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## **Aromatherapy Used As Medicine: A Systemic Review**

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### **ABSTRACT**

Aromatherapy is classified as traditional, alternative or complementary therapies and has been steadily gaining popularity in today's society. The word aromatherapy is used to describe the use of essential oils for aromatic inhalation, compresses and topical application through massage. Volatile and essential oils are extracted from the various parts like flowers, barks, stem, leaves, roots, fruits and other parts of the plant by different techniques. The inhaled aroma from these "essential" oils is widely believed to stimulate brain function. Essential oils can also be absorbed through the skin, where they travel through the bloodstream and can promote whole-body healing. There are a wide number of essential oils available, each with its own healing properties. The present review focus on scenario of aromatherapy, modes of application, mechanism of action, types and health benefits.

**Keywords:** Aromatherapy, Inhalation, Essential oils, Bath, Massage

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## INTRODUCTION

Aromatherapy derived its name from the word aroma, which means fragrance or smell and therapy which means treatment. This therapy is a natural way of healing a person's mind, body and soul [1]. Many ancient civilizations like Egypt, China and India have used this as a popular complementary and alternative therapy from at least 6000 years [2, 3]. Aromatherapy has established itself for the treatment of various arrays of complications and conditions. Literature survey reveals that this therapy has gained a lot of attention in the late 20th century and is very popular in the 21st century too, and due to its importance, popularity and widespread use, it is recognized as aroma science therapy [4]. The essential oils have gained their importance in therapeutic, cosmetic, aromatic, fragrant and spiritual uses [5, 6]. Aromatherapy uses essential oils, as the main therapeutic agents, which are said to be highly concentrated substances extracted from flowers, leaves, stalks, fruits and roots, and also distilled from resins [7]. Essential oils are a mixture of saturated and unsaturated hydrocarbons, alcohol, aldehydes, esters, ethers, ketones, oxides phenols and terpenes, which may produce characteristic odors [8, 9]. They are colorless pleasant smelling liquids with high refractive index. These oils Aromatherapy derived its name from the word aroma, which means fragrance or smell and therapy which means treatment. This therapy is a natural way of healing a person's mind, body and soul [1]. Many ancient civilizations like Egypt, China and India have used this as a popular complementary and alternative therapy from at least 6 000 years [2, 3]. Aromatherapy has established itself for the treatment of various arrays of complications and conditions. Literature survey reveals that this therapy has gained a lot of attention in the late 20th century and is very popular in the 21st century too, and due to its importance, popularity and widespread use, it is recognized as aroma science therapy [4]. The essential oils have gained their importance therapeutic, cosmetic, aromatic, fragrant and spiritual uses [5, 6]. Aromatherapy uses essential oils, as the main therapeutic agents, which are said to be highly concentrated substances extracted from flowers, leaves, stalks, fruits and roots, and also distilled from resins [7]. Essential oils are aldehydes, esters, ethers, ketones, oxides phenols and terpenes, which may produce characteristic odors [8, 9]. They are colorless pleasant smelling liquids with high refractive index. These oils are so potent and concentrated that they work on pressure points and rejuvenate. The essential oils in plants are present in different areas like, pockets and reservoirs, glandular hairs, specialized cells, or even in the intercellular spaces. Essences evaporation from the plants, shields them from bacterial attack and a warming aura due to essences protects the plant from temperature fluctuations [2]. There are various methods by which they are administered in small quantity like inhalation, massage or simple applications

on the skin surface and rarely, they are taken internally [6, 10]. Inhalation and the external application of these oils for the treatment of mental and physical balance are the very basics of aromatherapy. The therapy of these oils is known to relieve the stress, rejuvenate and regenerate the individual for a next day's work. Olfactory nerves from nose to the brain are the site of action for these essential oils. These oils have well proven antibacterial, antibiotic, and antiviral properties and many published reports elsewhere as well as folkloric practitioners have suggested them to be useful in many other diseases like alzheimer, cardiovascular, cancer and labor pain in pregnancy etc [11–15]. There is an increased trend nowadays to use this therapy in the treatment of cancer and sleep disorder [16–18]. Their organic character and to act in supportive manner with the body, provide a feeling of well- beingness [19]. It was found that the locomotor activity of mice increased significantly by inhalation of rosemary essential oils, which are used in phytotherapy as activating and refreshing remedy for exhaustion [20]. The use of aromatherapy in holistic medicine has taken a long leap within a couple of years [21]. On reviewing the literature on this therapy, it is found that numerous studies have been carried out to study the effects of this therapy on human brain and its emotions. Its role in mood, alertness, and mental stress in healthy subjects was a topic of hot discussion among scientific community recently. Some researchers tried to investigate the effects on work ability, reaction time, and some spontaneous actions on the brain through electroencephalograph patterns and functional imaging studies [22]. This therapy was found to be superior when compared to synthetic odors. Synthetic fragrances generally contain irritants, like solvents and propellants causing irritation in some people [23–25]. According to aroma therapists, synthetic odor does not match the importance of essential oils as they are deficient in natural or vital energy; however, this has been remained a matter of debate between odor psychologists and biochemists.

