



## Pharmacological activity of *Trachyspermum ammi* : A Review

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### ABSTRACT

Ayurveda is an important system of medicine and drug therapy in India. Among traditional potential herbs, *Trachyspermum ammi* family Apiaceae commonly known as Ajwain is widely used for curing various diseases in both humans and animals. The active principle are extracted and purified for therapeutic utility for their selective and regulated activities. The quality control of herbal drug and their bio-constituents are of prime importance justifying their acceptability in modern system of medicine. *Trachyspermum ammi* is one of the most famous medicinal plants in the treatment of a large number of human ailments is mentioned in Ayurveda, Sushrita Samhita and Charaka Samhita. This review deals with the evidence-based information regarding the pharmacological activity of *Trachyspermum ammi*.

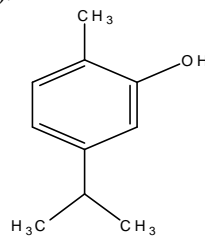
**Keywords:** Ayurveda, *Trachyspermum ammi*, Pharmacological activity

### INTRODUCTION

Consumers in general prefer to have food free from preservatives or added at low levels (1). Moreover, there has been a demand for food with long shelf life and without any risk of food contaminants. This warrants the use of natural preservatives as alternatives to chemical ones leading to increasing interest in testing natural compounds as antimicrobials for food preservation (2, 3). Accordingly, natural plant products with antimicrobial properties have obtained recognition for its possible applications in food in terms of preventing bacterial and fungal growth (4). Ajwain has characteristic aromatic smell and pungent test, and it's widely used as a spice in curries. It is employed either alone or in mixture with other spices and condiments. It is also used in pickles, certain types of biscuits, confectionery, beverages and pan mixtures (5). Ajwain is one of the aromatic seed spices, which is generally used for medicinal purposes as a digestive stimulant or to treat liver disorders. Thymol, the major phenolic compound present in Ajwain, has been reported to be a germicide, antispasmodic, and antifungal agent (6). The principle active constituents of the oil are the phenols, mainly thymol (35-60%) and some carvacrol. The Indian Pharmacopoeia requires Ajwain oil contain not less than 40% thymol. Thymol easily crystallizes from the oil on cooling and commonly known as *Ajwain ka phool* or *Sat-ajwain*. The remainder of oil is called thymine on account of its similarity with the corresponding portion of *Thyme vulgaris* (7).

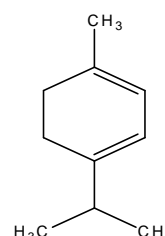
The maximum requirement for volatile oil content is 1.2 % v/w with the phenol values not less than 0.5% expressed as thymol and calculated with reference to the anhydrous drug. The phenol in isolated oil is determined by reaction with amino pyrazolan and potassium ferricyanide in ammonical solution with subsequent measurement of absorbance at 450 nm. A number of chemical reaction e.g.

Thymol and carvacrol type are known and it is these phenol that are held largely responsible for the antiseptic, antitussive, and expectorant properties of thyme (8). Different researcher investigated the oestrogenic content of some herbs (including *T. ammi*) that are traditionally used to increase milk yield in dairy cattle (*T. ammi*). has also been traditionally used as a galactagogue in humans (9). Thymol is a widely known anti-microbial agent. Due to its bactericidal action against oral bacteria, it is commonly incorporated in mouthwashes. Its action seems to be mainly related with harmful effects on both the cellular cytoplasmic membrane (perforation) and the generation of ATP (10, 11). It has also demonstrated a fungicide activity that could involve effects on the membrane (12). It is emphasized that, in lamiaceae plants, thymol is always accompanied by its isomer carvacrol (13). Thymol also has antiseptic activity and carvacrol possesses antifungal properties (14). It has been established that thymol and carvacrol inhibit the peroxidation of liposome phospholipids in a concentration dependent manner (15). It appeared that both isomers were equally effective in the autoxidation of lard at 35 °C at a concentration of 0.1% (16).



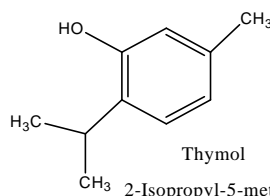
Carvacrol

5-Isopropyl-2-methyl-phenol



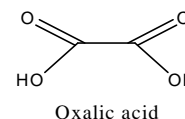
$\alpha$  Terpene

1-Isopropyl-4-methyl-cyclohexa-1,3-diene



Thymol

2-Isopropyl-5-methyl-phenol



Oxalic acid

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