A MINI REVIEW ON AROMA THERAPY

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ABSTRACT

Nowadays, use of alternative and complementary therapies with mainstream medicine has gained the momentum. Aroma therapies are one of the complimentary therapies which use essential oils as the major therapeutic agents to treat several diseases. The essential oils are extracted from the roots, stem, leaves, fruits, flower and aerial parts of the plants by different distillation methods. Inhalation, local application and baths are the major methods used in aroma therapy that utilize these oils to penetrate the human skin surface with marked area. Once the oils are in the system, they remodulate themselves and work in a friendly manner at the site of malfunction or at the affected area. Aroma therapy utilizes various permutation and combinations to get relief from numerous ailments like depression, insomnia, indigestion, headache, muscular pain, respiratory problems, skin diseases, swollen joints; urine associated complications, tumour, other physical wellbeing, etc. This review explores the information available in the literature regarding therapeutic, medical, physiological, Cosmatological, massage aromatherapy and different plants used in aroma therapy, such as geranium, palmarosa, tea tree, lemon grass, etc.

KEYWORDS: Aromatic Plants, Volatile oils, Fixed oils, Distillation, Skin.

INTRODUCTION

Aroma therapy is the practice of using volatile plant oils, including essential oils for physiological and physical well – being. Aroma therapy is a natural therapy that uses essential oils – the volatile oils distilled from plants to promote health and wellbeing. It is
used in the management of physiological states and is though to change mood and promote improved mental wellbeing. Aroma therapy is commonly administered through massage therapy, but delivery may also include aromatic baths and vaporization. Essential oils are a mixture of saturated and unsaturated hydrocarbons, alcohol, aldehydes, esters, ethers, ketones, oxides phenols and terpenes, which may produce characteristic odors.\[^1,2\]

Aroma therapy is used to treat emotional disorders, such as stress and anxiety, but has wider applications, including the alleviation of pain and nausea and the promotion of sleep. A side from the perceived benefits to health and well-being, aromatherapy is popular because it is non-invasive, relatively inexpensive, readily available, pleasant to use and can be self administered without prior consultation with a healthcare professionals or natural therapist.\[^3\]

Mental disorders occur in people in all countries, societies and in all ethnic groups, regardless socio-economic order with more frequent anxiety disorders. Through the process of time many treatment have been applied in order to address this complex mental issue. People with anxiety disorders can benefit from a variety of treatments and services. Following an accurate diagnosis, possible treatments include psychological treatments and mediation.\[^4\]

**Mode of application**

Essential oils can be inhaled, massaged on to the skin, diffused into the air, applied as a compress, or placed in a bath for soaking.

1. Inhalation treatments are usually recommended for problems with respiration and can be done by dropping several drops of essential oil into bowl of steaming water. The vapors are then inhaled for a few moments, with the effect being enhanced by placing a towel over both the head and the bowl to form a tent to capture the humidified air and scent.

2. Massage using aromatic essential oils combined with base oil can be either calming or stimulating, depending on the oil used. The essential oil massage can be applied to a specific problem area or to the entire body.

3. Diffusion is normally used to calm or soothe nerves or treats some respiratory problems and can be done by spraying oil-containing compounds into the air in fashion similar to an air freshener. It can also be done by placing a few drops of essential oil in a diffuser and turning on the heat source.
4. Soaking baths containing essential oils and lasting for 10 - 20 minutes are recommended for skin problems and for calming or soothing nerves.\[5, 6]\n
**Classification of aromatherapy**

There are many kinds of aromatherapy but its types are divided according to the application and purposes of the essential oils. These essential oils are taken from the different parts of the plants and then it is distilled or purified. These extracted oils have therapeutic benefits of the plants from which they are extracted. It is really important to use these oils under the guidance of some experienced Aroma-therapist. These oils are very strong and also contain concentrated natural chemical compounds. There are different ways of application of these essential oils but all the ways come into or divided into few main types of Aromatherapy.\[7, 8]\n
1. **Massage aroma therapy**

The use of grape seed, jajoba oil and almond oil in pure vegetable oil during massage has been shown to have wonderful effects. This is also known as healing touch of massage therapy.\[9, 10]\n
2. **Cosmetic aromatherapy**

