



ROLE OF VOLATILE OIL OF NATURAL SOURCE IN THE COSMETICS AND HEALTH CARE INDUSTRIES

Saikat Chowdhury^{*a}, K. Nishteswar^b

^aM. Pharm (Ayu.) Scholar, Department of Dravyaguna, I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar-361008, India

^bProfessor & H.O.D, Dept of Dravyaguna, I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar-361008, India

ABSTRACT

Flavors and Fragrances have been part of life since ancient times. They were used fragrances in religious purposes and for developing healing power and protect from evil forces. But in modern life style, their use is restricted to cosmetics and confectionaries. Essential oils are widely used in the industries related to pharmaceutical, food, cosmetic and veterinary products. This review is an effort to compile all the relevant material about essential oils from natural resources which may be helpful to create interest towards the aromatic plants to enrich aromatherapy.

Keywords: Herbal medicine, flavor and fragrances, essential oil, Aromatherapy.

INTRODUCTION

Essential oils are widely distributed in nature and are found in plants mainly belongs to Apiaceae, Asteraceae, Burseraceae, Lamiaceae, Myrtaceae, Poaceae and Rutaceae Plant families. These are concentrated, hydrophobic liquid containing volatile aroma compounds and are produced and accumulated in oil cells, in secretory canals or in glandular hair of plants. For extraction of essential oils various methods are used, like pressing or cold expression, enfleurage, solvent extraction, hydro diffusion, water-distillation and steam-distillation ^[1]. This oil is further processed or rectified for value addition.

Essential oil is not the same as perfume or fragrances oils. Perfume oils are artificially created fragrances and do not offer the therapeutic benefits that essential oil offers ^[2]. It is established that coriander oil having antifungal action upon oral candida albicans bio film

formation^[3]. In another study oils extracted from fifteen medicinal plants were screened for their activity against *Aspergillus fumigatus* and *Aspergillus niger* by disc diffusion method. The results showed that the maximum antifungal activity was demonstrated by oils of *Cymbopogon martini*, *Eucalyptus globulus* and *Cinnamomum zeylanicum* as compared to control^[4]. The comparative study of composition of essential oil from stigmas and of extract from corms of *Crocus sativus* shows that stigma contains 0.4–1.3% essential oil and 1.0% volatile composition can be yielded from corm^[5]. So, it may help in commercial utilisation of saffron. There is increasing public concern over the level of pesticide residues in food. In this situation essential oil or other plant extract assumed to be more acceptable and less hazardous than synthetic compounds. It is experimentally found that the essential oil of tea tree oil exhibits antifungal activity against *Botrytis cinerea* which is common post harvest pathogen of fresh grapes^[6].

MATERIALS & METHODS

Ayurvedic classics and lexicons were referred for compiling the aromatic medicinal plants mentioned in the management of various diseases. In addition to ayurvedic literature, the published data from journals and web pages have been taken for compiling the usage of essential oils in food & cosmetics and various formulations.

Mode of Action and Application:

Essential oils work on two distinct levels, the psychological and the physical. The fragrant essential oils of many plants can have quite a powerful effect on the mind, altering mood quite noticeably when they are inhaled. This is utilized in aromatherapy particularly to treat mood disturbances and consequently build one's ability to function properly.

The odors of the oils are taken up by receptor cells within the nasal cavity which are connected, via the olfactory nerve, to the limbic system in the brain- the part of the brain that controls emotion and memory. The brain is stimulated by the smells of the oil containing chemical and consequently release certain neurochemicals, like serotonin,

endorphins etc into the bloodstream. Most of these are opiate-like substances inhibit pain and induce a feeling of wellbeing. On a normal physiological level, according to their individual chemical make-up, different essential oils have their own specific effects on the internal workings of the body.

Aromatherapists are used essential oils to treat various ailments by different methods like Therapeutic massages, Steam and dry inhalation, Steam facial, Aromatic bathing, Sitz baths, Compresses and Mouthwashes, according to site of defects are found.

During taking of aromatherapy, the safety measurement always has to follow, like adding of sufficient base oil before applied oil to the skin, follow restriction of steam treatment in inflammatory skin condition application of steam facials in sensitive skin, avoid using of soaps, bath oils or shampoos in an aromatic bath, keep away an essential oil from eyes and avoiding the vulnerable essential oil during pregnancy. More over it is best, to use aromatherapy according to therapist's advice ^[7].

