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## AROMATHERAPY IN MODERN HEALTHCARE: A SYSTEMATIC REVIEW OF ITS HISTORY, MECHANISMS, APPLICATIONS AND MEDICINAL PLANTS USED

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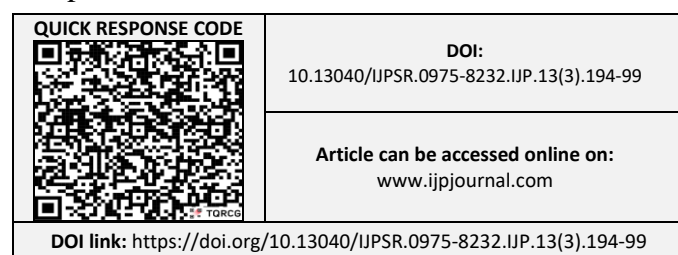
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**ABSTRACT:** Aromatherapy is a complementary therapeutic approach based on the use of volatile essential oils derived from aromatic medicinal plants. The practice has a long history, originating in ancient medical systems of Egypt, India, China, and Greece, where aromatic plants were employed for therapeutic, cosmetic, and spiritual purposes. In contemporary pharmacognostic research, aromatherapy is recognized for the bioactive potential of essential oils, which are complex mixtures of secondary metabolites such as terpenoids, phenylpropanoids, aldehydes, alcohols, and esters. The mechanisms of action involve olfactory stimulation of the limbic system as well as transdermal absorption, leading to neuropharmacological, autonomic, and systemic effects. Essential oils have demonstrated a range of pharmacological activities including anxiolytic, analgesic, antimicrobial, anti-inflammatory, antioxidant, and sedative effects. Aromatherapy has found applications in the management of stress-related disorders, pain, insomnia, dermatological and respiratory conditions, and as supportive therapy in chronic diseases and palliative care. Medicinal plants frequently employed in aromatherapy include *Lavandula angustifolia*, *Mentha piperita*, *Eucalyptus globulus*, *Rosa damascena*, and *Melaleuca alternifolia*. This review consolidates current knowledge on the historical evolution, phytochemical profile, mechanisms of action, therapeutic applications, and medicinal plant sources of aromatherapy, emphasizing its scientific basis and importance in pharmacognosy and natural product research.

**INTRODUCTION:** The therapeutic use of essential oils from herbs, flowers, and other plants is known as Aromatherapy. The term aromatherapy was coined by Prof. Gatte Fosse, a French cosmetic chemist, where 'Aroma means smell or fragrance' 'Therapy' means treatment. It conveys the concept of healing with aromatic substance. In order to improve both psychological and physical health, aromatherapy uses natural plant extracts from plants' flowers, bark, stems, leaves, roots, or other components.

It is commonly accepted that the aroma of "essential" oils can enhance brain activity when inhaled. It is a complementary therapy, it does not provide a complete cure for diseases, or illnesses, but it can support conventional treatment of various conditions. According to several research, aromatherapy is helpful in decreasing pain in patients with multiple various pain problems, such as fibromyalgia, postoperative pain, and dysmenorrhoea. Patients with sleep disorders and insomnia have higher levels of anxiety.

The quality of sleep can be improved by sedatives and sleep medicines, but they also have negative effects and a high potential for addiction. The use of complementary medicine is therefore advised to minimize these issues given the prolonged nature of the healing process. Additionally, essential oils



can be absorbed through the skin, where they enter the bloodstream and help to heal the entire body. They might also affect your hypothalamus, which may react favourably to the oil by generating a positive emotion in the brain. It can be used for everything from pain treatment to mood-enhancing. Both the olfactory system as well as the skin can be used to absorb essential oils into the body<sup>1-5</sup>.

**Historical Background:** Aromatherapy is thought to have been practised for at least 6,000 years by the world's oldest civilizations. Aromatherapy's origins are widely attributed to Egypt. In order to obtain the oils from aromatic plants, the Egyptians employed a process known as infusion, and incense was one of the first applications for aromatics. The Egyptians used oils of cinnamon, clove, and cedar wood oil to embalm the dead. Traces of the herbs were found alongside intact body parts when a tomb was uncovered in the early 20th century. Despite being weak, the aroma was still detectable. Although the Egyptians used a primitive distillation method to extract the cedar wood oil. In addition, the Egyptians employed some of the oldest known oils, such as myrrh and juniper, for skin care, massage, healing treatments, and perfumery. The contemporary development of aromatherapy is attributed to Gatte fosse, a French chemist, who burned his hand and applied lavender oil to the site. The hand was healed without excessive scarring, and gangrene was prevented. He was motivated by the encounter to research plant oils' potential therapeutic effects. Thus, in 1937, the term "aromatherapy" was first used.

