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Aromatherapy: A New Pragmatism in Dentistry [Part-1]

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ABSTRACT

One of the most rapidly expanding alternative medicine practises is aromatherapy, which combines massage, counselling, and a pleasant smell with the use of essential oils and aromatic plant compounds. Several clinical studies have already demonstrated the efficacy and usefulness of essential oils. Essential oils can help to reduce the number of pathogens in the mouth and assist in the action of antibiotics and other active components for the treatment of periodontitis, mucositis, and managing dental anxiety. This review will provide an overview of essential oils, including their therapeutic properties and applications.

Key words: Aromatherapy, Jasmine, Rosemary, Sandalwood, Thyme

INTRODUCTION

Aromatherapy derived its name from the word aroma, which means fragrance or smell and therapy which means treatment.^[1] Aromatherapy, referred to as Essential Oil therapy, which can be defined as the art and science of utilizing naturally extracted aromatic essences from plants to balance, harmonize and promote the health of body, mind and spirit.^[2]

It is a type of complementary medicine in which the volatile oil of plants is used to promote the level of

physical, spiritual, psychological, and physiological health. Aromatherapy is used in several forms including massage, inhalation, compresses, baths, or topical application.^[3]

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 distilled from resins.^[1]

On inhalation of scented oils, volatile molecules of the oil reach the lungs and rapidly diffuse into the blood, causing brain activation via systemic circulation.^[4] However, these molecules also bind to olfactory receptors, creating an electrophysiological response which reaches the brain. Neocortex activation is expected to occur by this response, which has an effect on perception of odours and reaches the limbic system regions including amygdale and hypothalamus, the areas where levels of hormone and emotions are controlled.^[5]

History

The Chinese may have been one of the first cultures to use aromatic plants for well-being. Later, the Egyptians

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invented a rudimentary distillation machine that allowed for the crude extraction of cedarwood oil.^[6] 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 recognised as aroma science therapy.^[1]

In the year 1937, Rene Gattefosse coined the term aromatherapy. He did experiments with various oils, and classified them according to their “healing” properties as antitoxic, tonifying, antiseptic, calming and stimulating.^[7]

How Aromatherapy Works

Essential oils are known for their energy specific character, as their potency is not lost with time and age. The mechanism of action of essential oils administered by inhalation involves stimulation of the olfactory receptors’ cells in the nasal epithelium, about 25 million cells, connected to the olfactory bulb. After stimulation, the signal is transmitted to limbic and hypothalamus parts of the brain via olfactory bulb. These signals cause brain to release neuro messengers like serotonin, endorphin etc., to link our nervous and other body systems assuring a desired change and to provide a feeling of relief. Serotonin, endorphin and noradrenalin are released from calming oil, euphoric, and stimulating oil respectively to give expected effect on mind and body.^[1]

1. Sandalwood Oil

Sandalwood is one of the most important plants in Indian culture. It has been used for spiritual, ritual and medicinal purposes, and in perfumes and incense for millennia. It is used to treat common cold, urinary tract infections, liver and gallbladder problems, digestive problems, muscle problems, mental disorders, haemorrhoids, scabies and skin related problems. It is also used in Fragrance and fixative in perfumes, toiletries, cosmetics, soaps, incense.

Table 1: Scientific aspects of Sandalwood oil^[8]

Latin name	<i>Santalum album</i>
Family	Santalaceae

Synonyms	White sandalwood, Mysore sandalwood, Santal, Saunders oil
Other Species	<i>S. spicatum</i> , <i>S. austroclaudonicum</i> , <i>S. ellipticum</i> , <i>S. freycinetianum</i> , <i>S. paniculatum</i> , <i>S. yasi</i> , <i>S. spicatum</i>
Chemical Constituents	alcohomas sanatalols, tricyclocasantalol, borneol 80%; sesquiterpenes as santalene, curcumene, farnesene 10%; traces of monterpene limonene, phenols, ketones as santalone; and other components 7.5%.
Parts used	Heartwood and roots of mature trees: powdered, dried.

Extraction/adulterations^[8]: Water or steam distillation.



