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Medicinal Uses of Trachyspermum Ammi (L.) and Cuminum Cyminum: A Review

Kanika Mishra[1], Sanyogita Shahi[1*]

[1]Kalinga University, Raipur, Chhattisgarh, 492101, India

**Corresponding author's E-mail: drsanyogitashahi@gmail.com*

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Abstract

Spices have been an integral part of Indian cuisine for centuries, adding flavor, aroma, and colour to dishes. Indian spices are also known for their medicinal properties and have been used in traditional Indian medicine for centuries. ***Indian spices****, a vibrant blend, of flavors that entice and transcend. Trachyspermum ammi (L.) Sprague, commonly known as ajwain, and Cuminum cyminum L., commonly known as cumin, are two important medicinal plants from the family Apiaceae. They have been used in traditional medicine for centuries to treat a wide range of ailments. Ajwain is a small, aromatic plant with pungent seeds which is a rich source of essential oils, including thymol, carvacrol, and p-cymene. These compounds have been shown to possess a variety of pharmacological activities, including antimicrobial, antifungal, anti-inflammatory, and antioxidant properties. Ajwain is traditionally used to treat a variety of digestive disorders, including indigestion, flatulence, colic, and diarrhea. It is also used to treat respiratory problems, such as asthma and bronchitis. Ajwain has also been shown to have antihypertensive, hypolipidemic, and antidiabetic effects. Cumin is a rich source of essential oils, including cumin aldehyde, beta-pinene, and gamma-terpinene. These compounds have been shown to possess antimicrobial, anti-inflammatory, and antioxidant properties. Cumin is traditionally used to treat a variety of digestive disorders, including indigestion, flatulence, and diarrhea. It is also used to treat respiratory problems, such as asthma and bronchitis. Cumin has also been shown to have antihypertensive, hypolipidemic, and antidiabetic effects. In conclusion, ajwain and cumin are two important medicinal plants with a wide range of potential therapeutic applications. Their use in traditional medicine is supported by a growing body of scientific evidence. This review represents the brief description of ajwain and cumin and their medicinal importance in our life.*

Keywords: *Carvacrol, Cuminamaldehyde, Thymol*

1. Introduction

Description of Carom seed:

Scientific name: Trachyspermum ammi (L.), Common name: Ajwain, ajowan caraway, thymol seeds, bishop's weed, or carom seed.

Fig 1 (a): Seeds of Trachyspermum ammi (L.) (Ajwain)

The carom seeds (Trachyspermum ammi), ajwain, belong to the family of Apiaceae (Umbelliferae). It is a native of Egypt and cultivated in India, Iraq, Iran, Afghanistan, Pakistan and several other countries. Both the leaves and the seed like fruit (often mistakenly called seeds) of the plant are consumed by humans. Ajwain is a seed-like natural product frequently utilized in Indian cooking as a feature of a flavour combination. It seems to be like fennel and cumin seeds and is exceptionally fragrant, possessing a scent like thyme. Ajwain has been ordinarily utilized in customary medication frameworks for an assortment of restorative and pharmacological angles. In Traditional Persian Medicine (TPM), Ajwain was notable from millennia. Persian specialists typically utilized seeds of Ajwain as the most helpful piece of the spice Ajwain is esteemed for its recuperating and corrective properties and has been utilized for a very long time as a therapeutic fixing in Ayurveda, the Hindu arrangement of medication that has confidence in balance in the body. The seed has been appeared to help with stomach issues, cold manifestations, and rheumatoid joint pain.

Chemical constituents:

Fundamental constituents incorporate a fundamental oil called thymol. There is likewise carvacol, α-pinene, p-cymene, limonene and γ-terpinene found in the seed. Ajwain seeds comprise of dampness, protein, fat, minerals, fiber, starches, calcium, phosphorus, iron, carotene, thiamin, riboflavin and niacin.

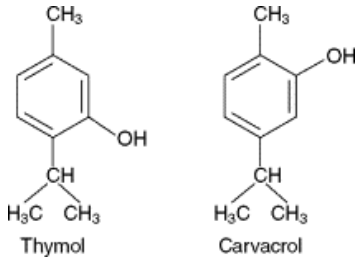

Fig 1 (b): Bioactive component of carom seed

Biological activity:

Ajwain with its trademark fragrant smell and impactful taste is broadly utilized as a zest in curries. In Indian arrangement of medication, ajwain is regulated for restoring stomach problems, a glue of squashed organic products is applied remotely for assuaging colic torments; and a hot and dry fomentation of the natural products is applied on chest for asthma. T. ammi has been appeared to have antimicrobial, hypolipidemic, digestive energizer, antihypertensive, hepatoprotective, broncho-enlargin, diuretic, anti-inflammator, gestor-protective impacts. Remedial employments of T. ammi organic products incorporate; stomachic, carminative and expectorant, germ-free and amoebiasis, antimicrobial. Seeds absorbed lemon juice with Prunus amygdalus (badam) are given in restoring amenorrhoea and it is additionally utilized as antipyretic, febrifugal and in the treatment of typhoid fever.