Aromatic Plant of Ayurvedic Texts:

Aromatic medicinal plants have been included under Puspa Varga and karpooradi Varga, mentioned in various Ayurvedic lexicons. These drugs are incorporated in various formulation indicated in the management of diseases.

The essential oil of Agar (*Aquilaria agallocha*) used to palliate Eczema, itching and other skin diseases ^[8]. Volatile oil of deodar (Kelon oil) used in the treatment of Karnasula and specific eye diseases named as Pilla ^[9]. Camphor oil used for strengthening the root of teeth^[10]. Essential oil from Cinnamomum bark is well known medicine for menstrual disorder^[11]. The essential oil of Shila Rasa (*Liquidamber orientalis*) used for imparting body lusture and male fertility. ^[12] Essential oil of Amra (*Mangifera indica*) used to cure disease of mouth ^[13]. The aroma of golden champak used to eradicate foul smell of vagina ^[14]. Bakula flower oil having cardio protective activity ^[15]. Oil of Parijata (*Nyctanthes arbortristis* Linn) used in the treatment of eye diseases ^[16]. Essential oil from sacred basil used in kaphaja karnasula and having bronchodilator,

antiseptic and insect repellent activity^[17]. The essential oil of kewda used to alleviate osteo-arthritis^[18]. In piles, oil of Kustha (*Saussurea lappa*) had been prescribed for massaging^[19]. Clove oil used as well known medicine for toothache and also for the treatment of arthritic disorder and digestive problems^[20]. Essential oil from Gokshura (*Tribulus terrestris*) is used in the management of arthritic problems^[21]. The essential oil of sarja (*Vetivera indica*) shows marked action against abscess, wound and skin diseases and in helminthisis^[22].

There are many research work had been done over essential oil containing plants those are mentioned in ayurvedic texts. A list of these aromatic plants is tagged here^[23]—

Sr. No.	Sanskrit Name	Botanical Name
1.	Adraka	<i>Zingiber officinale</i> <i>Z. cassumunar</i>
2.	Agaru	<i>Aquilaria agallocha</i>
3.	Agnimanth	<i>Premna tomentosa</i>
4.	Ajmoda	<i>Apium graveolens</i> <i>Trachyspermum roxburghianum</i>
5.	Akarkarabh	<i>Anacyclus pyrethrum</i>
6.	Akshoda	<i>Juglans regia</i>
7.	Amra haridra	<i>Curcuma amada</i>
8.	Apamarga	<i>Achyranthes aspera</i>
9.	Asana	<i>Terminalia tomentosa</i>
10.	Ashwakarna	<i>Dipterocarpus alatus</i>
11.	Atibala	<i>Abutilon indicum</i>
12.	Bakula	<i>Mimusops elengi</i>
13.	Bandhuka	<i>Ixora coccinea</i>
14.	Bhojapatra	<i>Betula alnoides</i>
15.	Bhutakeshi	<i>Seseli sibiricum</i>
16.	Bilva	<i>Aegle marmelos</i>
17.	Bilva parni	<i>Limonia crenulata</i>
18.	Bola	<i>Balsamodendron myrrha</i>
19.	Chagalantri	<i>Ipomoea pes-caprae</i>
20.	Champaka	<i>Michelia champaca</i>
21.	Chandana	<i>Santalum album</i>
22.	Damanak	<i>Artemisia vestita</i>

