

A Review of Super Food Ajwain and Its Pharmacological Actions

Shashank Mishra

Department of Pharmacy, Shri Ram Murti Smarak College of Engineering and Technology,
Barielly, (U.P), India.

***Corresponding Author**

Email Id: shashankmishra6797@gmail.com

ABSTRACT

Nowadays there are a variety of new drugs available in the market and the use of drugs is also increasing day by day, which causes a lot of toxicity in the human body, hence it is necessary to promote natural ingredients or foods as drugs to minimize the toxicity of the drugs in the body. *Trachyspermum Ammi* (Ajwain) is a natural spice which is very beneficial and shows a variety of pharmacological functions. Almost all the parts of Ajwain play different pharmacological actions. The oil of Ajwain seed contains a component named thymol which is very beneficial. Ajwain shows actions like diuretic, antihypertensive, Antispasmodic, antifatulent, antihelminthic, antiplatelet, bronchodilation, antiulcer, antitussive, analgesic, hepatoprotective and other activities so it is necessary to investigate these type of natural products and to provide safe and effective medications to human race. These Superfoods may also have many hidden properties; hence it is necessary to study Ajwain and its constituents.

Keywords : *Trachyspermum ammi*, Ajwain , Pharmacological Actions, Superfood.

INTRODUCTION

Trachyspermum ammi is commonly known as ajwain is a indigenous variety of Egypt and is also cultivated in Iraq, Iran, Afghanistan, Pakistan, and India. In India, it is mainly cultivated in Madhyapardesh, Uttarpardesh, Bihar, Gujrat, Maharashtra, Rajsthan and West Bengal [1].

Classification[2]

Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida–Dicotyledons
Order	Apiales
Family	Apiaceae
Genus	<i>Trachyspermum</i>
Species	<i>Ammi</i>

It is a highly efficient medicinally important seed spice. Almost all the parts of Ajwain show different pharmacological actions.

Roots: Diuretic.

Seeds: Aphrodisiac, Anthelmintic, Carminative, Laxative, Stomachic, Abdominal Tumours, Abdominal Pains and Piles. The seeds contain 2–4.4% brown colored oil known as Ajwain oil. The main component of this oil is thymol.

Seed Oil: Gastro-intestinal ailments, lack of appetite, bronchial problems, fungicidal, antimicrobial, anti-aggregatory [3,4,5]. Seed oil also used in toothpaste and perfumery [6].

Fruit: Stimulant, antispasmodic and carminative properties and remedial agent for flatulence, atonic dyspepsia and diarrhea [7].



Fig 1. Ajwain Seeds

Chemical Constituents

Various Phytochemical Studies Reported that Ajwain seed oil contains [8,9].

Constituents	Percentage
Fiber	11.9 %
Carbohydrates	38.6 %
Tannins, Glycosides, Moisture	8.9 %
Proteins	15.4 %
Fat	18.1%
Saponins , flavones and mineral matter	7.1%

Pharmacological Actions

Antiflatulent: from ancient times ajwain is used to relieve the retention of gas and flatulence when taken with warm water. It is an excellent natural home remedy to treat abdominal gas anorexia, nausea and vomiting [10].

Anthelmintic Activity: The Anthelmintic activity of Ajwain shows its effect against specific helminths, e.g.

Category	Helminthes
Humans	<i>Ascaris lumbricoides</i>
Sheep	<i>Haemonchus contortus</i>

The activity is shown by interference with the energy metabolism of parasites through activation of ATPase activity and which results in loss of energy reserves [11].

Hepatoprotective Activity

The hepatoprotective actions *in vivo* showed that Ajwain was 80% protective in mice against a normally-lethal dose of paracetamol (1 g kg⁻¹) and it also acted to normalize the high serum levels of liver enzymes which is caused by CCl₄ induced liver damage in rats [12].

Antiulcer Activity

The ethanolic extract of Ajwain resulted in decreased ulcerative lesions compared to control group, the activity is studied by using different ulcer models [13].

Antitussive Activity

Antitussive effect of Ajwain has been mentioned in traditional medical manuscripts. In a study the an experiment was performed with macerated extracts of Ajwain seeds as well as with carvacrol, codine and saline resulting in decreased cough which shows its potent antitussive effect .^[14] Various relative studies showed the inhibitory effect of both Ajwain extract and essential oil on Histamine (H1) receptors of isolated guinea-pig tracheal chains [15].

Bronchodilatory Effect

In a study, bronchodilatory effects of different concentrations of Ajwain were examined. In which the Results showed that the relaxant and bronchodilatory effect of essential oil concentrations may be due to

the amount of Carvacrol [16]. The bronchodilatory effect of decocted extract of Ajwain on the patient of asthma, airways was examined in a trial study. According to the results, the extract has a relatively bronchodilatory effect on asthmatic airways compared to the effect of theophylline at different concentrations used [17].

Analgesic Activity

The alcoholic extract of *Trachyspermum ammi* can act as a natural safe, orally active, moderately strong antinociceptive. It also justifies the therapeutic claim in Iraq traditional medicine that alcoholic extract of *Trachyspermum ammi* has painkilling activity [18].

Anti-platelet

The Extract of *Trachyspermum ammi* shows anti platelet action and inhibit platelet aggregation by inducing epinephrine, arachidonic acid and collagen [19].