1. Gastro protective activity:

Ajwain seeds were accounted for as against ulcer movement. Creatures pretreated with ethanolic extricate displayed decline in ulcer security what's more, ulcer index. The discoveries gathered that the concentrate has showed huge security by diminishing ulcerative sores when contrasted and control gathering of creatures.

2. Hepatoprotective activity:

Along with the potent antioxidant activity, the Ajwain methanolic extract revealed to exhibit in vivo hepatoprotective activity with eighty percent protection against a normally-lethal dose of paracetamol in mice.

3. Analgesic and antinociceptive activity:

A test preliminary investigation has moreover been completed to analyze the antinociceptive impact of the hydroalcoholic concentrate of Ajwain with morphine sulfate utilizing formalin test. Discoveries uncovered that Ajwain separate displayed antinociceptive impact on both early and late stages. Also, under a randomized controlled fake treatment control clinical preliminary, the spice fundamental oil was examined for the pain-relieving impact in neuropathic feet consume. Results revealed that Ajwain essential oil significantly reduced the feet burn compared to placebo.

4. Digestive stimulant activity:

Ajwain would build the emission of gastric corrosive almost multiple times. Customary experts suggested the spice as a stomach related energizer medication. It is presently demonstrated that Ajwain can build the emission of gastric corrosive, bile acids and movement of stomach related catalysts. It might likewise diminish the food transient time. As the catalyst modulatory movement, Ajwain supported the pancreatic lipase and amylase adequacy, which may uphold the stomach related energizer movement.

5. Anti-inflammatory activity:

Ajwain was additionally assessed for showing against provocative impact. Likewise, both complete alcoholic concentrate and absolute fluid concentrate have in vivo critical anti-inflammatory impact.

6. Diuretic and Anti-lithiasis Activity:

Ajwain was ascribed to have diuretic and against lithiasis movement in ethnopharmacological reports. In like manner, a human report was performed and in which, seeds of Ajwain were decocted in milk and offered orally to volunteers experiencing urinary stone for a nine days that is all. The outcomes were accounted for agreeable against unadulterated ca-oxalate stone.

7. Antihypertensive and Bronco-Dilating activity:

The antihypertensive impact of Trachyspermum ammi managed intravenously in vivo and the antispasmodic what's more, broncho-widening activities. In vitro showed that calcium channel bar has been found to intercede the spasmolytic impacts of plant materials and it is being viewed as that this instrument added to their noticed outcome and upheld the conventional utilization of Trachyspermum ammi in hyperactive sickness conditions of the gut, for example, colic and loose bowels just as in hypertension.

8. Anti-microbial activity:

Ajwain is likewise known for its phenomenal antimicrobial impact. It secures the food stuffs against microbial deterioration; leading research center examines of antimicrobial adequacy in vitro and its utilization as antimicrobials in people are additionally examined. The dynamic mixtures of ajwain viz., carvacol and thymol viewed as answerable for the antimicrobial action.

2. Description of Cumin

Scientific name: Cuminum cyminum Common name: Jira (Jeera), Zeera (zira, ziira), Cumin.

Fig 2 (a): Cuminum cyminum (cumin)

Cumin commonly known as Jeera commonly used in the house hold work as spice. Cumin (Cuminum cyminum) is an annual herbaceous flowering plant belonging to family Apiaceae, also known as the Umbelliferae family, native from East Mediterranean to East India. Cumin seeds are generously utilized in a few cooking styles of various food societies since old occasions. It is utilized as zest and as seasoning specialist. Despite of its flavouring property cumin also possess variety of biological activities, i.e., anti-oxidant, anti-microbial, anticancer, antidiabetic, immunomodulator, antifungal, anti-inflammatory and ophthalmic effect also due its chemical constituents.

Chemical constituents:

The principal component of cumin is cuminaldehyde. Cuminaldehyde, cymene, and terpenoids are the major volatile components of cumin. It contains volatile oil, fixed oil and proteins. Volatile oil mainly consists of Cuminaldehyde, small quantities of α-pinene, β-pinene, phellandrene, cuminic alcohol, hydrated Cuminaldehyde and hydro cuminine which make it suitable for medicinal purpose.

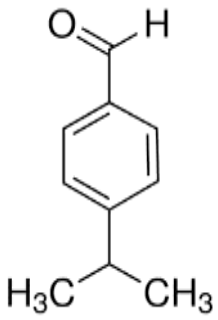

Fig 2. (b): Cuminaldehyde

Biological activity:

The important bioactivity of cumin includes anti-oxidant, anti-microbial, anticancer, antidiabetic, immunomodulator, antifungal, anti-inflammatory properties.

1. Antioxidant activity:

Cumin seed contains normally happening substances that work as cancer prevention agents, for example Apigenin and luteolin which keep the little free revolutionaries that assault solid cells from being fruitful. The cumin oil exhibited high antioxidant activity which has been attributed largely to thresence of monoterpene alcohols, flavonoids and other polyphenolic compounds. The cumin oils have high antioxidant activity due to presence of these molecules.

