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Natural Herbs Used in Normal Cough and Cold Condition

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Review Article

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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 ajwain oil to contain not less than 40 per cent thymol. The remainder of the oil is called 'thymene'. Thymene, which constitutes 45 per cent of the oil, has the following composition: p-cymene (50-55%), gterpinene (30-35%), a- and ß-pinenes (4-5%) and dipentene (4-6%).

INTRODUCTION

Presence of minute 'amounts of camphene, myrcene and D3-carene are 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 the tissues of tree. The botanical name is derived from Greek language. It 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 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, Laurolitsine, Reticuline etc. Menthol is a naturally occurring monoterpene alcohol that is extracted from 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 give relief from cough and cold, throat irritation and treating bronchitis.

LITERATURE REVIEW

Ajwain flower

It is known as Ajwain, *Trachyspermum ammi* (L.) Sprague is an annual herbaceous plant belonging to the highly valued medicinally important family, *Apiaceae* [1]. It is said that the herb is widely grown in arid and semi-arid regions where the soil involve high amount of salts [2]. Ajwain has an erect and striate stem involving glabrous or minutely.

A pubescent property grows up to 90 cm tall [3]. Ajwain is widely distributed and cultivated in various regions such as Iran, Pakistan, Afghanistan and India as well as Europe while it is indigenous to Egypt [4]. 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 purposes (Table 1) [5].

Table 1. Vernacular names in different states in India.

Vernacular names	
Hindi	Ajwain
English	Bishop's weed
Sanskrit	Dipyaka, Yemini, Yaminiki, Yaviniki
Punjabi	Lodhar Bengali -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

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*"(Figure 1) [6].

Figure 1. Straight view of *Trachyspermum ammi*.

Chemical constituent: The alcoholic extract was found to contain a highly hygroscopic saponin with a haemolytic index of 500. A yellow, crystalline flavone (m.p. 291-294°) and a steroidal substance (m.p.140-150°) have also been isolated from the fruits. The principal constituents of the essential oil from the fruits [7] are the phenols, mainly thymol and some carvacrol. The Indian Pharmacopoeia requires ajowan oil to contain not less than 40 per cent thymol. The remainder of the oil is called 'thymene'. Thymene, which constitutes c-45, per cent of the oil, has the following composition: p-cymene, 50-55, gterpinene, 30-35, α and β-pinenes, 4-5, and dipentene, 4-6%. Presence of minute 'amounts of camphene, myrcene and D3-carene are also reported [8]. 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-terpenine, α- and β-pinenes, dipentene, αterpinene 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 βpinene). 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%), γterpinene (2.6%), p-cymene (1.6%), palmitic acid (1.6%) and xylene (0.1%).

Medicinal properties: In 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 asthma [9]. 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 piles [10]. It's also prescribed to comfort dipsomania, hysteria, sore throat; many ajowan ayurvedic formulations are available which is given to overcome infections with worms [11]. 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, grows up to 40 m with a broad sweeping crown, has diameter of up to 3 m. the bark of the plant is of yellow brown colour with 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 penniverved with dormant buds that enclose in a large, silky, orbicular, imbricating caduceus scales. These give a strong smell when crushed. The shape of the leaves is very variable. It shows ovate to elongate range of structures. Each of them grows alternatively on twigs. The flowers of the plant 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 the November, the dark blue berries fruit ripen. These are very small up to 1 cm. the new foliage proliferates in spring season have purple red, then green color. In the end, after its full growth when previous year leaves fall down, it become of orange red color. Karpura 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 the tissues of tree. The botanical name is derived from Greek language. It 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 Southern United States; especially in Florida (Table 2) [12,13].

Table 2. Vernacular Names of the Karpura in india.

Vernacular Names of the Karpura	
Sanskrit name	Karpur
Hindi name	Karpur, karpuram
English Name	Camphor tree, Camphor laurel, Japanese camphor
Kannada Name	Pache karpoora
Bengali Name	Karpur
Telugu Name	Karpooram Chettu
Marathi name	Karpur
Gujarati Name	Karpur
Tamil Name	Karpooram, Pachai Karpooram
Chinese	Xiang-zhang, Zhang-shu
Creole	Kafm, bom zangle
Dutch	Kamferboom
French	camphrier, camphre, baume anglais, Arbre a camphre
German	Kampferßaum
Italian	Canfora,confora
Japanese	kkusu-no-ki, kuso-no ki, hon-sho
Nepali	Kapur
Portuguese	Alcanforeira
Spanish	Alcanfor, alcanforero, alcanfor delJapón
Swahili	Mkafuri maita
Swedish	Kamfertraed

Biological source: Camphor is a solid ketone, obtained from the volatile oil of *Cinnamomum camphora* (L.) Nees et Eber, belonging to family *Lauraceae*. Synthetic camphor, which is optically inactive, is prepared from turpentine and would probably have completely replaced the natural product (Figure 2) [14].

Figure 2. Straight view of Kapoor.

Chemical constituents: 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, laurolitsine, reticuline etc. Its bark contains a major constituent as cinnamaldehyde that imparts it the very peculiar odor and flavor. The oil is extracted from the leaf that contains eugenol and iso eugenol that imparts it a very harsh odor; besides these it contains minerals a active component known as camphor that imparts it the properties. The plant contains a volatile oil comprising camphor, safrole, linalool, eugenol and terpeneol. It also contains lignans (including secoisosolariciresinol dimethyl ether and kusunokiol). Safrole is thought to be carcinogenic. The leaf oil is a natural source of linalool (94.9%); also contained citronellal (2.4%).

Medicinal properties

Cold and cough treatment: It can be taken as steam as it form a covering over the organs and gives relief from throat irritation and treating bronchitis.

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

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

Anti-oxidant: It acts as antioxidant and suppresses the effect of oxidative stress. So helps to cure kidney and heart problems.

Menthol: Menthol is a naturally occurring monoterpene alcohol that is extracted from oil of peppermint, corn mint or other mint plants. It is known for its minty, cooling odor and taste [15]. It is also a part of the composition of Zinda

Tilismath. Due to its antipruritic, analgesic, antiseptic and various other therapeutic effects, it has been used for medicinal purposes since ancient times [16].

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 family Labiatae (Figure 3) [17].

Figure 3. Straight view of Menthol.

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 subjects [20]. 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 fashion [21].

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 resistance [22].

Rhinitis: Menthol is commonly used as a part of the formulations to treat rhinitis associated with allergy or acute upper respiratory tract infection [23] .Although it does not change the nasal airflow resistance, it gives a subjective feeling of nasal decongestion to the patients suffering from the common cold [24].

Headache: Clinical trials have found that topical application of methanol is a safe, efficacious, and tolerable treatment of headaches like a migraine [25].

DISCUSSION AND CONCLUSION

It is concluded that medicinal plants have contributed hugely to the traditional and western medicines through providing ingredients for drugs or having played central roles drug development. The above review provides the update information regarding the Ajwain fool, Kapoor, Menthol herbs used for the treatment of normal cough and cold.

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