

TITLE: ESSENTIAL OIL IN THE MANAGEMENT OF PERIODONTAL DISEASE

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ABSTRACT:

Periodontal diseases are the most common infectious diseases that lead to the devastation of periodontal tissues. Bacteria isolated from periodontal lesions are found to be anaerobic bacteria, which have been shown to be related to the onset and progression of periodontal disease. Given the incidence of periodontitis, increased resistance of oral bacteria to antibiotics and adverse effects of some antibacterial agents currently used in dentistry, there is a need for alternate products that are safe and effective, for prevention and treatment of these diseases. Essential oils considered traditional medicines are viewed as good choice of alternative. For these reasons, the search of a new natural agent has become a necessity. In this qualitative systematic review, 3 essential oils have been described which reduce the virulence of increased antibiotic resistant pathogens, involved in periodontitis, and justifying the use of the essential oils in this treatment. Studies that have investigated the efficacy of such plant-derived natural medicines on periodontal pathogens will be described and discussed.

KEY WORDS: Thyme oil, geranium oil, spearmint oil, periodontal diseases, essential oil.

Introduction:

The basic goal of dental treatment is to protect and maintain healthy tooth structures. One of the major diseases affecting the oral health is periodontal diseases. Gingivitis and periodontitis are two forms of periodontal disease. The symptoms of the disease start with inflammation of the gingival tissue in the form of gingivitis and continue to involve supporting structures around the teeth in the form of periodontitis (1). Inflammation is a double-edged blade; on one side, it causes damage to tissues and on the other side it stimulates cells to restore lost structures. The accumulation of the bacterial plaque starts the periodontal disease, and host-defense responses follows the process of the disease (2). To eliminate the periodontopathicsubgingivalmicroflora various therapeutic methods including surgical and non-surgical techniques have been introduced (3). Goldenseal, a member of the buttercup family, contains an alkaloid called berberine. It has the ability to kill bacteria that becomes trapped in deep pockets between the gums and teeth.

Other herbal teas that can help promote healing include chamomile, calendula, echinacea, gotu kola, hawthorn, thyme and rose hips. Other Herbal Remedies for Periodontal Disease

- For swollen and bleeding gums, massage myrrh oil on the affected area.
- To relieve pain, massage clove oil on your gums.
- To fight bacteria, add 1 drop of grapefruit seed extract or two drops of tea tree oil to your toothpaste.
- To stop bleeding, chew on tender guava leaves.

Herbal remedies for periodontal disease can be beneficial in the treatment for both gingivitis and periodontitis, but it is also important to visit a dentist and maintain proper oral hygiene to help in the healing process (4).The ingredients in essential oil have been extensively researched and have the ability to work in 4 distinct, yet synergistic ways: 1) antimicrobial, 2) tissue conditioning, 3) connective tissue rebuilding, and 4) anti-halitosis (5).



Severe periodontal inflammation

Essential oils:

An essential oil is a concentrated hydrophobic liquid containing volatile aroma compounds from plants. Essential oils are also known as volatile oils, ethereal oils, aetherolea, or simply as the "oil of" the plant from which they were extracted, such as oil of clove. An oil is "essential" in the sense that it carries a distinctive scent, or essence, of the plant. Essential oils do not form a distinctive category for any medical, pharmacological, or culinary purpose. They are not essential for health. Essential oils are generally extracted by distillation, often by using steam. Essential oils have been used medicinally in history (7 & 8).

Essential oils are useful for applying to the area of gum infection or simply adding to a glass of water to be used as mouthwash. They can dramatically affect your healing process when suffering from periodontitis and be a tremendous benefit when added into your normal oral care routine.

Essential oils that have a significant effect on periodontitis symptoms include examples such as: Eucalyptol, Peppermint, Menthol, Almond, Spearmint, Lemon, Geranium, Thyme, Marigold and Bloodroot

Essential oils should be used according to directions and sparingly, so as not to accidentally use too much. Typically you can add one or two drops of the oil to your toothbrush and brush in the affected area or apply it with a cotton swab.

An EO mouth rinse does not induce mucosal drying or aberration. Evidence supports that long-term use of CHG, CPC, or EO does not contribute to soft tissue lesions or mucosal aberrations. This includes effects on salivary flow, taste, tooth deposits, and dental restorations (11).

Essential oils are added in both toothpaste and mouthwash. Toothpaste is more effective than mouthwash (13).

THYME OIL:(12)



Botanical name: *Thymus vulgaris*, *Thymus zygis*.

Part of plant used: flowering herb, leaves and flowering top.

General Uses: Orally, thyme is used for bronchitis, pertussis, sore throat, colic, arthritis, dyspepsia, gastritis, diarrhea, enuresis, dyspraxia, flatulence, skin disorders, as a diuretic, urinary disinfectant, anthelmintic, and as an appetite stimulant. Topically, thyme is used for laryngitis, tonsillitis, stomatitis, and halitosis. Thyme oil is used topically as a counterirritant, an antiseptic in mouthwashes and liniments, and for alopecia areata. Thymol, a constituent of thyme, is used with chlorhexidine as a dental varnish to prevent caries. Optically, thyme oil is used as an antibacterial and antifungal ingredient. In foods, thyme is used as a flavoring agent. In manufacturing, red thyme oil is used in perfumes. It is also used in soaps, cosmetics, and toothpastes (12).

