

APPLICATIONS OF AROMATHERAPY IN MANAGING DENTAL ANXIETY

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Abstract: Anxiety is a flight or fight response to anticipated threat. Dentists routinely encounter patients with dental anxiety and find difficult to manage such patients. Current allopathic medications used to manage dental anxiety have side effects. Aromatherapy is the use of plant essential oils for therapeutic purposes. These essential oils are applied on skin or inhaled and never to be taken by mouth. It has been found that aroma of lavender reduces current state anxiety. This is attributed to the ability of lavender to promote relaxation through autonomous nervous system. It has been suggested that essential oils like lavender act like agonists of gamma aminobutyric acid (GABA). GABA has inhibitory effects of nervous system. Also, it is thought to reduce the activity of cyclic adenosine monophosphate (cAMP). Cypress, basil, jasmine, chamomile, juniper, rose, ylang ylang, neroli, marjoram, geranium, and clary sage aromas are also of benefit to reduce patient's anxiety. Aromatherapy has been observed to reduce anxiety in dental office. The current article discusses the application of aromatherapy in managing dental anxiety to inculcate and develop research in this rewarding field.

Keywords: Anxiety, Aromatherapy, Dental, Essential oil.

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Aromatherapy is a traditional complementary therapy which uses concentrated essential or volatile oils extracted from herbs, flowers, roots, barks, leaves, stems, and other parts of plants to treat various diseases [1,2]. Essential oils for aromatherapy are also extracted by distillation from resins [1]. Aspects of aromatherapy in managing dental anxiety is briefly discussed here.

Dental anxiety is “*abnormal fear or dread of visiting the dentist for preventive care or therapy and unwarranted anxiety over dental procedures*” [3]. Dental anxiety is a barrier to provide or avail oral health care services, thus negatively impacting oral health.

Aromatherapy is utilizing essential oils of aromatic plants for therapeutic purposes.[4] Aromatherapy has the capacity to change the state of mind in dental setting [5]. Unlike pharmacotherapy, there are no side effects associated with aromatherapy [6]. Use of aromatics of lavender and orange reduces the anxiety in patients waiting for dental treatment, enhances the mood and calms the mind.[7]

A study found that aroma of Lavender (**Figure 1**) reduces current state anxiety, but does

not have effect on future anxiety provoking thoughts. They attributed to the ability of lavender to promote relaxation through autonomous nervous system [3,4]. It has been suggested that essential oils like lavender act like agonists of gamma aminobutyric acid (GABA). GABA has inhibitory effects of nervous system [6]. Also, it is thought to reduce the activity of cyclic adenosine monophosphate (cAMP) [4].

Cypress, basil, jasmine, chamomile, juniper, rose, ylang ylang, neroli, marjoram, geranium, and clary sage aromas (**Figure 2-12**) are also of benefit to reduce patient's anxiety [8]. Aromatherapy with orange essential oil has been observed to reduce pulse rate and salivary cortisol in children aged 6-9 years.[9] A drop of essential oil can be put into patients drape and mask or can be diffused throughout the dental operatory environment through room diffuser.

1. Lavender The genus *Lavandula* grows in regions surrounding the Mediterranean Sea, southern Europe, northern. eastern Africa, Middle Eastern countries, southwest Asia and southeast India. Four main categories of Lavender are *L. angustifolia*, *L. stoechas*, *L. latifolia* and *L. intermedia*[10].

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Predominant ingredients of lavender are linalool, linalyl acetate, 1,8-cineole *B*-ocimene, terpinen-4 ol, and camphor. Lavender oil is derived from flowers of *Lavandula angustifolia*. [10] Aromatherapy utilizes whole lavender oil or its main constituents like linalool and linalyl acetate. Undiluted lavender oil is often applied to the skin. Lavender has anxiolytic, sedative, calming, anticonvulsant and antidepressive, properties. It is also observed beneficial to alleviate pain and tremors. [10] Lavender has antibacterial and antifungal properties and is reported in literature to be useful in skin problems, boosting immune system, in management of burns, abrasion, migraine headaches, stress, painful muscles, dysmenorrhea, to reduce blood pressure and heart rate in open heart surgery patients in ICU. [1,11-12] Recent research has substantiated that inhalation of lavender essence decreases both cortisol level and anxiety levels in open-heart surgery patients. [13] Inhalation of 2% Lavender essential oil also increases the quality of sleep in patients with coronary artery disease. [14]