This therapy utilizes certain essential oil for skin, body, face and hair cosmetic products. These products are used for their various effects as cleansing, moisturizing, drying and toning. A healthy skin can be obtained by use of essential oils in facial products. On a personnel level, cosmetic aroma therapy of full body or foot bath will be a simple and an effective way to have an experience. Similarly, few drops of appropriate oil give a rejuvenating and revitalizing experience.\[11]\n
3. **Psycho aromatherapy**

In psycho-aromatherapy, certain states of moods and emotions can be obtained by these oils giving the pleasure of relaxation, invigoration or a pleasant memory. The inhalation of the oils in this therapy is direct though the infusion in the room of a patient. Psycho-aromatherapy and aromacology both deal with the study and effects of aroma be it natural or synthetic. Psycho-aromatherapy has limited itself with study of natural essential oils.\[12]\n
4. Medical aromatherapy
The founder of modern aromatherapy Rene-Maurice Gattefosse has used essential oils to massage patients during surgery, thus utilizing the medical aromatherapy knowledge of the effect of essential oils on promoting and treating clinically diagnosed medical ailments.\[13\]

5. Olfactory aromatherapy or clinical aromatherapy
Inhalation of essential oils has given rise to olfactory aromatherapy, where simple inhalation has resulted in enhanced emotional wellness, calmness, relaxation or rejuvenation of the human body. The release of stress is welded with pleasurable scents which unlock odor memories. Essential oils are complemented to medical treatment and can never be taken as a replacement for it.\[14,15\]

Mechanism of action of aroma therapy
Aromatherapy is based on the theory that inhalation or absorption of essential oils triggers changes within the limbic system, the part of the brain associated with memory and emotion. This can, in turn, stimulate physiological responses of the nervous, endocrine or immune systems, affecting heart rate, blood pressure, breathing, brain wave activity and the release of various hormones throughout the body.\[16\] Their effect on the brain can sedate or stimulate the nervous system, as well as possibly aid in normalizing hormonal secretions. Inhaling essential oils can ease respiratory symptoms, while localized application of diluted oils can be helpful for certain localized conditions. Massage combined with essential oils provides relaxation, as well as relief from pain and muscle stiffness and spasms. Some essential oils applied to the skin can have anti-microbial, antiseptic, anti-fungal, or anti-inflammatory properties. Although essential oils produce certain predictable effects, they also may affect different people in different ways.\[17\]

Some plants used in aroma therapy
Many plants have been reported to use in the aromatherapy due to presence of essential or volatile oils in different plants materials like barks, stem, flowers, roots, leaves, fruits etc. Some plants are described as follows-

1. Pippermint (Mentha)
Pippermint [Mentha piperita Linn.] belongs to the family- Lamiaceae (Labiatae). There are 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. The menthe oil constituents include carvacrol, menthol, carvone, methyl acetate, limonene and menthone. Menthol is the primary constituent of menthe, and pharmacological action due to the presence of menthol. 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.

The antispasmodic properties of oil make it a better choice during pain associated with the menstrual cycle and are also used in the treatment of irritable bowel syndrome. When superficially applied around the head and temple, it has very good action on headache. Further, itching due to various reasons like herpes blisters, ringworm infestation, scabies, poison oak, and ivy can also be relieved. It is observed that it can relieve many bacterial, fungal, and viral infections when inhaled or applied in the form of a vapor balm. Sinus and lung congestion are also known to be cleared from this oil. Much have been said and discussed about the mentha oil by many researchers for its various activities but its use in aroma therapy needs more efforts.\[18, 19\]

2. Lemon

Lemon (Citrus limon Linn.), a evergreen tree in the family Rutaceae, is an important type of citrus tree in Taiwan due to its nutritionally rich juice and uniquely aromatic peels. Its oil constituents are abundant in the terpenes, Hesperidin (3’,5,7-trihydroxy-4’-methoxyflavanone 7-rhamnoglycoside) and diosmin (3’,5,7- trihydroxy-4’-methoxyflavone 7-rutinoside) are flavonoid glycosides and are known to lower hepatotoxicity induced by carbon tetrachloride (CCl4) and lipopolysaccharides (LPS), minimize oxidation stress caused by nicotine, reduce blood sugar and cholesterol, and inhibit carcinogenesis of the bladder.\[20\] Its oil constituents are abundant in the terpenes, D-limonene and Llimonene, together forming about 90 percent of the bulk of the oil. Traces of phellandrene, pinene and sesquiterpene are also present.\[21\] 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.\textsuperscript{[22]} 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.\textsuperscript{[23,24]}

![Figure: Mentha piperita Linn.](image1)