The medicinal use of plant oils has also an extensive history in ancient China, Greece, India, and Europe. During the same time period as ancient Egypt, other ancient societies such as China and India recognized the therapeutic properties of perfumed lotions and oils. Ayurvedic medicine in ancient India involved massage with sandalwood oil. Hippocrates supported fragrant baths and massages using oils like marjoram, cypress, and myrrh. In China, essential oils of Rose, Jasmine and Chamomile were used as tonics<sup>6,7</sup>.

**Concepts and Important Requirements in Aromatherapy:** The term "aromatherapy" is fraught with misunderstandings. It is a catch-all phrase for applying essential oils to the skin, for

massage, or in the environment. The use of essential oils in cosmetic care products is a more ambiguous definition. In some countries, aromatherapy may also include the use of essential oils, further complicating the concept. Aromatherapy is the use of scents to elicit psychological or physiological responses. It highly depends on the functionality of the scents used. Any effect elicited by a scent must be a result of both the scent and the method of application.

### **Important Requirements in Aromatherapy:**

- Purity of the substance is one important element. Many synthetic and semi-synthetic monoterpenes are used to dilute essential oils at a low cost.
- The usage of single notes or complicated mixes is another consideration. Although single note scents make up a majority of aromatherapist test subjects, the therapeutic benefit may be increased by using complex fragrance combinations.
- The chirality of natural fragrances may also increase their potency. All synthesized medications contain mirror molecules with potential pharmacokinetic differences.
- Natural plants produce varying levels of different essential oils to protect themselves from potential pathogens, and raw material sources will always vary<sup>8-10</sup>.

### **Types of Aromatherapies:**

**Cosmetic Aromatherapy:** Certain essential oils are used in this therapy to make cosmetic products for the skin, body, face, and hair. For their various cleansing, moisturizing, drying, and toning actions, these products are used. Essential oils can be used in facial products to promote healthy skin.

**Medical Aromatherapy:** Rene-Maurice Gatte fosse, the father of aromatherapy, has applied the medical aromatherapy understanding of the impact of essential oils on promoting and treating clinically identified medical illnesses to massage patients during surgery.

**Olfactory Aromatherapy:** Olfactory aromatherapy, which is a result of the inhalation of

essential oils, has been shown to improve emotional wellness, peacefulness, relaxation, or physical replenishment in humans.

**Massage Aromatherapy:** It has been proven that adding grape seed, almond, or jojoba oil to pure vegetable oil before massaging someone provides great results. This is often referred to as massage therapy with a healing touch.

**Psycho-Aromatherapy:** These oils that provide the pleasure of calm, energization, or a pleasant memory can be used in psycho-aromatherapy to achieve specific mood and emotional states. In this therapy, the oils are directly inhaled by the patient while they are being infused in their room<sup>11-14</sup>.

**Mechanisms Involved in Aromatherapy:** When essential oils are inhaled, they integrate into a biological signal of the receptor cells in the nose, which generates them to act. The signal is sent to the limbic and hypothalamic regions of the brain via the olfactory bulb. These signals cause the brain to release neurotransmitters such as serotonin and endorphins, which connect our nervous and other body systems, ensuring the desired change and providing a sense of relief. Serotonin, endorphin, and nor-adrenaline are all released by calming, euphoric, and stimulating oils, respectively, to produce the desired effect on the mind and body. The activation properties of these oils are based on their structure, which is similar to that of actual hormones. One of the most important aspects of this therapy is the ability of these oils to penetrate the subcutaneous tissues<sup>16,17</sup>.

**Applications of Aromatherapy in Various Disease Conditions:** Aromatherapy has the potential to treat a wide range of diseases, including:

- **Asthma:** A condition that makes difficult to breathe because the person's airways restrict, swell, and create excess mucus. E.g.; Lavender oil.
- **Fatigue:** Extreme tiredness brought on by disease, mental stress, or both. Eg. peppermint oil.
- **Depression:** A mental condition that results in a long feeling of sadness and restlessness. Eg; Lavender oil, Ylang-Ylang.

