



Research paper

Phytochemical and Ethnomedicinal Importance of *Foeniculum vulgare* and *Trachyspermum ammi* at Chhatarpur District (M.P.)

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ARTICLE INFO	ABSTRACT
<p>Keywords</p> <p>Seeds Ethnomedicinal Phytochemical Essential oil</p>	<p>Apiaceae family is most common herbaceous family of angiosperm in which vegetables, spices, medicinal plants and industrial plants present, it have main aromatic compound in which volatile-oil, alkaloids, coumarins and other secondary metabolites producing family. <i>Foeniculum Vulgare</i> and <i>Trachyspermum ammi</i> are most important plant of this family there are presence of phytochemical and antioxidant activity have been given in this paper in <i>Foeniculum Vulgare</i> whole plant parts have their own phytochemical, antioxidant and ethnomedicinal activity while in <i>Trachyspermum ammi</i> seeds are more important. Both plants are used to cure digestive problem antibacterial, anti-diabetic & anti-inflammation etc.</p> <p>Apiaceae family is most common herbaceous family of angiosperm present work focused on phytochemical and ethnomedicinal importance of <i>Foeniculum Vulgare</i> and <i>Trachyspermum ammi</i>. During research work it has been found that some phytochemical Flavenoids, Terpenoids, Alkaloids, Tannins, Saponins, Glycosides, Phenols, Quinones, Resins, Carbohydrates, Amino acids, and Coumarins are common in both plants only oil contents are different in both plants. Seeds of <i>Foeniculum Vulgare</i> and Soaked seeds in water is more effective to care many diseases like antibacterial, antifungal, antidiabetic, anticancer ,cardio protective, antimicrobial, effective promote lactation and to care gynec disorder. Present study have been done during 2022-25 March at Chhatarpur District.</p>
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1. Introduction

Apiaceae family is important herbaceous family among angiosperms it is well known for bioactive enzymes phytochemicals producing many secondary metabolite compound and ethnomedicinal compound. Beyond their culinary uses members of the Apiaceae family have been valuated in various medicinal system around the world for their therapeutic properties. *Foeniculum vulgare* (Saunf) and *Trachyspermum ammi* (Ajwain), plants are small herb leaves and seeds of *Foeniculum vulgare* and *Trachyspermum ammi* are used by human being in many ailment with other in gradients. These are very important parts of Indian kitchen. In india these

plants used in many medicines, pharmaceutical, cosmetics, mouth fresheners, insecticides, and anti acidity medicine, both plant seeds are more effective so in each home it is easily available.

Taxonomic Identification	- According to APG fourth 2016
Kingdom	- Plantae
Clade	- Tracheobionta
Clade	- Angiosperm
Clade	- Eudicots
Clade	- Asterids
Order	- Apiales
Family	- Apiaceae
Genus	- 1. <i>Foeniculum Vulgare</i> 2. <i>Trachyspermum ammi</i>

Common Names of Plants in different languages

Language	Name of Plants	
	<i>Foeniculum vulgare</i>	<i>Trachyspermum ammi</i>
English	Fennel	Carom seeds
Hindi	Saunf	Ajwain
Sanskrit	Mishreya, Madhurika	Yavani
Tamil	peruncirakam	Omam
Telgue	Phennel	Vamu
Bengali	Mauri	Jowan
Marathi	Badisep	Ajmod



Foeniculum vulgare



Trachyspermum ammi

2. Research Methodology

Phytochemical Test

Phytochemical test for *F. vulgare* and *T. ammi* plant parts (seeds, roots and leaves) of plant A and B had been done. After drying plants parts aqueous extract prepared and powdered plant material with the help of different chemicals some phytochemical test will be done at Botany Department of Maharaja Chhatrasal Bundelkhand University Chhatarpur (M.P).

Alkaloids- For alkaloids Mayer's test and Wagner's test will be done.

Mayer's test- A few drops of Mayers' reagent (potassium mercuric iodine) to the extract positive result formation of a creamy white precipitate.

Wagner's test- add Wagner's reagent (Iodine in potassium iodine) the extract- radish-brown precipitate.

Flavonoids- For flavonoids test alkaline reagent test and Shinodq a test will be done alkaline test add a few drops of NaOH solution to the extract intense yellow colour found after adding dilute acid it becomes colourless.

Tannins-For Tannis test ferric chloride less will be done add a few drops of 5% ferric chloride solution to the extract then blue black and green is black colour. Found this shows presence of tannins.

Saponins- For saponins foam test will be done first shake the extract with water vigorously then persists forth for more than 10 minutes.

Terpenoids-For terpenoids test Salkowski test will be done add chloroform and Conc. H₂SO₄ to the extract then reddish-brown interface will be found. Phenols- For phenol test ferric chloride test will be done add neutral ferric chloride to the extract then deep blue, green or purple colour indicates phenol test.

