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NATURAL HERBS USED IN NORMAL COUGH AND COLD CONDITIONS

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ABSTRACT: Natural herb Ajwain, *Trachyspermum ammi* (L.) Sprague is an annual herbaceous plant belonging to the highly valued medicinally important family, Apiaceae; the essential oil from the fruits are the phenols, mainly thymol, and some carvacrol. The Indian Pharmacopoeia requires Ajowan oil to contain not less than 40 percent thymol. The remainder of the oil is called 'thymene'. Thymene, which constitutes c. 45 percent of the oil, has the following composition: p-cymene, 50-55; gterpinene, 30-35; a- and β-pinenes, 4-5; and dipentene, 4-6%. Presence of minute 'amounts of camphene, myrcene, and D3-carene is also reported. Kapoor is a tree of many faces as it is a giant, stately forest tree native of the wet forests of tropical and subtropical regions of Asia. The species Camphora refer to camphor, an important chemical constituent present in the oil found in tree tissues. The botanical name is derived from the Greek language. It is derived from the word 'kinnamomon' which means spice. This herb is recorded in Sanskrit also. This is also used by Egyptians as early 1485 BC for embalming purposes. Camphor tree is native to China, India, Mongolia, Japan, and Taiwan, and a variety of this fragrant evergreen tree is grown in the Southern United States; especially in Florida Menthol, Thymol, Phenol, Salicylic acid and Naphthol are amongst the fragrant chemical constituents obtained from this plant. Campher, Campherol, Cineol, Camphene, dipentene, terpineol, candinene, safrole, camphorace, laulolitsine, reticuline, etc. Menthol is a naturally occurring monoterpene alcohol that is extracted from the oil of peppermint, corn mint, or other mint plants. It is known for its minty, cooling odor, and taste, Various constituents of peppermint oil are limonene (1.0-5.0%), cineole (3.5-14.0%), menthone (14.0-32.0%), menthofuran (1.0 - 9.0%), isomenthone (1.510.0%), menthyl acetate (2.8-10.0%), isopulegol (0.2%), menthol (55.0%), pulegone (4.0%) and carvone (max. 1.0%). All three herbs gives relief from cough and cold, throat irritation, and treating bronchitis.

INTRODUCTION:

Ajwain Flower: Known as Ajwain, *Trachyspermum ammi* (L.) Sprague is an annual herbaceous plant belonging to the highly valued medicinally important family, Apiaceae¹.

It is said that the herb is widely grown in arid and semi-arid regions where the soil involves a high amount of salts². Ajwain has an erect and striate stem involving glabrous or minutely.

Pubescent properties which may grow up to 90 cm tall³. Ajwain is widely distributed and cultivated in various regions such as Iran, Pakistan, Afghanistan, India, and Europe, while it is indigenous to Egypt⁴. The herb is generally grown in October–November and should be harvested in May–June. Usually, greyish brown seeds or fruits of Ajwain are considered for medical and nutritional purposes⁵.

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Vernacular Names:**Hindi:** Ajwain**English:** Bishop's weed**Sanskrit:** Dipyaka, Yemini, Yaminiki, Yaviniki**Punjabi:** LodharBengali -Yamani, Yauvan, Yavan, Javan, Yavani**Guajarati:** Ajma, Ajmo, Yavan, Javain;**Kannada:** Oma, Yom, Omu;**Kashmiri:** Kath**Malayalam:** Omam**Marathi:** Onva**Oriya:** Juani**Tamil:** Omam**Telugu:** Vamu.**FIG. 1: TRACHYSPERMUM AMMI**

Biological Source: Ajwain consists of the plant known as *Trachyspermum ammi*, belonging to the family Umbelliferae. It is also known as *Trachyspermum copticum* and *Carum copticum*⁶.

Chemical Constituent: The alcoholic extract contained a highly hygroscopic saponin, with a hemolytic index of 500. A yellow, crystalline flavone (m.p. 291-94°) and a steroidal substance (m.p.140-50°) have also been isolated from the fruits¹. The principal constituents of the essential oil from the fruits⁷ are the phenols, mainly thymol, and some carvacrol. The Indian Pharmacopoeia requires ajowan oil to contain not less than 40 percent thymol.

The remainder of the oil is called 'thymene'. Thymene, which constitutes c. 45 percent of the oil, has the following composition: p-cymene, 50-55; gterpinene, 30-35; α - and β -pinenes, 4-5 and dipentene, 4-6%. The presence of minute amounts of camphene, myrcene and D3-carene is also reported⁸. Fixed oil extracted from the seeds contains resin acids, palmitic acid, petroselenic acid, oleic acid and linoleic acid. Vitamins and trace elements include riboflavin, thiamin, nicotinic acid, carotene, calcium, chromium, cobalt, copper, iodine, iron, manganese, phosphorus and zinc and also consist of moisture 7.4%, protein 17.1%, percent, fat 21.8%, minerals 7.9%, fiber 21.2%, and carbohydrates 24.6% per 100 grams. Ajwain seed analysis has revealed it to contain fibre (11.9%), carbohydrates (38.6%), tannins, glycosides, moisture (8.9%), protein (15.4%), fat (18.1%), saponins, flavone and mineral matter (7.1%) containing calcium, phosphorous, iron and nicotinic acid. The Ajwain fruits yields 2% to 4% brownish essential oil, with thymol as the major constituent (35% to 60%).