- **Inflammation:** A localized physical condition where a region of the body reacts to injury or infection by becoming reddish, swollen, hot, and sometimes painful. Eg; Eucalyptus.
- Migraine and headache pain. Eg; Eucalyptus.
- Menstrual issues that interfere with a woman's regular menstrual cycle. Eg; Roman chamomile, Peppermint oil.
- **Arthritis:** A condition that makes the joints pain with inflammation and stiffness. Eg; Lavender oil, Eucalyptus.
- Menopausal symptoms. Eg; Clary sage, Peppermint oil<sup>17,18</sup>.

### Various Plants used in Aromatherapy:

**Eucalyptus:** The eucalyptus (*Eucalyptus globulus*), along, evergreen shrub with height of up to 250 feet, is a member of the *Myrtaceae* family. It is well-known for having ingredients including cineole (70–85%), aromadendrene, limonene, terpinene, and pinene<sup>19</sup>. Its oils have been used to regulate and enhance a variety of systems, including the nervous system for migraine, headaches, and unresponsiveness. Immunity against measles, the flu, colds, and chickenpox are maintained by the immune system. It is also an effective treatment for genitourinary cystitis. The oils from this plant have been used to treat bronchitis, asthma, pneumonia, coughs, constipation, and throat infections that are related to the respiratory system. Moreover, skin problems like wounds, cuts, burns, herpes, lice, insect repellent and insect bites can be treated. The results are promising and can be utilized for treatment of multifunctional disease of various organs in human<sup>20</sup>.

**Lavender:** Lavender (*Lavandula officinalis*), a member of the Lamiaceae family, is a lovely plant for gardens. It includes 1, 8-cineole, camphor, terpinen-4-ol, linalool, and linalyl acetate. The concentration of its ingredient and its medicinal benefits vary based on the species<sup>21</sup>. Its use in lavender pillow anxiety patients with sleep disruption patients, promoting mental alertness, enhancing feelings of well-being, and suppressing anger and anxiety may be due to these two effects<sup>22</sup>.

Even when medications are ineffective, lavender oil exhibits antibacterial and antifungal activity against a variety of bacteria. Regarding its usage in aromatherapy, it has a long history of success in the treatment of skin irritation, burns, tension, headaches, as well as in the development of new cell growth, the treatment of skin issues, the relief of muscle pain, and the strengthening of the immune system<sup>23,24</sup>.

**Lemon:** Lemon (*Citrus limon*) is a member of the Rutaceae family. *C. limon* long trees can reach heights of 15 feet and produce richly fragrant lemon fruits all year long. The terpenes D-limonene and L-limonene, which together make up nearly 90% of the oil's mass, are among its abundant oil constituents<sup>25</sup>. There are additional traces of sesquiterpene, pinene, and phellandrene. The valuable element of the oil is the remaining 10%, which is made up primarily of the aldehyde citral. It's constituents, in contrast to those of other essential oils, contain antibacterial, astringent, and detoxifying characteristics, which can treat acne caused by greasy skin. Its oil refreshes and brightens pale skin<sup>26</sup>. Lemon essential oil is mainly used to boost the immune system, increase speed the generation of white blood cells, and fight acidity and ulcers through citric acid, Citrus oil may be effective in reducing the discomfort of the early stage of labour, according to a recently completed study on aromatherapy<sup>27,28</sup>.

**Peppermint:** Peppermint (*Mentha piperita*) belongs to the family of Lamiaceae. Peppermint (*M. piperita*) and spearmint are the two most important (*Mentha spicata*). The powerful scent of spearmint has a sweet, menthol-sharp flavour. Carvacrol, menthol, carvone, methyl acetate, limonene, and menthone are among the components of its oil<sup>29</sup>. Menthol, a key ingredient in peppermint oil, is responsible for the pharmacological activity. In peppermint oil, there is at least 44% free menthol. It is used to treat arthritic issues and pain spasms in a range of liniments. Studies and documentation have been done on the anti-inflammatory, analgesic, anti-infectious, antimicrobial, antiseptic, antispasmodic, astringent, digestive, carminative, fungicidal effects, nervine stimulant, vasoconstrictor, decongestant, and purgative qualities of peppermint oil. It has very good headache-relieving effects

when applied topically around the head and temples. This oil is believed to clear congestion in the sinuses and lungs as well. Many researchers have spoken and written extensively on menthol for its many uses, but more work needs to be done before it can be used in aromatherapy<sup>30,31</sup>.