**History:**

11th century: Something new happened, now the distillation of essential oils was done by coiled cooling pipe. This invention was done by Avicenna, before this straight pipe was used. His contribution is a great help in the field of aromatherapy [3, 4].

12th century: Hildegard grew and distilled the lavender for some medicinal purposes.

13th century: A new pharmaceutical company had taken birth. This helped greatly in the distillation of different types of essential oils [6].

In 14th century: Many people were killed due to Black Death (Bubonic plague). Many herbal preparations were used to fight with this problem [6, 7].

15th century: During, other plants like rose, sage and rosemary were also used for distillation and people came to know about the new power of healing through plants.

17th century: People started making perfumes from plants and it was considered as an art.

19th century: The use of perfumes increased and so the industries related to perfumes increased [8].

20th century: A French chemist Rene-Maurice Gattefosse started the use of essential oils for the medicinal purposes.

## **METHODS OF AROMATHERAPY**

### **Massage:**

Massage is an extremely beneficial method of applying Aromatherapy. It combines therapeutic touch with the powerful effects of essential oils. As a general rule of thumb we recommend 10-15 drops of essential oils to 1 tablespoon- 3oz. of base oil [8]. This varies on the type of essence you are using. Small children and pregnant woman will need a weaker solution. Massage can be self administered or applied by a partner [9].

### **Bath:**

Baths are by far the easiest way of using essential oils in the home. The heat and steam effectively empower and disperse the oils [9]. The oils are absorbed through the skin and through inhalation. The rule of thumb for baths is 8- 12 drops of essential oil per bath. A few bath tips: Add oils to a full bath because they begin to evaporate after entering the water temperature to enhance your experience as well [9, 10].

### **Inhalation:**

Inhalation is the quickest way to get essential oils to enter the body and get an immediate effect. The easiest way to use inhalation is to literally open the bottle and smell it, but you can also apply a few drops to a tissue or handkerchief to keep with you during the day. For inhalation in a bowl add 3- 5 drops to a large bowl of hot water [11]. Close your eyes and cover your head with a towel large enough to not to let the vapors escape. Relax with your head twelve inches above the bowl (face down), breathe deeply for 10 minutes.

### **Compress:**

Compresses are extremely useful for putting the oil where it is needed the most- the point of injury. For small areas 2 drops of oil and 1/4 cup of water is sufficient, for large areas 8 drops of oils and 2 cups of water should do it. To make a compress add oil and water to an appropriate size bowl, soak a cotton cloth in bowl, wring excess water out and wrap wound. Repeat process every 15 minutes for at least one hour [11].

## **SOME PLANTS USED IN AROMATHERAPY**

1. Clary sage
2. Geranium
3. Lavender

4. Lemon
5. Peppermint
6. Tea tree
7. Eucalyptus
8. Lemongrass

**Clary sage :**

Clary sage (*Salvia sclarea* Linn.) belongs to the family of Lamiaceae (Figure 1). Purple tinted large hairy green leaves are the main source of essential oil in clary sage, perennial herb. It is different from, *Salvia officinalis* or a common sage. Further, it can be differentiated by its size of leaves which are much larger than the common one and its color is bluish white in late summer [11]. It contains mainly linalool, linalyl acetate, alpha-terpineol, germacrene D and geranyl . The literature available on clary sage essential oil suggests its various therapeutic properties. It's a boon for women as its tonic is used for womb and uterus associated problems, and it also regulate the menstrual periods, ease tension and muscle cramps along with a seductive and aphrodisiac activity. It helps in controlling the sebum production, hence can be used for both dry and oily skin, along with acne, wrinkles and for controlling cellulite . In recent studies, this oil is found to be very effective in controlling cortisol levels in women along with its antimicrobial activity [12].



**Figure 1: Clary sage (*Salvia sclarea* Linn.)**

**Geranium:**

Geranium (*Pelargonium graveolens* L' Herit) belongs to the family of Geraniaceae (Figure 2). A perennial hairy shrub native of South Africa, up to one meter in height, also found and cultivated in France, Italy, Spain, Central America, Egypt, Japan and Congo is a plant of choice for essential oil. Eugenol, geranic, citronellol, geraniol, linalol (linalool), citronellyl formate, citral, myrtenol, terpineol, methone and sabinene are the chemical constituents of its essential oil. One of the best natural perfume, complete in itself is geranium oil, generally used in soaps

and detergents because its unique nature is never challenged with alkalinity of soaps. Hence, this oil is generally used to control the emotions in aroma therapy. It is used in dermatitis, eczema, aging skin, some fungal infections, along with anxiety and stress related problems. The oil has some anti-bacterial action and is an important ingredient for endometriosis treatment. This oil is further used for its sedative properties, nerve tonic, in throat infection, to rectify the blood disorder diabetes and for menopausal associated problems. Some reports are there about its supportive therapy in uterine and breast cancer, and it also certainly can help the patient in coping with the pain. People have used this as a flavoring agent for food stuff along with alcoholic and nonalcoholic beverages. It is an effective insect repellent. Moreover, this oil is gaining popularity as antidiabetic, anticancer, antibacterial and antimicrobial agent [15, 16].