Figure 1: Sandalwood oil

Therapeutic actions^[9]:

Hepatoprotective, anti-ulcer, antibacterial, antifungal, antiviral, antioxidant, haemolytic, anticancer, antipyretic, anti-inflammatory, antihyperglycemic and antihyperlipidemic effect.

Applications in Dentistry

- Although it is very mild, this essential oil of Sandalwood has some astringent properties which induce contractions in the gums, muscles, and skin. This proves beneficial in terms of strengthening the hold of gums on the teeth.^[10]
- Through aromatherapy, sandalwood oil is widely used to relieve anxiety, stress, and depression. This oil has neuroleptic, calming, and bronchial dilatation effects.^[11]

Safety/precautions: Non-toxic, non-irritating, non-sensitising.^[8]

2. Thyme Oil:

In 1785 a German apothecary, Neumann, first isolated the essential oil and introduced it as a powerful antiseptic substance Thymol. This was used as a disinfectant in hospitals at least until the First World War. It is used more in pharmaceutical dosage forms because it contains more essential oil. It prevents hardening of the arteries, treatment of toothache, urinary tract infection. It is useful in cases of assorted intestinal infections and infestations, like hookworms, ascarids, bacteria, fungi and yeasts such as *Candida albicans*. It will be used in treatment of cartilaginous tube, bronchial and urinary infections. Thyme is helpful in treatment of laryngitis and inflammation.

Table 2: Scientific aspects of Thyme oil^[8]

Latin name	<i>Thymus vulgaris</i> from the Greek thymbra or thumon through Latin thymum,
Family	Lamiaceae/ Labiatae
Synonyms	Garden thyme, common thyme, red thyme, white thyme
Other species	<i>T.serpyllum</i> , <i>T.zigis</i> , <i>T.vulgaris</i> and <i>T.x citriodorus</i> . ^[12]
Chemical Constituents	Thymol and carvacrol (rich in phenols), linalool, geraniol and thusanol-4-ol (rich in alcohols), α -terpinyl acetate (rich in esters). ^[12]
Parts used	Flowering parts, fresh or partially dried.

Extraction/adulterations: Steam or water distillation.^[8]



Figure 2: Thyme oil

Therapeutic actions^[8]:

- Thymol, is active against Salmonella and Staphylococcus bacteria.
- The antiseptic and tonic properties of Thyme, especially fungal infections as well as an effective remedy for chest infections such as bronchitis, whooping cough, and pleurisy.
- Antispasmodic, bactericides, antiseptics, antioxidants, anthelmintic properties and has lately been recommended as substitute for cancer prevention agent.
- Antimicrobial, astringent, carminative, disinfectant, medicinal drug and tonic.

Applications in Dentistry^[13]:

- Thyme oil exhibits antibacterial activity and has been useful in dental practice.
- A component of thyme, known as thymol, appears to inhibit growth of oral pathogens in the mouth and in combination with other essential oils, may reduce dental caries.
- In patients with orthodontic brackets, a dental varnish containing thymol reduced the proportion of *Streptococcus mutans* in supragingival plaque near the bracket.
- Thymol is one of the essential oils with antibacterial effects found in Listerine.

Safety/Precautions^[8]: Possible skin sensitivity.

3. Jasmine Oil

Jasmine essential oil has a distinctively rich, warm, floral, and sweetly exotic aroma with fruity-tea undertones. The fragrance of the oil sedates the nervous system, and is good for headaches, insomnia, and depression, takes the emotional edge off PMS and menopause. Helps ease muscle cramping, including menstrual cramps when used in a massage oil or lotion. This oil is also used in cosmetics for sensitive or mature and aging skin. Jasmine absolute oil is often used as an aphrodisiac. The luscious fragrance stimulates and intoxicate the senses.