![Figure: Citrus limon Linn.](image2)

3. Geranium

Geranium (Pelargonium graveolens Linn.) belongs to the family of Geraniaceae. 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 non alcoholic beverages. It is an effective insect repellant.\textsuperscript{[23,24]} Moreover; this oil is gaining popularity as antidiabetic, anticancer, antibacterial and antimicrobial agent.\textsuperscript{[25,26]}
4. Eucalyptus

Eucalyptus (Eucalyptus globules) is a diverse genus of flowering tree and shrubs in the myrtle family- Myrtaceae. Nearly all eucalyptus are evergreen, but some tropical species lose their leaves at the end of the dry season. These leaves are covered with oil glands. The leaf oils were found to contain 1, 8-cineole (4.10–50.30%) depending upon maturity and origin of their collection site. Other major components of the leaf oils were α-pinene (0.05–17.85%), p-cymene (trace-27.22%), cryptone (0.00–17.80%) and spathulenol (0.12–17.00%). In contrast, the fruit, bud and branch oils contained α-thujene (0.00%, 11.95% and trace respectively), 1,8-cineole (15.31%, 36.95% and 56.96% respectively) and aromadendrene (23.33%, 16.57% and 8.24% respectively).[27] The cineole based oil is used as component in pharmaceutical preparations to relieve the symptoms of influenza and colds, in products like cough sweets, lozenges, ointments and Inhalants. Eucalyptus oil has antibacterial effect on pathogenic bacteria in the respiratory tract.[28] 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.[29]

5. Palmarosa

Palmarosa (Cymbopogan martini) oil is an Indian grass, which smells sweet and rose like, belonging to the family- Poaceae (Graminae). The main chemical component of Palmarosa oil are- myrcene, linalool, geraniol, giranly acetate, dipentene and limonene.
The therapeutic properties of palmarosa oil are- antiseptic, bactericide, antiviral, cytophylactic, digestive, febrifuge and hydrating. Palmarosa oils claims the mind yet has an uplifting effect, while clearing muddled thinking. It is used to counter physical and nervous exhaustion, stress related problems and nervousness. Palmarosa oil moisturizes the skin, while balancing the hydration levels and stimulating cell regeneration. It balances production of sebum, to keep the skin supple and elastic and is valuable for use with acne, dermatitis, preventing scarring, rejuvenating and regenerating the skin, as well as fighting minor skin infections, sore tired feet and athlete's foot.

6. Rosemary
Rosemary (Rosmarinus officinalis Linn.) belonging to the family of Lamiaceae bears small pale blue flowers in late spring/ early summer and grows up to the height of 90cm. It has three varieties (silver, gold and green stripe); it's the green variety that is used for its medicinal properties. This plant is rich in bitter principle, resin, tannic acid and volatile oil. The active constituents are bornyl acetate, borneol along with other esters and, special camphor similar to that possessed by the myrtle, cineol, pinene and camphene. Its oil has a marked action on the digestive system, with relieving the symptoms of indigestion, constipation and colitis. It works as liver and gallbladder tonic. The oil also possesses some good action on the cardiovascular system. It regularizes the blood pressure and retards the hardening of arteries. In winter, it used to relieve the rheumatic pain which aggravates due to cold. Its stimulating properties on the nervous system have found to be beneficial in hysteria and paralysis. In latest human trials, aromatherapy is an efficacious non-pharmacological therapy for dementia and may have some potential for improving cognitive function, especially in Alzheimer's disease patients, due to its free radical scavenging activity.[30,31]
7. Lavender
Lavender (Lavandula officinalis Chaix.) belonging to the family of Lamiaceae, is a beautiful herb of the garden. It contains camphor, terpinen-4-ol, linalool, linalyl acetate, betaocimene and 1,8-cineole. Its constituent varies in concentration and therapeutic effects with the different species. 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 dysmenorrheal and has shown some promising results in one of the randomized, double-blind clinical trial.

8. 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. 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 trial efforts with a promising result of this plant.
Pharmacological actions of essential oils

Many essential oils were screened for variety of pharmacological potentials. Some of the pharmacological actions of essential oils are discussed below.