**Rosemary:** Rosemary (*Rosmarinus officinalis*) a plant of the *Lamiaceae* family, grows up to 90 cm tall and blooms in the early summer with tiny, pale blue flowers. It comes in three varieties, with the green stripe being used for its medicinal powers<sup>32</sup>. Tannic acid, resin, volatile oil, and bitter principle are all abundant in this plant. The active constituents are bornyl acetate, borneol, various esters, specifically camphor like that found in myrtles, cineol, pinene, and camphene. Heartburn, constipation, and ulcerative symptoms are lessened by its oil's considerable impact on the digestive system<sup>33</sup>. It functions as a liver and gallbladder tonic. The cardiovascular system benefits from the oil as well. In the past, it was used to relieve rheumatic pain that was increased by the cold. Its great skin toning characteristics, a calming, helpful effect on menstruation pains, and its capacity to stimulate hair growth are just a few of this oil's other important properties<sup>34,35</sup>.

**Tea Tree:** A shrub found in moist soils, the tea tree (*Melaleuca alternifolia*) which belongs to the *Myrtaceae* family, has yellow or purple flowers and needle-like leaves. It is grown on fields because of its economic significance. Terpinen-4-ol, an alcoholic terpene with a pungent musty odour, is the oil's major component. Alpha-sabine, which also has antibacterial and antifungal properties and cineole gives it an antibacterial quality<sup>36</sup>. The tea tree itself has immune-stimulating, antibacterial, anti-inflammatory, antiviral, and insecticidal qualities. The oil is applied to the skin to treat herpes, infections, ulcers, acne, cold sores, burns, insect bites, dandruff and oily skin. Treatment of respiratory associated problems it has been used for tuberculosis, cough, bronchitis, asthma, catarrh and whopping cough, and also it is used in female for vaginitis, cystitis and pruritus treatment. Cold, fever and flu have called for use<sup>37</sup>.

**Ylang Ylang:** A little tree called ylang-ylang (*Cananga odorata*) a member of the *Annonaceae* family, is indigenous to the Philippines and

Indonesia. Geranyl acetate, linalool, geraniol, farnesol, benzyl acetate, geranial, methyl chavicol, eugenol, pinene, and farnesene are some of its chemical constituents<sup>38</sup>.

The best quality of this tree is its ability to slow down rapid breathing and heartbeat, which makes it ideal for use in shock and conditions. Its antidepressant qualities make it feel good and promote wellbeing. The findings provided conclusive evidence that using this plant significantly affected one's sense of self<sup>39, 40</sup>.

#### **Aromatherapy Treatment and Research Centre:**

- Aromatherapy Treatment Centre's Include;
- Arvi Aroma Therapy Center
- Vedica Ayurvedic Treatment Centre
- Kudipravesika Ayur Nilayam
- Aroma Tree Spa
- Sam Veda Heal Well Zone
- Palash Kerela Ayurvedic Treatment Centre
- Ayur Arogyam, Lakkidi
- Ayurkshethra, Wayanad
- Cheryakkan Memorial Massage Center
- Feather Spa & Massage Wayanad
- Ayur Aswas Ayurvedic clinic and Spa Centre Aromatherapy Research Centre's include;
- Council of Scientific and Industrial Research– Central Institute of Medicinal and Aromatic Plants
- Markaz Unani Hospital & Research Centre
- PRANALAYAM-Prana Integrated Holistic Healing, Wellness and Research Center
- Ecoplanet Research Institute
- SHEN Institute of Medical Science
- Adyant Ayurveda Jayanagar

**CONCLUSION:** Aromatherapy is one of nature's gifts to humans. The physiological, spiritual, and psychological upliftment for the new stage of life is directed by aromatherapy. The scientific community's shift towards complementary and alternative medicine has given rise to fresh hope for using essential oils to lessen the side effects of contemporary medicine. Pharmaceutical companies are working to provide natural, complementary, and environmentally friendly medicine for disease associated with pathogens and metabolism. The volatile oils have synergistic effect with the drugs used in the treatment of central nervous system disorder. Essential oils can be a useful non-medicinal option or can also be combined with conventional care for some health condition. The tilt of the scientific community towards complementary and alternative medicine has given new hope to reduce the unwanted effects of modern medicine.

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