



## NUTRITIONAL ATTRIBUTES AND THERAPEUTIC IMPORTANCE OF CARAWAY SEEDS

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Received on: 25.02.2022

Revised on: 23.04.2022

Accepted on: 29.04.2022

### Abstract

Strongly aromatic, caraway is a member of the parsley or Umbelliferae family; a large family of plants that also includes commonly known herbs and spices such as dill, anise, fennel, and . Caraway (*Carum carvi* L.) contains health benefiting essential oils. These compounds indeed work as powerful antioxidants by removing harmful free radicals from the body and thus protect from cancers, infection, aging and degenerative neurological diseases. Principle health benefiting volatile compounds are flavonoids antioxidants viz. carvone, limonene, carveol, pinene, cumuninic aldehyde, furfural, and thujone. These active principles in the caraway seeds known to have antioxidant, digestive, carminative, and anti-flatulent properties. Also, dietary fibers occurring in caraway bind to the toxins in the food and helps protect the colon mucosa from cancers. Further, dietary fibers bind to bile salts (produced from cholesterol) and decrease their re-absorption in the colon, and thus help in reducing serum LDL cholesterol levels. Caraway spice is an excellent source of minerals like Fe, Cu, Ca, K, Mn, se, Zn and Mg. The plant's roots can be eaten, but most people use the caraway fruit, which is mistakenly called seed as a result of its size and texture.

### Keywords

Carminative, Crptoxanthin, Carvone, Carveol, Emmenagogue, Thujone, IBS.

### INTRODUCTION

Although frequently mistaken for a seed, this small, brown pod is really the dried fruit of the caraway plant (*Carum carvi* L.) belonging to Umbelliferae family. Caraway is a widely cultivated spice native to Europe, Asia and North Africa. It also appears wild in Iceland, Scandinavia, throughout Russia, in Siberia, Persia, the Caucasus and the Himalayas. Caraway grows extensively all over the Europe, North Africa, and Asia Minor regions. It is a biennial, herbaceous plant which blooms once in every two years. Its creamy flowers appear in umbels. The plant grows to about two feet in height and bears small feathery leaves. [1-2]Caraway seeds, having similar in appearance as that of [cumin](#), have a crescent shape, dark brown, with up to five stripes (ribs) running lengthwise on their surface. Studies have shown that caraway oil has

antibacterial and larvicidal properties. Caraway has a long history of use as a household remedy especially in the treatment of digestive complaints where its antispasmodic action soothes the digestive tract and its carminative action relieves bloating caused by wind and improves the appetite. It is often added to laxative medicines to prevent griping. The seed is antiseptic, aromatic, anaesthetic, anodyne, antianxiety, diuretic, mildly expectorant, fungicidal, muscle relaxant, soporific, tonic, emmenagogue, expectorant, galactagogue and stimulant. It can be chewed raw for the almost immediate relief of indigestion and can also be made into infusions. The seed is also used in the treatment of bronchitis and are an ingredient of cough remedies, especially useful for children and for mothers for increasing breast milk . A tea made from the seeds is a pleasant

stomachic and carminative, it has been used to treat flatulent colic. [3-4] The seed is used in Tibetan medicine where it is considered to have an acrid taste and a heating potency. It is used to treat failing vision and loss of appetite. Caraway boasts a wide variety of essential nutrients, several of which are lacking in Western diets. These include Fe, Zn, Ca and fibre. Caraway boasts a rich supply of health-promoting [antioxidants](#), including limonene and carvone. This plant is also referred to as meridian [fennel](#) or Persian [cumin](#). The plant's roots can be eaten, but most people use the caraway fruit, which is mistakenly called seed as a result of its size and texture. They are often compared to fennel, and both make a good substitute for the other, although there is an obvious difference in the taste. Fennel is very heavily [licorice](#)-flavored, while caraway tends to have more peppery and citrus notes to it. [5-6].



Fig. 1: Flowers and Seeds of Caraway.