1. Anti-oxidant

The essential oil from seeds of Nigella sativa L. is a potent antioxidant in vitro, with effective hydroxyl radical scavenging activity. Kanuka (Kunzea ericoides), Manuka (Leptospermum scoparium) and Leptospermum petersonii possess good antibacterial activity and antioxidant properties. The essential oil from the M. armillaris has marked antioxidant potential; it alters the parameters of superoxide dismutase, improves vitamin E and vitamin C concentrations. The free radicals produced during inflammation, can induce gene mutations and posttranslational modifications of various proteins. If not, remove may turn injurious radicals to the whole system. This mechanism is generally countered by antioxidant properties of compounds. Various plants like Thymus vulgaris, C. limon, E. globules and Cupressus sempervirens have shown their anti-inflammatory effects on animal study.\[39\]

2. Antifungal

Melaleuca alternifolia (tea tree) oil tested positive for its all constituents for in vitro antifungal activity except beta-myrcene. Hammer et al. identified that most of the components of tea tree oil had wide range of fungicidal potential, especially against dermatophytes and filamentous fungi. In one of the reports, the germinated Aspergillus niger conidia was more susceptible to non-germinated one. The essential oils obtained from the fresh leaves of Melaleuca ericifolia (M. ericifolia), Melaleuca armillaris (M. armillaris), Melaleuca leucadendron (M. leucadendron) and Melaleuca styphelioides exhibited good activity against Aspergillus niger.\[40\] Many plants like M. piperita, black mustard (Brassica nigra), Angelica archangelica, Cymbopogon nardus, Skimmia laureola, Artemisia sieberi and Cuminum cyminum have been tested positive for their antifungal activity. They are in the initial phase of clinical trials and if the results are as per the expectation, they will be a very good alternative for existing antifungal drugs which are not frequently used for their toxic systemic effects.\[41\]

3. Antiviral

The antiviral activity evaluated by Deans and Ritchie for the essential oils of M. ericifolia, M. leucadendron, M. armillaris and Melaleuca styphelioides on kidney cells of African green monkey through plaque reduction assay on herpes simplex virus type 1, gave the remarkable
results for M. armillaris (up to 99%) followed by M. leucadendron (92%) and M. ericifolia (91.5%).[42]

4. Anti-inflammatory
Histamine reaction of weal and flare were reduced by tea tree oil in human. The topical applications of 100% tea tree oil are able to reduce the inflammation induced by histamine diphosphate after a period of 10 min. Existing data on various essential oils shows that noncytotoxic concentrations exert an anti-inflammatory action by increasing interleukin-10 production.[43]

5. Anti-lice
Most of the preparation for head lice infestations contains the tea tree oil. The insecticidal activity of tea tree oil is due to its anticholinesterase potential.

6. Spasmodic action
Strong spasmogenic and spasmolytic activity was shown by Kunzea ericoides and Leptospermum scoparium essential oils, respectively and their various extracts when tested on isolated rat ileum. Ferula gummosa is much better in relaxing the contractile Over - activity of the ileum which forms the very basic of gastrointestinal disorders.[44]

7. Hormonal action
Geranial, neral, geraniol, nerol and trans-anethole are well established for their stimulation of estrogenic response, when compared to eugenol which has anti-estrogenic activity. Citra i.e., the combination of geraniol, nerol and eugeno l were effective in replacing [3H] 17b-estradiol from the estrogen receptors in recombinant yeast cells.[45]

8. Anti-tumor
Tea tree oil and terpinen-4-ol both were able to retard the growth of human melanoma M14 WT cells and M14 adriamicin resistant adriamicin resistant cells. This action was linked to apoptosis via caspase dependent mechanism in melanoma cells. 5-Fluorouracil treatment is enhanced in human colon cancer cells if sensitized by geraniol, a component of plant essential oils. Efforts are being made to establish the link between essential oils and their anti-tumor activity. Polypharmacological anti-tumor mode-of-action of essential oils in cardamom has some promising results to substantiate the claims.[46,47]
CONCLUSION
From above reports and study, we can conclude that aromatherapy is natural and noninvasive gift of nature for humans. It's not only the disease symptoms which are eradicated but the whole body is rejuvenated by the use of aroma. Aromatherapy regulates the physiological, spiritual and psychological upliftment for the new phase of life. This therapy is not only preventive but also can be used in the acute and chronic stages of disease. The tilt of the scientific community towards complementary and alternative medicine has given the new hope to reduce the unwanted effects of modern medicine by these essential oils and if properly explored to their full potential, this therapy can be a boon not only to the patients but also to a common man.

CONFLICT OF INTEREST
Authors declare no conflict of interest.

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REFERENCES