Anti-hypertension

The calcium channel blocking effect, Ajwain has a role in heart rate and blood pressure. It made fall in blood pressure and heart rate .Various cardiovascular effects of Ajwain and its constituents were noticed. When 1-10 mg/kg Thymol was administered in mice it results in decreased blood pressure. It was suggested that the effect of Thymol could be due to calcium channel blocking property [20].

Amebiasis

In the Unani system, Ajwain is used to enhance the body's resistance and is given in Amebiasis [21]. The goal of this study is to promote the researcher to investigate such type of Superfoods as it may be very beneficial for human race .

METHODOLOGY

The following databases are collected from various electronic journals including Google Scholar, Pubmed, Wiley, Springer and Science Direct. The main search terms were *C. copticum*, Ajwain, and *Trachyspermum ammi* and other names of the plant. The different constituents and pharmacological effects of the plant were also searched then the collected data was arranged in a sequential manner for making the study easy.

CONCLUSION

From the above study it is concluded that Ajwain has a variety of Pharmacological actions and medicinal uses. The study also suggests investigating more about Ajwain. The study also concluded that the natural super foods like Ajwain may help in improving human health.

REFERENCES

- 1) Ayurvedic Pharmacopoeia of India. Government of India, Ministry of Health and Family Welfare Department of Ayush. Part1. 1999-2011;1:170-1.
- 2) USDA-Natural Resources Conservation Service, Plant Profile: *Trachyspermum ammi* L. Sprague ex Turrill-Ajowan caraway.
- 3) Singh I, Singh VP. Antifungal properties of aqueous and organic extracts of seed plants against *Aspergillus flavus* and *A. niger*. Phytomorphology. 2000;20:151-7.
- 4) Sivropoulou A, Papanikolaou E, Nilolaou C, Kokkini S, Lanaras T, Arsenakis M. Antimicrobial and cytotoxic activities of *Origanum* essential oils. J Agric Food Chem. 1996;44:1202-5.
- 5) Srivastava KC. Extract of a spice Omum (*Trachyspermum ammi*) shows Anti-

- aggregatory effects and alters Arachidonic acid metabolism in human platelets. Prostaglandins Leukot Essent Fatty Acids. 1988;33:1–6.
- 6) Joshi SG. Medicinal Plants, 1st ed. Delhi (INDIA): Oxford and IBH Publisher; 2000.
- 7) Bentley R, Trimen H. Medicinal Plants. New Delhi: Asiatic Publishing House; 1999. pp. 107–15.
- 8) Bairwa R, Sodha RS, Rajawat BS. *Trachyspermum ammi*. Pharmacognosy Reviews. 2012; 6(11):56-60.
- 9) Zarshenas MM, Moein M, Samani SM, Petramfar P. An overview on ajwain (*Trachyspermum ammi*) pharmacological effects; Modern and traditional. Journal of Natural Remedies. 2013; 14:98-105.
- 10) Hawrelak, J.A., T. Cattley and S.P. Myers, 2009. Essential oils in the treatment of intestinal dysbiosis: A preliminary *in vitro* study. Altern. Med. Rev., 14: 380-384.
- 11) Jabbar, A., Z. Iqbal and M.N. Khan, 2006. *In vitro* anthelmintic activity of *Trachyspermum ammi* seeds. Pharmacogn. Mag., 2: 126-129.
- 12) Gilani, A.H., Q. Jabeen, M.N. Ghayur, K.H. Janbaz and M.S. Akhtar, 2005. Studies on the antihypertensive, antispasmodic, bronchodilator and hepatoprotective activities of the *Carum copticum* seed extract. J. Ethnopharmacol., 98: 127-135.
- 13) Ramaswamy S, Sengottuvelu S, Haja Sherief S, Jaikumar S, Saravanan R, Prasadkumar C, et al. Gastroprotective activity of ethanolic extract of *Trachyspermum ammi* Fruit. International Journal of Pharma and BioSciences. 2010; 1(1):1–15.
- 14) Boskabady MH, Jandaghi P, Kiani S, Hasanzadeh L. Antitussive effect of *Carum copticum* in guinea pigs. J Ethnopharmacol. 2005; 97(1):79–82. doi:10.1016/j.jep.2004.10.016
- 15) Boskabady MH, Shaikhi J. Inhibitory effect of *Carum copticum* on Histamine (H1) receptors of isolated guinea-pig tracheal chains. J Ethnopharmacol. 2000; 69(3):217–27. doi:10.1016/S0378-8741(99)00116-6
- 16) Boskabady MH, Ramazani M, Tabei T. Relaxant effects of different fractions of essential oil from *Carum copticum* on guinea pig tracheal chains. Phytother Res. 2003; 17(10):1145–49.
- 17) Boskabady MH, Alizadeh M, Jahanbin B. Bronchodilatory effect of *Carum copticum* in airways of asthmatic patients. therapie. 2007; 62(1):23–29
- 18) Shahbaa M. Al-khazraji /International Journal of ChemTech Research, 2017,10(7): 632-639 638
- 19) Lim TK (2013) *Trachyspermum ammi* in edible medicinal and non-medicinal plants. Springer Dordrecht pp: 60-71
- 20) A. H. Gilani, Q. Jabeen, M. Ghayur, K. Janbaz, and M. Akhtar, “Studies on the antihypertensive, antispasmodic, bronchodilator and hepatoprotective activities of the *Carum copticum* seed extract,” *Journal of Ethnopharmacology*, vol. 98, no. 1-2, pp. 127–135, 2005
- 21) Bairwa, R., 2011. Medicinal uses of *Trachyspermum ammi*: A review. Pharm. Res., 5: 247-258.