Table 3: Scientific aspects of Jasmine oil^[14]

Latin name	<i>Jasminum officinale</i>
Family	Oleaceae
Synonyms	Summer jasmine, poet's jasmine, white jasmine, true jasmine or jessamine
Other species	<i>J. abyssinicum</i> , <i>J. adenophyllum</i> , <i>J. andamanicum</i> , <i>J. angulare</i> , <i>J. angustifolium</i> , <i>J. auriculatum</i> , <i>J. azoricum</i> , <i>J. beesianum</i> , <i>J. dichotomum</i> and 150 more species.
Chemical Constituents	Alkaloids, coumarins, flavonoids, tannins, terpenoids, glycosides, emodine, leucoanthocyanins, steroids, anthocyanins, phlobatinins, essential oil and saponins.
Parts used	Leaf, flower, root

Extraction/adulteration: Jasmine oil starts its journey as a 'concrete', which is made by solvent extraction, after which an 'absolute' is obtained from the concrete, by separation with alcohol. The essential oil is then produced by steam distillation.

**Figure 3: Jasmine oil**

Therapeutic actions^[8]: Nervine analgesic, sedative, antispasmodic, antidepressant, euphoric, aphrodisiac, antiseptic; balances hormones, galactagogue, parturient; cicatrising, anti-inflammatory, carminative, expectorant; uterine tonic; euphoric.

Application in dentistry:

- Antibacterial activity of Jasmine oil has been previously demonstrated against several types of

oral bacteria (Streptococcus mutans, Staphylococcus aureus, Lactobacillus casei, Klebsiella pneumoniae and Escherichia coli), and fungi (Candida albicans, Candida krusei, and Candida stellatoidea).^[15]

- Results from the study "Anti-Biofilm Formation of Streptococcus mutans by Jasmine Mouthwash" conducted by Thaweboon, S., & Thaweboon, B. (2018) are scientific information to indicate that jasmine mouthwash can be applied as adjunct to mechanical oral biofilm control in dental caries prevention.^[15]

Safety/precautions: Non-toxic, generally non-irritating, non-sensitising, though allergic reactions have occurred in some individuals.^[8]

4. Rosemary Oil:

Rosemary oil is used to season processed foods, but for the most part it is employed in perfumes, in scented soaps, detergents, household sprays and other related technical products. It finds application in denaturing alcohol and is popular in aromatherapy. Rosemary oleoresin is used in the food industry as a natural antioxidant, for instance in cooked meat products. In traditional medicine, Rosemary is thought to fortify the brain and refresh the memory. The volatile oil of Rosemary has been reported to induce hyperglycaemia and to inhibit insulin release in test rabbits. Rosemary possesses strong antioxidant properties.

Table 4: Scientific aspects of Rosemary Oil^[8]

Latin name	<i>Salvia rosmarinus</i> ^[16]
Family	Lamiaceae ^[16]
Synonyms	Common rosemary, Compass plant, Romero
Other species	<i>Rosmarinus officinalis</i> var <i>Cineole</i> , <i>Rosmarinus officinalis</i> var <i>Verbenon</i>
Chemical Constituents	1,8-cineol, camphor, borneol, bornyl acetate, α -pinene as well as β -pinene, linalool, camphene, subinene, myrcene, α -phellandrene, α -terpinene, limonene, p-cymene, terpinolene, thujene, copalene,

	terpinen-4-ol, α -terpineol, caryophyllene, methyl chavicol, thymol, etc [16]
Parts used	Leaves

Extraction: Steam or water distillation, though supercritical fluid extraction using CO₂ as solvent. [16]

Therapeutic uses: carminative; antidepressant, antispasmodic; rubefacient; antimicrobial; emmenagogue; anti-inflammatory; carcinogen blocker and liver detoxifier; antirheumatic; and abortifacient. It has an emerging potential as a source of anticancer molecules and bioavailability enhancer of cancer drugs. [17]



Figure 4: Rosemary oil

Applications in dentistry:

- Rosemary essential oil is a natural disinfectant that can help remove bad oral bacteria that causes cavities, bad breath plaque building, and other minor dental issues. [18]
- Rosemary has the power to inhibit the formation of dental biofilm by reducing the adherence of pathogens to dental surfaces, thereby avoiding the pathologies caused by its formation. [19]

CONCLUSION

Recently, contemporary and alternative medicine approaches such as aromatherapy have been considered in dental settings. This method supports the concept that common oils can produce positive pharmacological, psychological, and physiological effect on humans by its aroma. [3] Assessing the influence of aromatherapy on more complex and

fearful dental procedures including injection of local anaesthesia and drilling is recommended in further studies. [5]

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