23.	Devadaru	<i>Cedrus deodara</i>
24.	Dhanyaka	<i>Coriandrum sativum</i>
25.	Ela	<i>Elettaria cardamomum</i>
26.	Gajapippali	<i>Piper chaba</i>
27.	Gandhapura	<i>Gaultheria fragrantissima</i>
28.	Guggul	<i>Commiphora wightii</i>
29.	Haimavati vaca	<i>Iris versicolour</i>
30.	Hapusha	<i>Juniperus communis</i>
31.	Haridra	<i>Curcuma longa</i>
32.	Hingu	<i>Ferula narthex</i>
33.	Irimeda	<i>Acacia farnesiana</i>
34.	Jambu	<i>Syzygium cuminii</i>
35.	Jarayupriya	<i>Erigeron Canadensis</i>
36.	Jatamansi	<i>Nardostachys jatamansi</i>
37.	Jati-phala	<i>Myristica fragrans</i>
38.	Jhandu	<i>Tagetes erecta</i>
39.	Kakajangha (Substitute)	<i>Leea aequata, Peristrophe bicalyculata</i>
40.	Kakanasika (Substitute)	<i>Martynia diandra</i>
41.	Kalajaji	<i>Nigella sativa</i>
42.	Kalambuka	<i>Jateorhiza palmate</i>
43.	Kankola	<i>Piper cubeba</i>
44.	Karanja	<i>Derris indica</i>
45.	Karcura	<i>Curcuma zedoaria</i>
46.	Karkatashringi	<i>Pistacia integerrima</i>
47.	Karpura	<i>Cinnamomum camphora</i>
48.	Kasamarda	<i>Cassia occidentalis</i>
49.	Katuvira	<i>Capsicum annum</i>
50.	Ketaki	<i>Pandanus fascicularis</i>
51.	Kokilaksha	<i>Asteracantha longifolia</i>
52.	Krishna jiraka	<i>Carum carvi</i>
53.	Kukundara	<i>Blumea balsamifera</i> <i>B. eriantha</i> <i>B. fastulosa</i> <i>B. lacera</i>
54.	Kulinjana	<i>Alpinia galangal</i>
55.	Kumkuma	<i>Crocus sativus</i>
56.	Kushtha	<i>Saussurea lappa</i>
57.	Lavanga	<i>Syzygium aromaticum</i>
58.	Lavanga- lata	<i>Luvunga scandens</i>

59.	Mahabhari vaca	<i>Zingiber zerumbet</i>
60.	Majuphala	<i>Quercus infectoria</i>
61.	Medasaka	<i>Litsea glutinosa</i>
62.	Methiuka	<i>Trigonella foenum graecum</i>
63.	Mishreya	<i>Foeniculum vulgare</i>
64.	Mundi	<i>Sphaeranthus indicus</i>
65.	Musta	<i>Cyperus rotundus</i> <i>C. scariosus</i>
66.	Nagkesara	<i>Mesua ferrea</i>
67.	Nimbook	<i>Citrus aurantium</i> <i>C. maxima</i>
68.	Pachi	<i>Pogostemon cablin</i>
69.	Palandu	<i>Allium cepa</i>
70.	Parnya- Yavani	<i>Coleus amboinicus</i> <i>C. barbatus</i>
71.	Parpata (Substitute)	<i>Glossocardia bosvallia</i> <i>Justicia procumbens</i>
72.	Parseeka vaca	<i>Iris germanica</i>
73.	Pindalu	<i>Randia uliginosa</i>
74.	Pippali	<i>Piper longum</i>
75.	Puskaramula	<i>Inula racemosa</i>
76.	Putiha	<i>Mentha species</i>
77.	Putranjiva	<i>Putranjiva roxburghii</i>
78.	Revandachini	<i>Rheum emodi</i>
79.	Rohisa	<i>Cymbopogon martinii</i> <i>C. citrus</i> <i>C. jwarancusa</i> <i>C. nardus</i>
80.	Rochana Tagara	<i>Selinum vaginatum</i>
81.	Sallaki	<i>Boswellia serrata</i>
82.	Sarala	<i>Pinus roxburghii</i> <i>P. excelsa</i>
83.	Sarja	<i>Vateria indica</i>
84.	Sarshapa	<i>Brassica campestris</i>
85.	Shala	<i>Shorea robusta</i>
86.	Shatahva	<i>Anethum sowa</i>
87.	Shatapatri	<i>Chrysanthemum indicum</i>
88.	Shathi	<i>Hedychium spicatum</i>
89.	Shveta- jiraka	<i>Cuminum cyminum</i>