2. Antidiabetic activity:

Dietary cumin countered other metabolically iterations as uncovered by brought down blood urea level and decreased discharges of urea and creatinine by diabetic creatures. Cumin was utilized as a piece of a home-grown medication preliminary for diabetes. The medication effectively helped individuals with diabetes to deal with their condition. In an audit on 201 8 composed by Kathryn Watson referenced that, diabetic creatures in lab considers were additionally found to profit by burning-through cumin. It's for the most part acknowledged that cumin oil is a hypoglycaemic specialist.

3. Anti-microbial activity:

The presence of dynamic segment cumin aldehyde, and carvone and linalool restrains mycelium development insect poison creation. an article of "G Lal* and SS Meena 2018" notice in their survey that, Essential oil and alcoholic concentrate of cumin has shown antimicrobial movement against Klebsiella pneumoniae ATCC 1 3883 and ceftazidime-safe strain. The antibacterial activity was surveyed against a scope of valuable and pathogenic gram-positive and gram-negative micro-organisms strain. Cumin oil and cumin aldehyde have been accounted for to show solid larvicidal and antibacterial action. The fundamental oil and alcoholic concentrate of cumin seed could be utilized in restorative enterprises (sanitizer or germicide). Antifungal movement of cumin is recorded against soil, food, creature and human microorganisms, including dermatophytes, Vibrio spp., yeasts, aflatoxins and mycotoxin makers.

4. Anti-inflammatory activity:

The dynamic segment of cumin seeds possesses calming and germfree impact which implies that cumin may counter the impacts. The essential oil present in cumin wasn't found to have anti- inflammatory properties, but the cumin seeds themselves worked to reduce pain and inflammation in a lab study done on rats.

5. Anticancer activity:

The spice seems to have an anticancer impact as shown by the capacity of cumin seeds to restrain the acceptance of gastric squamous cell carcinomas. In rodents took care of with cumin, a defensive impact against initiated colonic malignancy was demonstrated. The results recommended that nutraceutical food detailing made out of spent cumin could assume a significant part in the counteraction or the executives of degenerative infections. The malignancy chemo preventive capability of cumin seed could be credited to its capacity to adjust cancer-causing agent metabolism (Sanyogita Shahi and Shirish Kumar Singh, 2022).

Current examines has shown that cumin seeds have additionally hostile to cancer-causing properties, the seed was uncovered to lessen the danger of stomach and liver tumors in animals. The detoxification and chemo-preventive properties increment discharge of hostile to cancer-causing proteins from the

organs. The counter oxidants like Eugenol and limonene present in Cumin have solid hostile to tumour properties. Ongoing examination has likewise exposed that cumin may forestall the development of bosom also, colon malignant growth cells. In autonomous examinations, dietary supplementation of cumin was found to forestall the event of rodent colon malignant growth instigated by a colon-explicit cancer-causing agent.

6. Gastro protective activity:

Cumin is very useful for assimilation and related issues. The very smell (fragrance) of it, which comes from a sweet-smelling natural compound called cumin aldehyde, the fundamental segment of its fundamental oil, initiates our salivary organs in our mouth (the mouth-watering flavour), working with the essential absorption of the food. Next is Thymol, a compound present in cumin, which does same to the organs which emit acids, bile and proteins answerable for complete processing of the food in the stomach also, the digestion tracts, because of its Stimulating properties. Cumin is likewise carminative for example diminishes from gas troubles and in this way improves processing and craving. Because of its fundamental oils, magnesium and sodium content, it advances assimilation and furthermore gives help in stomach-hurt when taken with high temp water (like water ptycotis and mint) (Sanyogita Shahi et al., 2023).

4. Conclusion

Because of its different synthetic constituents, the spice seeds were likewise assessed for its various pharmacological properties. ajwain seeds uncovered to have clean, energizer, carminative, diuretic, sedative, antimicrobial, antiviral, nematicidal, antiulcer, antihypertensive, antitussive, broncho dilatory, antiplatelet and hepatoprotective just as antihyperlipidemic impacts, a large number of those were commented by early Persian doctors. Regarding these pharmacological exercises, Ajwain seeds can be a decent contender for to be applied in clinical practice.

The seeds of cumin (Cuminum cyminum L.) are generally utilized as a flavour for their particular smell; they are additionally usually utilized in conventional medication to treat an assortment of diseases. Cumin (Cuminum cyminum) is one such most well-known spice that is utilized as a culinary flavour for their exceptional fragrant impact. The general examination of the cumin seeds uncovers that they contain fixed oil, unstable oils, acids, fundamental oils, protein and different components. In cumin, contains a significant part, for example, pinene, cymene, terpinene, cumin aldehyde, oleoresin, thymol and others that have appeared their utilizations as indicated by the sickness. Cumin additionally appeared different pharmacological impacts however have some results. In this way, unstable plants commonly come out as a complex combination of less sub-atomic weight lipophilic mixtures that got from various biosynthetic pathways and likewise add to an assortment of physiological capacities.

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