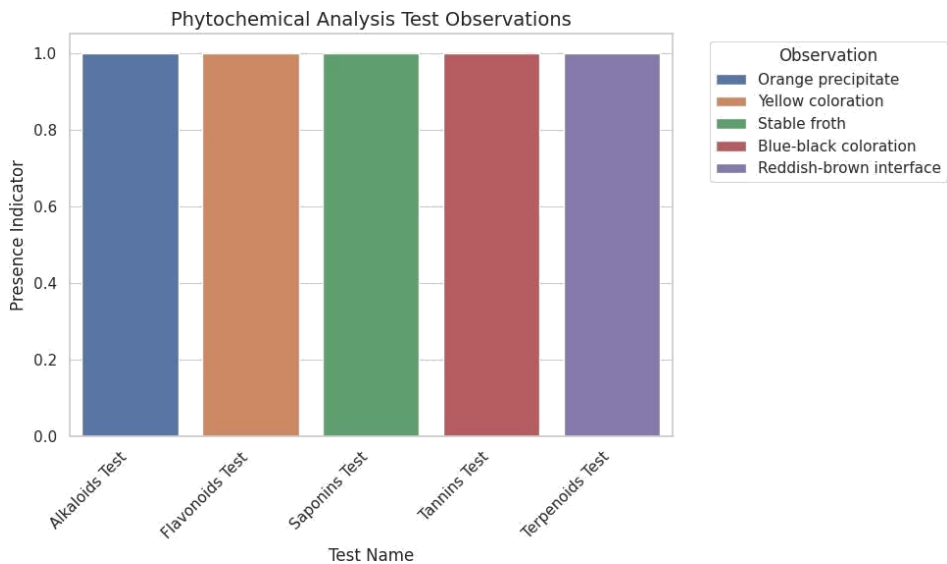
Glycosides- Glycosides test will be done by Keller Killani test. Mix the extract with glacial acetic acid, ferric chloride and conc. H₂SO₄ then reddish-brown ring found at the junction.

Resins-Resins test done by turbidity test carbohydrates carbohydrate test done by molish reagent where concentrated H₂SO₄ converts carbohydrates in to violet ring at the interface of the two layers.

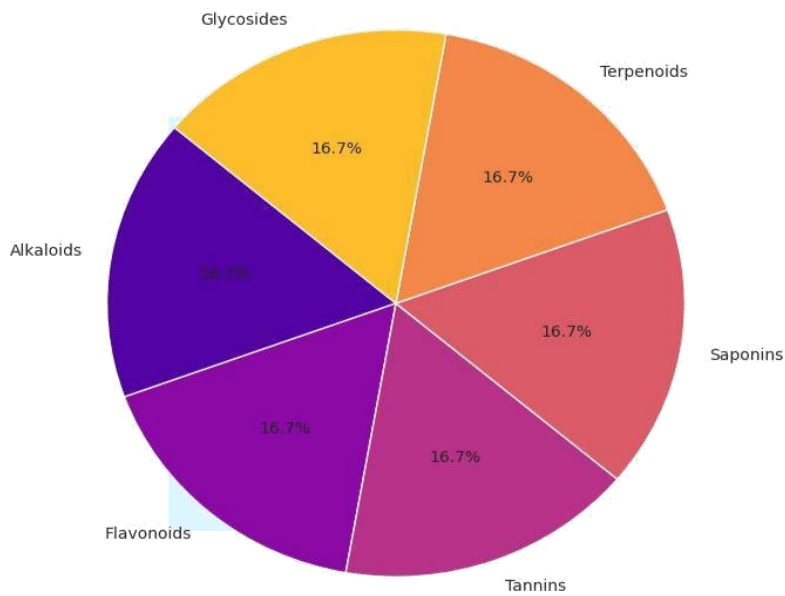
Amino acid- By chromatography with petroleum ether acetone and ninhydrin spray.

Table 1 Phytochemical test of *Foeniculum vulgare* and *Trachyspermum ammi*

Phytochemical	<i>Foeniculum vulgare</i>	<i>Trachyspermum ammi</i>
Alkaloids	+	+
Flavonoids	+	+
Tannins	+	+
Saponins	+	+
Terpenoids	+	+
Cardiac Glycosides	+	+
Phenols	+	+
Quinones	+	+
Resins	+	+
Carbohydrates	+	+
Amino acids	+	+
Coumarins	+	+
Essential oils	+	+