2. Hinoki cypress (*Chamaecyparis obtusa*) is a coniferous tree that grows in Japan. Its main constituents are sabinene and d-limonene. d-limonene enhances parasympathetic nervous activity and decreases heart rate. Hinoki cypress has been found to reduce oxyhemoglobin (oxy-Hb) concentrations in the prefrontal cortex. It induces natural killer cell activity. Also, it reduces adrenaline and non adrenaline concentrations of urine. Hinoki cypress leaf oil or its extraction has antifungal, antibacterial, insecticidal activity and inhibits food borne pathogens. Ikei H et al., observed that olfactory stimulation by Hinoki cypress leaf oil resulted in significant reduction in oxy-Hb concentration in the right prefrontal cortex and increased parasympathetic nervous activity. Also, study subjects felt more comfortable than controls. The authors suggested that lower concentrations of Hinoki cypress leaf oil may result in more relaxation to subjects. [15]

3. Basil (*Ocimum basilicum*) belongs to family Lamiaceae. It is known as “king of herbs”. Basil essential oil has antifungal and insect-repelling properties. [16] Basil essential oil has been observed useful in acute and chronic inflammatory conditions in *in vivo* mouse model. Hydroalcoholic extract and essential oil of *O. basilicum* has anxiolytic and sedative effects due to presence of phenol and terpenoid components. [17] Main components of essential oil of *O. basilicum* are methyl chavicol, geranial, neral, and β caryophyllene. [17]

4. Jasmine belongs to genus of shrubs and vines in *Oleaceae* family. The flowers are white or yellow in color. [18] *Jasminum officinale* grows in India, Nepal, Pakistan, Western China and Northern Iran. The essential oil of *Jasminum officinale* is used in aromatherapy. Jasmine oil is sweet scented, inexpensive, calming and soothing. [19]

5. Chamomile belongs to *Asteraceae/Compositae* family. Two common forms are *Chamomilla recutita* and *Chamaemelum nobile*. Chamomile essential oil is used in aromatherapy and cosmetics for its anxiolytic properties. [1,20] Chamomile has some anxiolytic properties and can be helpful in patients with generalized anxiety disorders. Dry Chamomile flowers contain flavonoids and terpenoids conferring them medicinal properties. Chamomile preparations are used in several human diseases such as insomnia, rheumatic fever, inflammation, ulcers, wounds, muscle spasms and inflammation. [20]

6. Juniper is a coniferous plant belonging to family Cupressaceae. [21] Essential oils of berries of *Juniperus communis* L has been traditionally utilized for medicinal purposes. [22] Juniper essential oil is known have calming effects and is helpful to relieve stress and anxiety. It is also useful for skin problems, arthritis, and general infections. [23]

7. Rose is a perennial flowering plant belonging to family *Rosaceae*. It is widely native to Asia. [24] Rose oil is helpful to relieve stress, anxiety, eczema and insomnia. [25] Rose essential oil is derived from *Rosa damascena*. [26] it has soothing, anxiolytic and relaxing effect. [26]

8. Ylang-ylang is a small tree belonging to family *Annonaceae*. It is native to Indonesia, Philippines and Madagascar. It retards heart beat and rapid breathing. It has euphoric properties and relieves anxiety, stress and depression. [1]

9. Neroli essential oil is derived from *Citrus aurantium* var. *amara* L. It has anxiolytic and sedative effects. It has been observed to be effective to reduce anxiety in post cardiac surgery patients. [26]

10. Marjoram is derived from leaves and flowers of *Origanum majorana* L. It possesses anxiolytic, comforting, and sedating properties. [26]

11. Geranium belongs to family Geraniaceae. *Pelargonium graveolens* L' Herit is perennial shrub native to South Africa. It is used in aromatherapy to control emotions. It has been observed to be useful in managing stress, anxiety, pain, fungal infections, eczema, dermatitis, diabetes and cancer [1].



Fig. 1 Lavender



Fig. 2 Cypress



Fig. 3 Basil leaves



Fig 4 Jasmine



Fig.5 Chamomile



Fig. 6 Juniper



Fig. 7 Rose



Fig.8 Ylang-ylang



Fig.9 Neroli



Fig.10 Marjoram

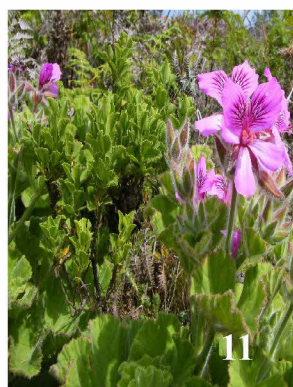


Fig.11 Geranium



Fig.12 Clary sage

12. Clary sage belongs to family Lamiaceae. Clary sage essential oil is derived from purple tinted hairy green leaves of *Salvia sclarea* Linn. It has seductive and aphrodisiac activities and is useful in managing muscle cramps [1]. It is also helpful in managing anxiety, fear, delusions and paranoia [26].

Aromatherapy has potential beneficial effects in reducing dental anxiety and should find applications in regular dental practice.

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Figure sources:

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