

## A Neutraceutical Assessment of *Trachyspermum ammi*

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### Abstract

*Trachyspermum ammi* commonly known as ajwain is widely used in traditional medical practices to cure numerous ailments related to stomach, abdomen and respiratory tract. Besides it also possess antibacterial, antifungal and anti viral properties. *Trachyspermum ammi* seed contains essential oils and pharmacological constituents that makes it an effective medicinal herb that is used for primary health. It is less expensive to cultivate and is locally available.

**Keywords:** Antifilarial; Antifungal; Antioxidant; Insecticidal; *Enterococcus faecalis*; *Myrothecium roridum*

### Introduction

*Trachyspermum ammi* have its place in the family Apiaceae which is also known as Bishop's wee, Ethiopian cumin, carom and ajwain [1]. It is commonly used as culinary spice in Indian food and for curing numerous ailments [2]. *Trachyspermum ammi* is a yearly herbaceous grass like plant which is 30-70 cm in height bearing white flowers and small brownish seeds which is cultivated in Iran, Afghanistan, Egypt and in the east of India [3]. It is used in traditional medicine preparations since it has organoleptic characteristics [4]. It is known to possess antiseptic, antispasmodic, anthelmintic, antidiarrheal and stimulant properties and is used to treat atonic dyspepsia, flatulence, sore throat, dipsomania, bronchitis, abdominal pains, urticaria, piles, tonsillitis etc. [5].

### Constituents of *Trachyspermum ammi*'s seeds

Ajwain seed is rancorous and its oil either extracted by super critical fluid extraction or hydro distillation contain 50% thymol which is used in toothpaste and perfume since it exhibits anti-fungal and antiseptic activity [6]. Besides its seeds contain linoleic acid, palmitic acid, resin acids, oleic acid and petroselenic acid [7]. Other constituents includes protein, lipids, carbohydrates, phosphorus, copper, sodium, iodine, calcium, lithium, thiamine iron, aluminum, potassium, xylene, p-cymene, zinc, manganese, cobalt, nicotinic acid, riboflavin, cadmium and carotene [8].

### Antibacterial properties

Aqueous extract of *Trachyspermum ammi* was effective against numerous species of bacteria such as *Escherichia coli*, *Enterococcus faecalis*, *Klebsiella pneumonia*, *Staphylococcus aureus*, *Salmonella typhi*, *Pseudomonas aeruginosa*, *Staphylococcus epidermidis*, *Bordetella bronchiseptica*, *Shigella flexneri*, *Helicobacter pylori* and *Salmonella typhimurium* [9]. However no activity was seen against

*Mirococcus luteus*, *Pseudomonas fluorescens* and *Bacillus pumilus* [10].

### Antifilarial properties

Alcoholic extract of *Trachyspermum ammi* was effective against adult bovine filarial *Setaria digitata*

worm and *B. malayi* worm [11].

### Antifungal properties

*Trachyspermum ammi* alcoholic extract was found to be effective against *Fusarium chlamydosporum*, *Aspergillus niger*, *Myrothecium*

*roridum*, *Curvularia lunata*, *Alternaria grisea*, *Rhizoctonia solani*, *Papulaspora sp* etc. [12].

### Antioxidant properties

Alcoholic extract of ajwain showed activity against hexachlorocyclohexane induced lipid peroxidation [13].

### Antiplatelet properties

Extract of *Trachyspermum ammi* was found to inhibit platelet aggregation induced by epinephrine, arachidonic acid and collagen [14].

### Antiviral properties

Alcoholic extract of ajwain showed inhibitory effects against hepatitis C virus [15].

### Enzyme modulation properties

*In vivo* exposure of gingerol (active molluscicidal components of *Trachyspermum ammi*) alters cyto-oxidase, acetylcholinesterase, succinic dehydrogenase and lactic dehydrogenase activity in the nervous tissues of snail [16].

### Insecticidal properties

Essential oil from *Trachyspermum ammi* possess insecticidal activity against *Callosobruchus chinensis* [17].

### Spermicidal properties

*In vitro* spermicidal activity against human spermatozoa is shown by ajwain oil [18].

### Antiflatulent properties

Ajwain is used to alleviate the retention of gas and flatulence to treat abdominal gas anorexia, nausea, vomiting and travel sickness [19].

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### Antispasmodic properties

Ajwain seed extract is used to treat migraine headaches, abdominal spasms, colds etc. [20].

### Gastroprotective properties

*Trachyspermum ammi* ethanolic extract exhibits antiulcer activity by reducing ulcerative [21].

### Digestive stimulating properties

Secretion of gastric acid is increased nearly four-fold by *Trachyspermum ammi* [22]. Besides it causes increased secretion of bile acids and enhances activity of digestive enzymes [23].

### Aflatoxin detoxification

Besides *Trachyspermum ammi* showed degradation of aflatoxin G1, B1, B2 and G2 [24].

### Anthelmintic properties

*Trachyspermum ammi* exhibited anthelmintic activity against *Ascaris lumbricoides* and *Haemonchus contortus* [25].

### Conclusion

Thus *Trachyspermum ammi* is a source of medicinally active constituents and have various pharmacological and therapeutic effects.

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