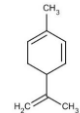
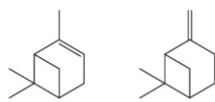
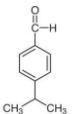
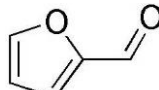
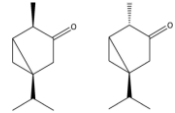
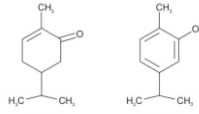


Fig. 2: Seed powder, Tea and Oil of Caraway.

**Phytoconstituents**

Principle volatile compounds are carvone, limonene, carveol, pinene, cumuninic aldehyde, furfural, and thujone. These active principles in the caraway seeds known to have antioxidant, digestive, carminative, and anti-flatulent properties. Caraway has health benefiting flavonoid antioxidants such as lutein, carotene, cryptoxanthin, and zeaxanthin. Caraway spice is an excellent source of minerals like Fe, Cu, Ca, K, Mn, se, Zn and Mg.

An essential oil from the seed is used in perfumery, for scenting soap, as a parasiticide etc. The main components of *C. carvi* oil are carvone, limonene, germacrene D, and trans-dihydrocarvone. Gas chromatography (GC) and gas chromatography-mass spectrometry (GC-MS) studies showed the presence of carvone and limonene as the major chemical constituents of the essential oil of *C. carvi*. The herb oil of caraway was found to consist of germacrene D with  $\alpha$ -caryophyllene,  $\alpha$ -elemene, humulene, germacrene A and B, and two cadinenes. Caraway seeds contained the main components divided into carvone and limonene. [4-7]

<b>Limonene</b>	
<b><math>\alpha</math> &amp; <math>\beta</math>-pinene</b>	
<b>Cumuninic aldehyde</b>	
<b>Furfural</b>	
<b><math>\alpha</math> &amp; <math>\beta</math>-thujone</b>	
<b>Volatile chemical constituents of Caraway (<i>Carum carvi</i> L.)</b>	 <div style="display: flex; justify-content: space-around; font-size: small;"> <div style="text-align: center;"><chem>CC1=CC=C(C(=O)C)C=C1C</chem> Carvone</div> <div style="text-align: center;"><chem>CC1=CC=C(C=C1)C(=O)C</chem> Carvacrol</div> </div>

### Health Benefits of caraway seeds

In addition to their utility as remedial items in the traditional medicines, caraway seeds have their own food value, and indeed, have many health benefiting nutrients, minerals, vitamins and antioxidants. Caraway seeds are a rich source of dietary fiber. 100 g seeds provide 38 g of fiber, 100% of daily recommended intake of fiber. The soluble as well as insoluble dietary fiber increase the bulk of the food and help prevent constipation by speeding up its movement through the gut. Also, dietary fiber binds to the toxins in the food and helps protect the colon mucosa from cancers. Further, dietary fibers bind to bile salts (produced from cholesterol) and decrease their re-absorption in the colon, and thus help in reducing

serum LDL cholesterol levels. Caraway contains health benefiting essential oils. These compounds indeed work as powerful antioxidants by removing harmful free radicals from the body and thus protect from cancers, infection, aging and degenerative neurological diseases. Copper present in caraway required for the production of red blood cells. [5-8] Iron required for red blood cell formation. Zinc is a co-factor in many enzymes that regulate growth and development, digestion and nucleic acid synthesis. Potassium is an important component of cell and body fluids that helps regulate heart rate and blood pressure. Manganese used by the body as a co-factor for the powerful antioxidant enzyme, superoxide dismutase. The caraway seeds indeed are the