Specific uses in dentistry:

- ❖ Thyme oil is used as a germ-killer in mouthwashes and liniments.
- ❖ Thymol, one of the chemicals in thyme, is used with another chemical, chlorhexidine, as a dental varnish to prevent tooth decay.
- ❖ In manufacturing, red thyme oil is used in toothpastes.
- ❖ In addition, according to a study by Meeker and Linke, microorganisms do not appear to develop tolerance or resistance to the antibacterial effects of essential oils such as clove oil (eugenol) and thyme oil (thymol) (6).
- ❖ An essential oils mouthwash has also been shown to have good reduction of plaque and inflammation, but without the side effects of chlorhexidine (13).

GERANIUM OIL: (12)



Botanical name: *Pelargonium graveolens* - Geraniaceae

Part of plant used: leaves and green branches

General uses:

Geranium is an adaptogen, which has the ability to sedate or stimulate as required. It can relax the mind, calm agitation and ease frustration and irritability. The calm strength and security arising from its use makes it ideal in cases of chronic anxiety and Nervous system exhaustion. It is also believed to possess aphrodisiac qualities, a reflection perhaps of its sensual, liberating nature. It has a particular affinity with the female psyche. The antifungal vapours of Bourbon geranium oil were tested against airborne fungal spores: the vapours had a significant fungistatic action, which leads to the possibility that repeated applications could help to reduce the proliferation of allergenic moulds in homes. The wound healing ability of geranium is largely due to its powerful antimicrobial activity, however one study of 16 different samples of oil found the activity to be variable amongst the samples, thought to be as a result of the different compositions of the oils. Despite this variability, the activity against a range of bacteria and fungi was described as good. The insecticidal properties of geranium oil

are well documented. Adaptogenic, antidepressant, antifungal, anti-inflammatory, astringent, cicatrissant, hormone balancer, lymphatic decongestant, analgesic, antimicrobial, diuretic, haemostatic, insect repellent, sedative, soothing, general tonic, vulnerary, these are the properties of geranium (12).

Specific uses in dentistry:

- ❖ Geranium oil has an anti-inflammatory property which is used in case of gingivitis.
- ❖ It also acts as an astringent.
- ❖ It has an antimicrobial activity which helps in eliminating microbes in the oral cavity.
- ❖ Good reduction of plaque and inflammation, but without any side effects is seen (13 & 14).

SPEARMINT OIL:(12)



Botanical Name: *Mentha spicata* L. **Common Name:** Spearmint

Plant Part: Flowering tops

General uses:

This oil works well as an antiseptic for wounds and ulcers, protecting them from becoming septic or developing other infections, while also helping them to heal faster. These antiseptic properties are due to the presence of components like Menthol, Myrcene and Caryophyllene. Antispasmodic property of spearmint has a relaxing and cooling effect on the nerves and muscles, and helps to relax contractions in the case of spasms. Therefore, it is frequently prescribed to provide effective relief from spasmodic coughs, aches, pulling sensations and aches in the abdominal region and intestines. This includes its ability to soothe muscle strains or cramps, nervous convulsions, and even spasmodic cholera. The antibacterial, antifungal and antiviral properties of Essential Oil of Spearmint make it a disinfectant. It can help get rid of both internal and external

infections. Oil of Spearmint induces relaxation in the intestines and muscles of the abdominal region. This oil has a relaxing and cooling effect on the brain, which removes stress on our cognitive center. Problems with menstruation, such as irregular periods, obstructed menses and early menopause can be solved with the help of this essential oil. The Essential Oil of Spearmint can help treat asthma and congestion due to its decongestant properties. It also relieves fevers, excess flatulence, constipation, sinusitis, acne, gum and teeth problems, migraines, stress and depression. Being far lower in menthol content, it can be safely given to children to relieve their various ailments (12).

Specific uses in dentistry:

- ❖ Antibacterial, antifungal and antiviral properties of spearmint oil make it a disinfectant.
- ❖ An essential oils mouthwash has also been shown to have good reduction of plaque and inflammation, but without the side effects of chlorhexidine (13).
- ❖ There is no long-term effect on the commensal flora and the microflora does not seem to become resistant to them. In both toothpastes, where it is particularly effective, and mouthwashes, where it has been less effective (13, 14 & 15).

CONCLUSION:

The treatment of periodontal disease is multifarious, requiring therapy on many different levels. This care is generally initiated in a clinical setting and is a critical beginning to commencing a baseline for health. While this step is crucial, the long-term care of the periodontium can only be accomplished by the patient in the form of at-home care. This is done by using the appropriate home care products in the form of mechanical aids and therapeutic agents in a regular, disciplined manner. Two essential criteria for any product are safety and efficacy. As discussed, the use of pure essential oils and herbal extracts in an exacting combination has been proven to accomplish these goals in a safe, simple, and highly effective manner.

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