The nonthymol fraction (thymene) contains paracymene, γ -terpinene, α - and β -pinenes, dipentene, α terpinene and carvacrol. Minute amounts of caphene, myrcene, and α -3-carene also have been found in the plant. Alcoholic extracts contain a highly hygroscopic saponin. From the fruits, a yellow, crystalline flavone and a steroid-like substance have been isolated and also contain 6-O- β -glucopyranosyloxythymol, a glucoside and a yield of 25% oleoresin containing 12% volatile oil (thymol, γ -terpinene, para-cymene and α - and β pinene). The principal oil constituents of *T. ammi* are carvone (46%), limonene (38%), and dillapiole (9%). GC and GC-MS analysis of ajwain essential oil showed the presence of 26 identified components which account for 96.3% of the total amount. Thymol (39.1%) was found as a major component along with pcymene (30.8%), γ -terpinene (23.2%), β -pinene (1.7%), terpinene-4-ol (0.8%) whereas acetone extract of ajwain showed the presence of 18 identified components which account for 68.8% of the total amount. The major component was thymol (39.1%) followed by oleic acid (10.4%), linoleic acid (9.6%), γ terpinene (2.6%), p-cymene (1.6%), palmitic acid (1.6%), and xylene (0.1%).

Medicinal Properties: In the Indian system of medicine, ajwain is administered for stomach disorders, a paste of crushed fruits is applied externally for relieving colic pains, and a hot and dry fomentation of the fruits is lapped on the chest to cure asthma⁹. Ajwan-ka-arak (aqueous extract) is popular preparation for diarrhoea.

Therapeutic uses of *T. ammi* fruits include stomachic, carminative, expectorant, antiseptic, amoebiasis and antimicrobial activity. It also cures abdominal tumor, abdominal pains and piles¹⁰. It's also prescribed to comfort dipsomania, hysteria, and sore throat; many ajowan ayurvedic formulations are available to overcome infections with worms¹¹. It is also used for relieving flatulence, dyspepsia, spasmodic disorders, flatulence, common cold, acute pharyngitis, sore and congested throat

Kapoor: Kapoor is a small, glabrous, broad-leaved tree that grows up to 40 m with a broad sweeping crown, and has a diameter of up to 3 m. the bark of the plant is yellow-brown with a rough surface and vertical fissures. The trunk of the plant can be grown up to 8 m long and 2 m wide. The leaves of the plants are of dark to light green colour with glossy light colour veins. These are 8 to 15 cm long and 3 to 7 cm wide. The leaves are penninerved with dormant buds that enclose in large, silky, orbicular, imbricating caduceus scales. These give a strong smell when crushed. The shape of the leaves are very variable. It shows ovate to elongate a range of structures. Each of them grows alternatively on twigs. The plant's flowers are bisexual, white in color; hermaphroditic, actinomorphic have terminal panicles on the ends of the twigs. The flowers have one ovary with locular, basal ovule stamens are very definite and free. Its anthers open through the valves or the slits. The embryos are very minute. By November, the dark blue berries fruit ripen.

These are very small, up to 1 cm. the new foliage proliferates in the spring season have a purple-red, then green color. In the end, after its full growth, when the previous year's leaves fall down, it becomes orange-red color. Karpura is a tree of many faces as it is a giant, stately forest tree native to the wet forests of tropical and subtropical regions of Asia. The species *Camphora* refer to

camphor, an important chemical constituent present in the oil found in tree tissues. The botanical name is derived from Greek language. It is derived from the word 'kinnamomon', which means spice. This herb is recorded in Sanskrit also. Egyptians also used this as early 1485 BC for embalming purposes. Camphor tree is native to China, India, Mongolia, Japan, and Taiwan, and a variety of this fragrant evergreen tree is grown in the Southern United States, especially in Florida^{12, 13}.