**Table 1: Main constituents of Caraway seeds and their nutrition value.**

Principle	Nutrient Value	Percentage of RDA
Energy	333 Kcal	17%
Carbohydrates	49.90 g	38%
Protein	19.77 g	35%
Total Fat	14.59 g	48%
Cholesterol	0 mg	0%
Dietary Fiber	38 g	100%
<b>Vitamins</b>		
Folates	10 µg	2.5%
Niacin	3.606 mg	23%
Pyridoxine	0.360 mg	28%
Riboflavin	0.379 mg	29%
Thiamin	0.383 mg	32%
Vitamin A	363 IU	12%
Vitamin C	21 mg	35%
Vitamin E	2.5 mg	17%
<b>Electrolytes</b>		
Sodium	17 mg	1%
Potassium	1351 mg	29%
<b>Minerals</b>		
Calcium	689 mg	69%
Copper	0.910 mg	101%
Iron	16.23 mg	203%
Magnesium	258 mg	64.5%
Manganese	1.300 mg	56.5%
Phosphorus	568 mg	81%
Zinc	5.5 mg	50%
<b>Phyto-nutrients</b>		
Carotene-β	189 µg	–
Crypto-xanthin-β	58 µg	–
Lutein-zeaxanthin	205 µg	–

storehouse for many vital vitamins. Vitamin-A, vitamin-E, vitamin-C as well as many B-complex vitamins like thiamin, pyridoxine, riboflavin, and niacin particularly concentrated in the seeds. Caraway water often used as a remedy for flatulence and indigestion in traditional medicines, especially used to relieve colic pain. It also used in pharmaceuticals as a flavoring agent in mouthwash and gargle preparations. Caraway extraction is used as a rubefacient (to soothe muscle sores), clear the cold, as a remedy for bronchitis and IBS (irritable bowel syndrome) in many traditional medicines. [7-10]

### Culinary uses

Caraway is a unique spice long used in cooking and herbal medicine. Caraway seeds feature warm, sweet, and slightly peppery aroma when squeezed between index and thumb fingers. They used extensively in European and Mediterranean cooking. To keep their fragrance and flavor intact; caraway seeds roasted gently under low flame and ground just before using them in a recipe. Caraway seed employed widely as a savory spice. It principally added in cooking as a condiment and flavoring base. It features in savory dishes, including [cabbage soups](#), sauerkraut, and salads. Caraway gives a pleasant aroma to bread, cakes, biscuits, and cheese. In France, the seeds offered in a saucer to sprinkle over Munster cheese before eating. [Cheddar cheese](#) with caraway seeds is a popular spice mixed, hard cheese in UK. The addition of caraway seeds give this cheddar cheese a savory flavor. Also, along with other spicy items, they are being used to season sausage and other meat preparations. In Central Europe (Poland), caraway-seasoned sausages (Kielbasa Kminkowa) are a favorite dish. Caraway seeds have a strong [anise](#)-like taste, making them popular in [savory](#) dishes, such as [sauerkraut](#) and harissa. In modern times, caraway seeds are most often used in baking recipes, from [rye](#) bread to pastry toppings and cakes. Its slightly bitter, earthy flavor is reminiscent of licorice, coriander, anise, and fennel. It can be used whole or ground in both sweet and savory dishes, such as breads, pastries, curries, and stews. It's sometimes infused into spirits and liqueurs as well. A tea made from the seeds is a pleasant stomachic and carminative, it has been used to treat flatulent colic. [6-10]

### CONCLUSION

Studies have shown that caraway oil has antibacterial and larvicidal properties. Caraway has a long history of use as a household remedy especially in the treatment of digestive complaints where its antispasmodic action soothes the digestive tract and its carminative action relieves bloating caused by wind and improves the appetite. It is often added to

laxative medicines to prevent griping. The seed is antiseptic, aromatic, anaesthetic, anodyne, antianxiety, diuretic, mildly expectorant, fungicidal, muscle relaxant, soporific, tonic, emmenagogue, expectorant, galactagogue and stimulant. It is used to treat failing vision and loss of appetite. Caraway boasts a wide variety of essential nutrients, several of which are lacking in Western diets. These include Fe, Zn, Ca and fibre.

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