

Treating Periodontitis - The Green Way

Abstract

Periodontal diseases are universal and have been known to affect mankind since the beginning of the recorded history. There are many natural ways to treat periodontal disease some of which even help in preventing it from occurring. There are a number of herbs that can help eliminate inflammation and infection associated with periodontal diseases. Proper oral hygiene, of course, goes a long way in treating and preventing periodontal disease. This review article mainly focuses on the possible anti-bacterial, anti-inflammatory, anti-collagenolytic and anti-oxidant effects of herbs on the gingiva and the periodontium.

Key Words

Herbs; periodontitis; ayurveda; gingivitis, plaque

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INTRODUCTION

Periodontal disease is one of the most common afflictions faced by the human beings. A disease affecting more than 30% of the human race, very few people escape its' ravages. Gingival bleeding, spacing of teeth, suppuration, progressive loss of alveolar bone support and ultimate loss of tooth or more often many teeth are the hallmarks of periodontitis. Certainly of microbial etiology the exact etiology of periodontal disease is still an enigma. Multifactorial in origin, chronic and insidious in nature with a mixture of genetic and oral hygiene factors, periodontitis is still a complex phenomenon.^[1] Plants have played an important role in the treatment of many diseases. Drugs, which are of plant origin and used to treat diseases to attain or maintain the condition of improved health are known as Herbal drugs.^[2,3] Traditional medicine has its roots, grounded deep in India and is being used here since times immemorial. Ayurveda medicine (Ayurveda = the science of life) is a system native to the Indian subcontinent and a form of alternative medicine. It has also attracted much attention in developed countries such as Europe, United States and Japan.^[4,5] These herbs are not only used for the treatment of systemic diseases, but the natural phytochemicals in them offer an effective

alternative to antibiotics and represent a promising approach in the prevention and therapeutic strategies for oral infections too.^[6] There are many natural ways to treat periodontal disease some of which even help in preventing it from occurring. There are a number of herbs that can help eliminate inflammation and infection associated with periodontal diseases. Proper oral hygiene, of course, goes a long way in treating and preventing periodontal disease. This review article mainly focuses on the possible anti-bacterial, anti-inflammatory, anti-collagenolytic and anti-oxidant effects of herbs on the gingiva and the periodontium.

Nutmeg (*Myristica fragrans*)

Nutmeg possesses medicinal properties that are anti-bacterial, anti-inflammatory, anti-oxidant and anti-collagenolytic in effect. These are the properties that are required for a successful treatment of periodontitis. Nutmeg, in proper doses therefore, can be used as an adjunctive treatment of periodontitis.^[7]

Neem (*Azadirachta indica*)

Neem leaves have been used in the treatment of gingivitis and periodontitis since a long time. Its anti-inflammatory action can be attributed to its ability to inhibit prostaglandin E and 5 HT and its

antibacterial action can be explained by “Azadiachtin” that is known to destroy bacterial cell wall and thus inevitably inhibit the growth of bacteria. In a study efficacy of neem based mouth rinse was checked where significant reduction of gingival, bleeding, and plaque indices was found in 21 days.^[8]

Meswak (*Salvadora persica*)

The most common type of chewing stick, Meswak, is derived from Arak tree (*Salvadora persica*) that grows mainly in Saudi Arabia and also in other parts of the Middle East. Meswak is a chewing stick used by many people of different cultures and in many developing countries as a traditional toothbrush for oral hygiene. The Meswak extract has also found its way into the dentifrices in the recent years as antiplaque and antigingivitis agents.^[9]

Curry leaf (*Murraya koenigii*)

This is a green leafy vegetable grown all over India and other countries for its aromatic leaves, used daily as an ingredient in Indian cuisine. The fresh curry leaves contain 2.65 volatile essential oils such as sesquiterpenes and monoterpenes, which have broad antimicrobial effects on *S. mutans*, *Streptococcus sanguinis*. It also contains chlorophyll that is proposed as an anticariogenic agent and also helps to reduce halitosis.^[10]

Eucalyptus (*Globulus labill*)

Eucalyptus essence has antimicrobial activity against some microorganisms such as *Vibrio cholerae*, *Aspergillus flavus* and *S. aureus*. The results of studies indicated that eucalyptus extract could prevent tooth decay through inhibition of biofilm formation of plaques. It has also been reported that chewing gum containing eucalyptus extract improves gingival health, decreases bleeding during probing, and reduces periodontal diseases.^[11]

Tulsi (*Ocimum sanctum*)

Tulsi has an antimicrobial property against a variety of microbes like *C. albicans*, *Staphylococcus aureus*, *Escherichia coli* by its phytoconstituents isolated from various parts of plant include eugenol, palmitric acid, vallinin, galic acid, Vitamin A, Vitamin C which are responsible for preventing dental cavities, gingivitis, periodontitis, halitosis. It mouth ulcers and can help inhibit the growth of oral cancer. Hence, it is termed as the “Queen of Herbs”.^[12]