Vernacular Names of the Karpura:

Sanskrit name: Karpura

Hindi name: Karpur, karpuram

English Name: Camphor tree, Camphor laurel, Japanese camphor

Kannada Name: Pachekarpoora

Bengali Name: Karpur

Telugu Name: KarpooramChettu

Marathi name: Karpur

Gujarati Name: Karpur

Tamil Name: Karpooram, PachaiKarpooram

Chinese: Xiang-zhang, Zhang-shu

Creole: Kafm, bomzangle

Dutch: Kamferboom

French: Camphrier, camphre, baumeanglais, Arbre a camphre

German: Kampferbaum

Italian: Canfora, confora

Japanese: Kkusuu-no-ki, kuso-no ki, hon-sho

Nepali: Kapur

Portuguese: Alcanforeira

Spanish: Alcanfor, alcanforero, alcanfordelJapón

Swahili: Mkafurimaita

Swedish: Kamfertraed



FIG. 2: KAPOOR

Biological Source: Camphor is a solid ketone, obtained from the volatile oil of *Cinnamomum camphora* (L.) Nees et Eber, belonging to the family Lauraceae. Synthetic camphor, optically inactive, is prepared from turpentine and would probably have replaced the natural product¹⁴.

Chemical Constituents: Menthol, Thymol, Phenol, Salicylic acid, and Naphthol are among the fragrant chemical constituents obtained from this plant. Campher, Campherol, Cineol, Camphene, dipentene, terpineol, candinene, safrole, camphorace, laurolicsine, reticuline, etc. Its bark contains a major constituent as cinnamaldehyde, which imparts it a peculiar odor and flavor.

The oil is extracted from the leaf containing eugenol and iso eugenol that imparts a very harsh odor; besides these, it contains minerals, an active component known as camphor that imparts it properties. The plant contains a volatile oil comprising camphor, safrole, linalool, eugenol, and terpeneol. It also contains lignans (including secoisolariciresinol dimethyl ether and kusunokiol). Safrole is thought to be carcinogenic. The leaf oil is a natural source of linalool (94.9%); it also contains citronellal (2.4%).

Medicinal Properties:

Cold and Cough Treatment: It can be taken as steam as it forms a covering over the organs, relieves throat irritation, and treats bronchitis.

Antiarthritic: It helps to cure swelling of various body parts so, gives relief to joints pain, and helps to improve

Anti-inflammatory: It helps to heal muscular pains and aches and rheumatism. It also helps to decrease cholesterol levels in the body.

Antioxidant: It acts as an antioxidant and suppresses the effect of oxidative stress. So, it helps to cure kidney and heart problems.

Menthol: Menthol is a naturally occurring monoterpene alcohol extracted from the oil of peppermint, corn mint, or other mint plants. It is known for its minty, cooling odor and taste¹⁵. It is also a part of the composition of Zinda Tilismath. Due to its antipruritic, analgesic, antiseptic, and various other therapeutic effects, have been used for medicinal purposes since ancient times¹⁶.



FIG. 3: MENTHOL

Biological Sources: It is found in the peppermint oil obtained from the fresh flowering tops of the plants commonly known as *Mentha piperita* Linn or other allied species of *Mentha* belonging to the family Labiatae¹⁷.

Chemical Constituents: Menthol is the primary component of the essential oil of peppermint and is mostly responsible for the agents anti spasmolytic effects. Various constituents of peppermint oil are limonene (1.0-5.0%), cineole (3.5-14.0%), menthone (14.0-32.0%), menthofuran (1.0 -9.0%), isomenthone (1.510.0%), menthyl acetate (2.8-10.0%), isopulegol (0.2%), menthol (55.0%), pulegone (4.0%) and carvone (max. 1.0%).

Medicinal Properties: Because of its various beneficial effects, it is used to treat many diseases, as described below:

Sore Throats: Sore throats are quite irritating as they cause discomfort due to the painful and burning sensations in the throat. As menthol imparts analgesic and cooling effects on skin and mucous membranes, its application in the form of

oral sprays or throat lozenges is helpful in the treatment of minor sore throat pains^{18,19}.

Cough: Menthol has been widely used as an antitussive in the symptomatic treatment of upper respiratory tract infection. Its inhalation has been found to cause a significant reduction of artificially evoked cough in normal subjects²⁰.

Similarly, another study has shown that inhalation of its aromatic vapors elongates the cough latency period along with a marked reduction in cough frequency in a dose-dependent fashion²¹.

Asthma: Pieces of evidence regarding the therapeutic efficacy of menthol in the treatment of mild asthma are present. A study has demonstrated that its long-term use in the form of vapors improves airway hyper-responsiveness in asthmatic patients without altering the airway resistance²².

Rhinitis: Menthol is commonly used as a part of the formulations to treat rhinitis associated with allergy or acute upper respiratory tract infection²³. Although it does not change the nasal airflow resistance, it gives a subjective feeling of nasal decongestion to the patients suffering from the common cold²⁴.

Headache: Clinical trials have found that topical application of methanol is a safe, efficacious, and tolerable treatment of headaches like a migraine²⁵.

CONCLUSION: It is concluded that medicinal plants have contributed hugely to traditional and western medicines by providing ingredients for drugs or having played central roles in drug development.

The above review provides updated information regarding the Ajwain fool, Kapoor, and Menthol herbs used for the treatment of Normal cough and cold.

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