed it to men in their slave camps so that the slave populations and Portuguese profits would both increase.”(18)  
Perhaps two of the best-known folk tales here in America involving ginger are “The Gingerbread Man” and “Hansel and Gretel”.

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