Clove (*Trifolium*)

The germicidal properties of the oil make it very effective for relieving toothache, sore gums and

mouth ulcers. Clove oil contains the compound eugenol, which has been used in dentistry for many years. Gargling with diluted clove oil helps in easing throat pain and irritation. The characteristic smell of clove oil also helps to eliminate bad breath.^[13]

Triphalā (*Three fruits*)

The free radical scavenging property and the antimicrobial activity of Triphalā, an herbal product, which was made from equal proportions of *Terminalia chebula*, *Terminalia bellirica* and *Embllica officinalis*, have been evaluated. This herbal extract effectively inhibited bio-film formation and the better antioxidant activity, which is exhibited by this extract, could protect the gum cells effectively from free radicals than the commercial toothpastes as an effective antiplaque agent.^[14]

Turmeric (*Curcuma longa*)

Turmeric, possesses anti-inflammatory, antioxidant, and antimicrobial properties, along with its hepatoprotective, immunostimulant, antiseptic, antimutagenic, and many more properties. It is for this reason that the promotion of turmeric in dental terrain would prove beneficial. Thus, the efficacy of 0.1% turmeric mouthwash as an antiplaque agent and its effect on gingival inflammation was done and it was found that it could be effectively used as an adjunct to mechanical plaque control in prevention of plaque and gingivitis.^[15]

Ginger (*Zingiber officinale*)

Ginger contains constituents with pharmacological properties similar to the novel class of dual-acting non-steroidal anti-inflammatory drugs (NSAIDs). Compounds in this class inhibit arachidonic acid metabolism via the cyclooxygenase and lipoxygenase pathways. These compounds have notably fewer side effects than conventional NSAIDs and now are being investigated as a novel class of anti-inflammatory compounds.^[16]

Cinnamon (*Cinnamomum Zeylanicum*)

Cinnamon oil shows stronger inhibitory activity as measured by minimum inhibitory concentration determination. *Streptococcus mutans*, the etiological agents of dental caries, are highly sensitive to Cinnamon oil and hence it may be used as an antiseptic in toothpaste, mouthwash or chewing gum for prevention of dental caries and other oral infections.^[17]

Tea tree oil (*Melaleuca alternifolia*)

The local delivery of tea tree oil (TTO) gel in case

of chronic periodontitis may have some beneficial effects to augment the results of the conventional periodontal therapy. Moreover, it places a focus on the value of monitoring gingival crevicular fluid levels of pentraxin-3 (PTX3) as a marker of periodontal tissue healing. There is effectiveness of adjunctive treatment of TTO on the clinical parameters and the level of PTX3 in chronic periodontitis.^[18]

Aloe vera (*Aloe Barbadensis Miller*)

The low plaque index (PI) observed in these subjects could be explained by the fact that Aloe vera has shown its antibacterial properties due to the plant's natural Anthraquinones. Results showed improvement of periodontal condition and can be used as a local drug delivery system in periodontal pockets.^[19,20]

Lippia sidoid (*Pepper-rosmarin*)

Studies have indicated that the major components of Lippia sidoides essential oil exhibit potent antimicrobial activity against oral pathogens and reduce the severity of gingivitis, dental plaque and histological inflammatory infiltrate. A significant reduction on plaque and gingivitis has also been found. Thus, the gel preparation containing 10% L. sidoides essential oil has been found to be an efficient herbal antiplaque and antigingivitis agent.^[21]

Frankincense (*Boswellia sacra*)

Frankincense, a resin-like extract of Bowsellia species. The effect of Frankincense powder or extract in the treatment of gingivitis was studied by various authors and was found that administration of 0.1 g of Frankincense extract or 0.2 g of its powder led to a significant decrease in various gingival and plaque scores due to its anti-inflammatory and antibacterial effects.^[22]

Septilin-herbal immune modulators

Host modulation is a fast gaining popularity as a preferred therapeutic modality for periodontal disease. Recent research in herbal immune modulators such as Septilin® has spurred an interest in evaluating its efficacy in periodontitis.^[23]

Berberis vulgaris (*European barberry*)

Berberine is an alkaloid agent extracted from the root and stem of the plant barberry. A study indicated that the barberry dental gel effectively controls microbial plaque and gingivitis in the school-aged children and has reduced Plaque Index scores by 56%.^[24]

CONCLUSION

Herbal remedies are expected to be a widely used in

future. The herbal remedies have an edge over conventional antibiotic treatment which suffer the limitation of low benefit to high risk as compared to herbal treatment which possess high benefit to low risk ratio. Standardization and quality assurance of these herbal remedies is also a key area to be focused in future and efforts have been initialized towards this target. There are much more opportunities for further research in the utility of herbal remedies for periodontal diseases. More organized and long-term research is to be carried out to support the use of established remedies. Development of novel drug delivery systems for these herbal ingredients is likely to be one of the thrust areas of research in future.

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