**Figure 2: Geranium (Pelargonium graveolens L' Herit)**

### **Lavender:**

Lavender (*Lavandula officinalis* Chaix.) belonging to the family of Lamiaceae, is a beautiful herb of the garden (Figure 3). It contains camphor, terpinen-4-ol, linalool, linalyl acetate, beta-cimene and 1,8-cineole. Its constituent varies in concentration and therapeutic effects with the different species [16]. Linalool and linalyl acetate have maximum and great absorbing properties from skin during massage with a depression of central nervous system. Linalool shows sedative effects and linalyl acetate shows marked narcotic actions. These two actions may be responsible for its use in lavender pillow anxiety patients with sleep disturbance pattern, improving the feeling of well being, supporting mental alertness and suppressing aggression and anxiety. Lavender oil shows its antibacterial and antifungal properties against many species of bacteria, especially when antibiotics fail to work, but the exact mechanisms are yet to be established. When talking about its use in aromatherapy, it is well documented for the treatment of abrasions, burns, stress, headaches, in promotion of new cell growth, skin problems, painful muscles and boosting an immune system. This oil is used in the treatment of primary dysmenorrhea and has shown some promising results in one of the randomized, double-blind clinical trials [15, 16].



**Figure 3: Lavender (*Lavandula officinalis* Chaix.)**

**Lemon:**

Lemon [*Citrus limon* Linn. (*C. limon*)] belongs to the family of Rutaceae. *C. limon* long trees grow up to the 15 feet height and bear rich scented lemon fruits all year round (Figure 4). Its oil constituents are abundant in the terpenes, D-limonene and L-limonene, together forming about 90 percent of the bulk of the oil. Traces of phellandrene, pinene and sesquiterpene are also present. The valuable portion of the oil is the remaining 10 percent which consists of oxygenated bodies, chiefly the aldehyde citral, to which the odor of the oil is largely due and of which there is 3.5%–5% odor present in the oil. When compared to other essential oils, its constituents have antiseptic, astringent and detoxifying properties, for blemishes associated with oily skin. Its oil brightens and rejuvenates dull skin. Lemon essential oil is mainly used to boost the immune system and to accelerate the white corpuscles production along with counteracting acidity and ulcers through citric acid, which helps digestion, by forming carbonates and bicarbonates of potassium and calcium. A recently conducted double-blinded, randomized, controlled clinical trial study on aromatherapy has suggested that citrus oil is good in relieving the first stage labor pain. It is effective in controlling the nausea and vomiting along with its mood elevating proper [18].



**Figure 4: Lemon (*Citrus limon* Linn.)**

**Peppermint :**

Peppermint [*Mentha piperita* Linn. (*M. piperita*)] belongs to the family of Lamiaceae (Figure 5). Till date, all the 600 kinds of mints are raised from 25 well-defined species. The two most important are peppermint (*M. piperita*) and spearmint (*Mentha spicata*). Spearmint bears the strong aroma of sweet character with a sharp menthol undertone. Its oil constituents include carvacrol, menthol, carvone, methyl acetate, limonene and menthone. The pharmacological action is due to menthol, a primary constituent of peppermint oil. At least 44% free menthol is present in peppermint oil. Components are sensitive to climate, latitude and maturity of the plant. Inhalation and application of menthol on skin causes a skin reaction. It is used in many liniments dosage form to relieve pain spasms and arthritic problems. Peppermint oil is studied and documented for its anti-inflammatory, analgesic, anti-infectious, antimicrobial, antiseptic, antispasmodic, astringent, digestive, carminative, fungicidal effects, nervine stimulant, vasoconstrictor, decongestant and stomachic properties [19, 20].