Phytochemical Analysis Test Distribution



Ethnomedicinal Importance of Apiceae Plants

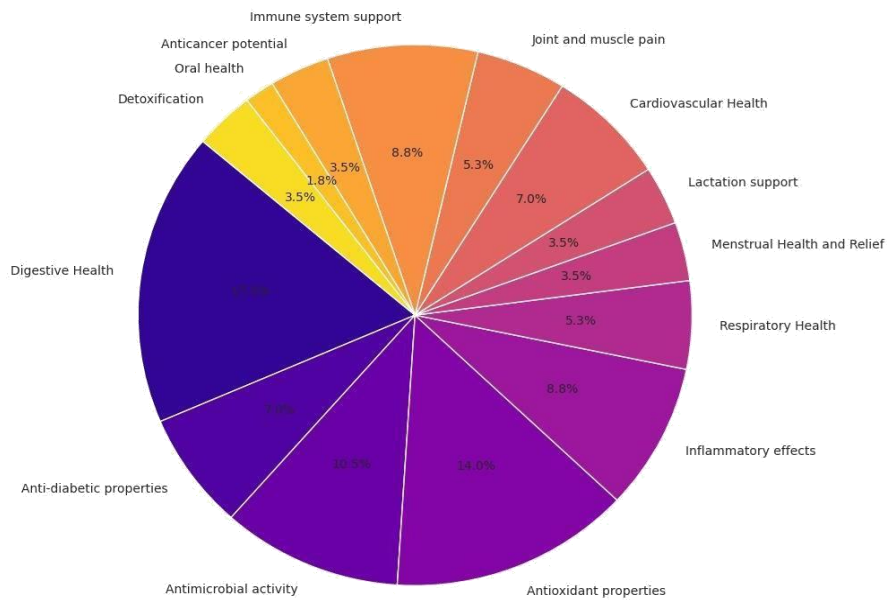


Table 2 Ethnomedicinal importance of Apiceae plants (A and B)

Health Aspect	A. <i>Foeniculum vulgare</i>	B. <i>Trachyspermum ammi</i>
Digestive Health	Ajwain seeds are widely used to relieve digestive issues such as indigestion, bloating, gas, and colic. The seeds contain thymol, which stimulates digestive enzymes and alleviates discomfort.	Cumin seeds are widely used to improve digestion, relieve bloating, gas, and colic. They are believed to stimulate the secretion of pancreatic enzymes.
Anti-diabetic Properties	—	Some studies suggest that cumin may help lower blood sugar levels, although more research is needed to confirm its efficacy.
Antimicrobial Activity	Ajwain has strong antimicrobial properties, effective against a range of bacteria and fungi. It is often used to treat infections and promote wound healing.	Cumin has been shown to exhibit antimicrobial properties, helping to combat infections and potentially aiding in wound healing.
Antioxidant Properties	Ajwain contains antioxidants that help protect the body from oxidative stress, potentially reducing the risk of chronic diseases.	Cumin is rich in antioxidants, which help protect the body from oxidative stress and may reduce the risk of chronic diseases such as heart disease and cancer.
Inflammatory Effects	Ajwain may help reduce inflammation and pain, making it useful for conditions like arthritis and muscle pain.	Cumin may help reduce inflammation in the body, which could be beneficial for conditions like arthritis and other inflammatory disorders.
Respiratory Health	Ajwain is used to treat respiratory issues like coughs, bronchitis, and asthma. Its expectorant properties help clear mucus from the airways, easing breathing.	In traditional medicine, cumin is sometimes used to treat respiratory issues such as coughs and asthma due to its expectorant properties.
Menstrual Health	Ajwain is sometimes used to treat menstrual cramps and irregularities due to its potential antispasmodic and hormone-balancing effects.	—
Lactation Support	—	Cumin is often used in traditional practices to enhance lactation in breastfeeding mothers.
Cardiovascular Health	Some studies suggest that ajwain may help lower blood pressure and cholesterol levels, potentially reducing the risk of heart disease.	—
Joint and Muscle Pain	Ajwain oil is sometimes used to relieve joint and muscle pain due to its anti-inflammatory and analgesic properties.	—
Immune System Support	—	Cumin is believed to boost the immune system, helping the body fight infections and diseases.
Anticancer Potential	—	Some studies suggest that cumin may have anticancer properties, although more research is needed to confirm its efficacy.

According to Anita et al. (2012) members of family apiaceae have antioxidant activity as given in in research work the phytochemical activates shows divers range of bioactive components including alkaloids, flavonoids, phenols(Majdoub et al 2017), Tannins, saponnis, glycosides, Terpenoids, Amino acids, Essential oils (Samojilik et al. 2010), carbohydrates their medicinal properties ,which contribute their divers biological activates

Ethnomedicinal studies highlights their importance entreating, joint and muscle pain, cardiovascular health, lactation support , menstrual health and relief, respiratory health, inflammatory effects, antioxidant properties, antimicrobial activity, anti-diabetic properties(Masola et al 2018), digestive health, detoxification ,oral health, anticancer potential, immune system support due to the presence of thymol and related compounds

The combined phytochemical richness and traditional applications demonstrate their potential for the development of safe, effective, and affordable herbal formulations. There are so many Ayurvedic unani, allopathic and homeopathic medicine are available market

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