90.	Silhak	<i>Liquidambar formosana</i>
91.	Sprikka	<i>Anisomeles malabarica</i>
92.	Sthula ela	<i>Amomum subulatum</i>
93.	Sukhatmaka	<i>Origanum Majorana</i>
94.	Sugandha- vaca	<i>Kaempferia galanga</i>
95.	Sugandha- vastuka	<i>Chenopodium ambrosioides</i>
96.	Surahva	<i>Cupressus sempervirens</i>
97.	Tagara	<i>Valeriana officinalis</i>
98.	Taila parna	<i>Eucalyptus globules</i>
99.	Talis patra	<i>Abies webbiana</i>
100.	Tamala	<i>Cinnamomum tamala</i>
101.	Tambula	<i>Piper betle</i>
102.	Taruni	<i>Rosa alba</i> <i>R. centifolia</i> <i>R. damascena</i> <i>R. multiflora</i> <i>R. rubra</i>
103.	Tejabala	<i>Zanthoxylum armatum</i>
104.	Trikantaka (Kakanasa variety)	<i>Acanthospermum hispidum</i>
105.	Tumbaru	<i>Zanthoxylum acanthopodium</i>
106.	Tuvari	<i>Eruca sativa</i>
107.	Tvak	<i>Cinnamomum cassia</i> <i>C. Zeylanicum</i>
108.	Tvakshira	<i>Curcuma angustifolia</i>
109.	Usira	<i>Vetiveria zizanioides</i>
110.	Vacha	<i>Acorus calamus</i>
111.	Valuka	<i>Pavonia odorata</i>
112.	Vana-Yavani	<i>Thymus serpyllum</i>
113.	Van- haridra	<i>Curcuma aromatica</i>
114.	Various Tulsi	<i>Ocimum sanctum</i> <i>O. basilicum</i> <i>O. canum</i> <i>O. gratissimum</i> <i>O. kilimandscharicum</i>
115.	Vasuka (Equated with brihat Bakula)	<i>Osmanthus fragrans</i>
116.	Waarasa	<i>Heterophragma roxburghii</i>
117.	Yashtimadhu	<i>Glycyrrhiza glabra</i>

118.	Yavani	<i>Trachyspermum ammi</i>
119.	Yuuthika	<i>Jasminum auriculatum</i>

AROMATIC OIL PLANTS FROM MODERN RESEARCH:

Most of the plants are mentioned by ayurvedic texts also used by modern industries in various field like aromatherapy, home selection, massage and also in reflexology. Among these some oils are having more demand. But modern research finds there are vast resources of aromatic oils which are not mentioned by Ayurvedic texts. The miraculous effect of these aromatic oils can be obtained if these are used with mentioned safety precautions. Some of these plants are enumerated here:

Sr. no.	Botanical name	Market name	Parts used	Use
1.	<i>Abelmoschus moschatus</i>	Ambrette oil	Seed	Essential oil is extensively used in perfumery, flavouring and cosmetic industries, chewing tobacco, baked products, and aromatherapy products ^[24] .
2.	<i>Anethum graveolens</i>	Dill oil	Seed	Aroma therapists credited dill seed oil, being stimulating, revitalizing, restoring, purifying, balancing and a cleansing agent. It also stomachic & carminative ^[25] .
3.	<i>Apium graveolens</i>	Celery seed oil	Seed	Essential oil has antioxidant, antiseptic (urinary), anti-rheumatic, anti spasmotic, aperitif, digestive, diuretic, depurative & stomachic properties. It can be used in sedative, tonic and carminative preparation ^[26] .
4.	<i>Artemisia pallens</i>	Davana oil	Whole plant	The oil is used in High grade perfume and cosmetics. In USA & Japan the oil is used for flavouring cakes, pastries, tobacco and beverages ^[27] .
6.	<i>Bursera delpepechiana</i>	Linaloe oil	Wood and Berries	Oil is used in Perfumery-flavouring, & cosmetic industries to incorporate in creams, lipsticks, brilliantine, and hair oil etc ^[28] .
7.	<i>Canaga odorata</i> var. <i>genuine</i>	Ylang ylang oil	Flower	Ylang ylang oil is used extensively in the perfume industry and also in the manufacture of cosmetics, soaps and toiletries. In aromatherapy, it being used to calm anxiety, palpitations and also help to treat hyperpnoea ^[29] .
8.	<i>Cymbopogon martinii</i>	Palmarosa oil	Whole plant	It is applied to stored grain & beans as it is anthelmintic against nematodes and has antifungal and mosquito