**Figure 5: Peppermint (*Mentha piperita* Linn)**

**Tea Tree:**

Tea tree (*Melaleuca alternifolia* Cheel) belonging to the family of Myrtaceae, with yellow or purple flower and needles like leaves is a shrub of marshy area (Figure 6). Due to its commercial value, it is cultivated on plantations. The main constituent of its oil is terpinen-4-ol, an alcoholic terpene with a clean musty aroma. The antiviral activity is due to alpha-sabine with antibacterial and antifungal effects. It is an immune booster due to terpinen-4-ol while cineole is responsible for its antiseptic character. The tea tree itself possesses antibacterial, anti-inflammatory, antiviral, insecticidal, and immune stimulant properties. The aromatherapy utilizes the mixture of lemon, blue gum, clary sage, eucalyptus, lavender, rosemary, ginger and Scotch pine for treatment of different ailments. The oil is used in herpes, abscess, blisters acne, cold sores, burns, insect bites, dandruff and oily skin. Further, in

treatment of respiratory associated problems it has been used for tuberculosis, cough, bronchitis, asthma, catarrh and whooping cough; also it is used in females for vaginitis, cystitis and pruritus treatment. Cold, fever, flu and chickenpox have called for its use. Well defined studies have been carried out on *Melaleuca alternifolia* (tea tree) on herpes through clinical [21].



**Figure 6: Peppermint (*Mentha piperita* Linn.)**

#### **Eucalyptus:**

Eucalyptus [*Eucalyptus globulus* Labill (*E. globulus*)] belonging to the family of Myrtaceae, is a long evergreen plant with a height up to 250 feet (Figure 7). It is known for its constituents like cineole (70%–85%), aromadendrene limonene terpinene, cymene, phellandrene, and pinene . Its oils have been used to regulate and activate the various systems like nervous system for neuralgia, headache and debility. The immune system boosts the immunity against measles, flu, cold and chickenpox. Leucorrhea and cystitis of genitourinary system can also be well treated with it. Throat infections, catarrh, coughs, bronchitis, asthma and sinusitis associated with respiratory system have been taken care of by oils of this plant. Moreover, skin problems like wounds, cuts, burns, herpes, lice, insect repellent and insect bites can be treated with it. Treatment of rheumatoid arthritis, muscle and joint pains and aches is well reported from the essential oils of this plant . Eucalyptus oil has demonstrated its antioxidant, anti-inflammatory, anti-proliferative and antibacterial activities and researchers have proved its efficacy beyond doubt in treatment of various metabolic and infectious diseases. The results are promising and can be utilized for treatment of multi factorial diseases of various origins in humans [20].



**Figure 7: Eucalyptus (Eucalyptus globulus Labill)**

### **Lemongrass:**

Lemongrass (*Cymbopogon citratus*, *Cymbopogon flexuosus*) is a tall grass that grows in tropical climates (Figure 8). In aromatherapy, lemongrass essential oil is used to reduce inflammation, relieve headaches, and ease indigestion. Inhaling the scent of the oil or using the oil topically (mixed into carrier oils, body oil, and hair and skin products) is said to offer a variety of benefits. One of the main components of lemongrass essential oil is citral, a compound found to act as antimicrobial (a substance that destroys or suppresses the growth of microorganisms, including bacteria and fungi). Lemongrass essential oil also contains limonene, a compound shown to reduce inflammation and knock out bacteria in scientific research. In addition, lemongrass essential oil is said to act as a natural insect repellent and air freshener, and may also alleviate stress and relieve pain [21].



**Figure 8: Lemongrass (Cymbopogon citratus)**

### **SAFETY CONCERNS**

In addition, there are potential safety concerns. Because essential oils are highly concentrated they can irritate the skin when used in undiluted form. Therefore, they are normally diluted with carrier oil for topical application, such as jojoba oil, olive oil, or coconut oil. Phototoxic reactions may occur with citrus peel oils such as lemon, lime. Also, many essential oils have chemical components that are sensitizers (meaning that they will after a number of uses cause reactions on the skin and more so in the rest of the body). Some of the chemical allergies could even be caused by pesticides, if the original plants are cultivated. Some oils can be toxic to some domestic animals, with cats being particularly prone. Two common oils, lavender and tea tree, have been implicated in causing gynaecomastia, an abnormal breast tissue growth, in prepubescent boys, although the report which cites this potential issue is based on observations of only three boys (and so is not a scientific study) and two of those boys were significantly above average in weight for their age, thus already prone to gynaecomastia. A child hormone specialist at the University of Cambridge claimed "... these oils can mimic estrogens" and "people should be a little bit careful about using these products". The study has been criticized on many different levels by many authorities. Oils both ingested and applied to the skin can potentially have negative interaction with conventional medicine [17, 18].

## CONCLUSION

Aromatherapy seems to produce some positive benefit as supportive treatment; however, evidence is limited at this time. If patients enjoyed the experience, then their quality of life may have been enhanced, even if it was just for the time they were receiving the therapy. In addition, aromatherapy appears harmless if used properly, producing minimal, if any, adverse effects. The most common side effect appears to be dermatitis. There is limited scientific research about aromatherapy and its use in individuals with spinal cord or brain injuries.

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