				repellent properties ^[30] .
9.	<i>Cymbopogon winterianus</i>	Citronella oil	Leaves	Citronella has many therapeutic applications and also useful as home selection for its deodorizing and insect repellent properties ^[31] .
11.	<i>Eucalyptus citriodora</i>	Lemon scented gum	Leaves	It is fantastic on skin ailments such as burns, blisters, wounds, insect bites, lice and skin infections, as well as to combat the effects of colds and the flu ^[32] .
12.	<i>Foeniculum vulgare</i>	Fennel oil	Seed	Fennel oil is used as an antiseptic, antispasmodic, carminative, depurative, diuretic, expectorant, laxative, stimulant, splenic, stomachic, vermifuge & also used in infantile colic ^[33] .
13.	<i>Jasminum auriculatum</i>	Jasmine oil	Flower	It is widely used in development of jasmine perfumes, jasmine creams and other cosmetics ^[34] .
14.	<i>Mentha species</i>	Mint oil	Leaves	Menthol is used in the flavouring of a large number of pharmaceutical and oral preparations like tooth pastes, dental creams, confectionery ^[35] .
15.	<i>Ocimum gratissimum</i>	Clocimum oil	Leaves	It is used as a substitute to the eugenol yielding crop. This oil widely uses in the perfume, cosmetic, Pharmaceutical and confectionery industries. ^[36]
16.	<i>Pelargonium graveolens</i>	Geranium oil	Leaves	It is used for the isolation of rhodinal which is the ingredient of most high grade perfumes and it also a favoured choice in various skin ailments for its anti-inflammatory properties and often demand in the treatment of menstrual disorders. ^[37]
17.	<i>Pogostemon patchouli</i>	Patchouli oil	Leaves	Patchouli oil is an effective room deodorizer for its insect repellent properties and also has various applications in aroma therapy, where it is beneficial to aging skin and helpful to prevent scars and stretch marks. ^[38]
18.	<i>Rosa damascena</i>	Rose oil	Flowers	It is used as a cell rejuvenator, antiseptic & anti-inflammatory agent as well as heals various skin conditions. It is reported that 3 drops of rose oil 3 times in a day is useful for the treatment of gallstone ^[39] .
19.	<i>Rosmarinus officinalis</i>	Rosemary oil	Leaves & flowering top.	Rosemary oil is extensively used in the perfume and cosmetics industries and in aromatherapy it is used for warming, stimulating, strengthening and toning both body and mind. It shows a well known anti-microbial activity against certain gram+ve & gram-ve organisms ^[40] .
20.	<i>Salvia sclarea</i>	Clary sage oil	Flowering top	Clary sage oil used by French perfumers as a fixative for many perfumes. In aromatherapy it is valuable for its

				potentiality to clam tension, create a feeling of greater wellbeing while at the same time to lift the mood. It helps to relieve period pain and premenstrual problems. Owing to its estrogen-stimulating action, it is most effective when levels of this hormone are low ^[41] .
21.	<i>Santalum album</i>	Sandal oil	Heart wood	It is one of the essential oils that appeals equally to both sexes. In aromatherapy it is used in bathing for its beneficial action to the genitor-urinary system. It also demandable in cosmetics and fragrances. The astringent properties of it make useful for after shaving preparation ^[42] .
22.	<i>Thymus vulgaris</i>	Thyme oil	Whole plant	Medicinally, it has been proven to possess various pharmacological activities like antifungal, antioxidant, antimicrobial, antinociceptive, cytotoxic activity, hypolipidaemic, antihypertensive, antispasmodic, broncho-dilating action, antilithiasis, diuretic, abortifacient, antitussive, nematicidal, anthelmintic and antifilarial activity ^[43] .
23.	<i>Vetiveria zizanoides</i>	Vetiver oil	Root	The vetiver oil is one of the most valuable and important raw materials in perfumery. It is widely used in perfumes and cosmetics, and for scenting soaps. It is used as carminative in flatulence, colic and obstinate vomiting. It is regards as a stimulant, diaphoretic and refrigerant ^[44] .

CONCLUSION

Ayurvedic classics and lexicons are enriched with vast information about aromatic plants, which are used in Fragrances and medicines. There are also many aromatic plants which are not mentioned by Ayurvedic classics and have potentialities for making insect repellants, confectionery, cosmetic and pharmaceutical products. These aromatic plants need to explore for their hidden curative, preventive and therapeutic potentials.

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For Correspondence:**Saikat Chowdhury**Email: saikatchowdhurybips@gmail.com