

Role of Herbal Medicine in Periodontics- A Review

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ABSTRACT

Herbal medicines have long been used as a traditional mode of therapy for various ailments. They are being used increasingly as dietary supplements to ward off common diseases. Periodontal diseases are highly prevalent and can affect up to 90% of the world population. Gingivitis is the mild form whereas periodontitis results in an irreversible loss of supporting structures of the teeth. Over the last decade, herbal and Ayurvedic drugs has become a subject of world importance, as they possess both medicinal and economic implications. Herbal excipients are non-toxic and compatible; they have a major role to play in pharmaceutical formulation. Herbal medicines have been widely used all over the world since ancient times and have been recognized by physicians and patients for their better therapeutic value as they have fewer adverse effects as compared to modern medicines. The aim of the present article is to present review of the current strategies adopted for the formulation and application of traditional herbal remedies.

Keywords: Herbal medicine, periodontal diseases, dental caries, medicinal plants

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INTRODUCTION

Periodontal disease is major public health problem in the world and is most common cause of tooth loss in population. Periodontal disease is a general term used to describe various pathological conditions which affects the supporting tissues of dentition. Scaling root planing and periodontal surgery are aimed at improving clinical conditions by lowering microbiota either by physical removal of plaque or by alteration of the sub gingival microbiota habitat¹. Subgingival habitat alteration is achieved by administration of antimicrobial systemically or locally which directly targets sub-gingival organisms residing in the biofilm. Also, laser therapies are known to control the periodontal diseases successfully. Many soft tissue lasers are used as a method of altering the gingival inflammatory status².

Herbal medicines, including herbs, herbal preparations and finished herbal products, contain as active ingredients parts of plants or other plant materials perceived to have therapeutic benefits. A wide range of anti-microbial agents have been evolved in recent years. Deployment of natural substances for use in dentistry is gaining momentum. Medicinal and ayurvedic herbs are part and parcel of humans since the dawn of civilization. The screening of these herbs extracts and plant products for antimicrobial activity has shown that plants represent a new potential source of anti-infective agents³. In Mexico, the Aztec and Mayan cultures developed many uses for medicinal plants. The Spaniards introduced new products from the Old World to Mexico and combined with native methods, thus enriched the natural medicine arsenal. The effectiveness and possible application of numerous medicinal plants has not yet been studied with respect to dentistry. With regard

to oral or dental treatments, the Mayans used quartz powder as an abrasive to clean out carious cavities before sealing them with a powder mixture that had a high resistance to mastication. For the treatment of the dental pain, they used the root of Chicalote (*Argemone Mexicana* L. [Papaveraceae]) as a reliable anaesthetic. Herbal products are preferred over prescription medications for treating certain illnesses because of their lower cost or because people may believe the herbs to be less toxic, given that they are natural⁴.

BENEFITS OF HERBAL DRUGS

Herbal drugs have long era of use and good patient tolerance as well as better public acceptance. The most common oral diseases are caries and periodontal disease. However, dental services in rural areas are very expensive and do not represent a primary health concern for rural people, who prefer to use alternative medicine for this common but simple oral disease. The method of preparation of medicinal plants varies depending on the kind of plant, as well as the portions used (stems, leaves, and roots), route of administration (local, topical, and rinse), and time of ingestion. In some areas, people who have dental pain prepare fillings from a plant or chew the bark of multiple trees to treat inflammation, as well as use plant extracts as mouthwashes or teas⁵.

Advantages of Herbal therapy:

Herbal therapy can offer many possible advantages. Some plants have been shown to be more effective than drugs at repairing the overall body due to the synergy of their active ingredients to have preventive effects, stimulate the regulatory action of the defensive functions of the body, and prepare for possible activity against external agents.

Side effects are often minor and therapeutic effects are more long lasting because of better tolerance and versatility. Unlike drugs that are prescribed for a specific

condition, the herbal therapy may act on different targets simultaneously or acts a co-treatment with conventional medications^{1,6}.

Plants used in the treatment of the oral disease according to experimental evidence

Role of turmeric (*Curcuma longa*) in the management of periodontal disease:

Massaging the teeth with roasted ground turmeric eliminates pain and swelling. A study concluded that chlorhexidine gluconate as well as turmeric mouthwash can be effectively used as an adjunct to mechanical plaque control methods in prevention of plaque accumulation and gingivitis. The effect of turmeric observed is because of its anti-inflammatory properties. Reduction in total microbial count was observed in both the groups. It is reported that the local drug delivery system containing 2% whole turmeric gel can be used as an adjunct to scale and root planing. There was a significant reduction in the trypsin-like enzyme activity of "red complex" species⁷. In one of the studies, it was seen that+ 1% curcumin solution can cause better resolution of inflammatory signs than chlorhexidine and saline irrigation as a subgingival irrigant. Mean Probing pocket depth reduction was significantly greater for the curcumin group than all other groups on all post-treatment days⁸.

Role of Neem (*Azadirachta indica*) in management of periodontal disease:

The ancient Ayurvedic practice of using Neem plant parts to heal and rejuvenate gum tissue and to prevent dental caries and gum disease is verified in modern clinical studies. Some of the observed anti-plaque activity of neem chewing sticks is attributed to the fibrous nature of sticks resulting in mechanical plaque removal however neem plant also contains chemotherapeutic antiplaque agents⁹. The presence of Gallo tannins during the early stages of plaque formation could effectively reduce the number of pathogenic microbes from binding to the tooth surface by increasing their physical removal from the oral cavity through aggregate formation. Additionally, the effective inhibition of glucosyl transferase activity and the reduced bacterial adhesion as seen with the presence of gallotannin extracts suggest some potential anti-plaque activity. The microorganisms found in inflamed gums are resistant to penicillin and tetracycline but are not resistant to antibacterial plant extracts like neem. Unlike antibiotics antibacterial plant extracts produced no allergy in the gingiva that could inhibit their effectiveness^{10,11}.

Role of Tulsi (*Ocimum sanctum*) in the management of periodontal disease:

Tulsi leaves are quite effective in treating common oral infections. Also, few leaves when chewed raw help in maintaining oral hygiene. Carracrol and Tetpene are the antibacterial agents present in this plant. Sesquiterpene b caryophyllene also serves as the antibacterial agents. This constituent is FDA approved food additive which is naturally present in Tulsi. Tulsi leaves which are dried in sun and powdered can be used for brushing teeth. It can also be mixed with mustard oil to make a paste and used as toothpaste. Tulsi has also proven to be effective in counteracting halitosis. Its anti-inflammatory property makes it a suitable remedy for gingivitis and periodontitis, and it can be used for massaging the gingiva in these periodontal conditions. Tulsi contains vitamin A and vitamin C, calcium, zinc and other metals. It also has chlorophyll and many other phytonutrients. Deficiency of these nutrient has been associated with variety of oral diseases^{1,12}.

Role of Pomegranate (*Punica granatum*) in the management of periodontal disease:

Research showed that pomegranate extract was more effective against the adherence of biofilm species than a pharmaceutical antifungal when three or four microorganisms were involved. Investigators noted that pomegranate active components including polyphenolic flavonoids (e.g., punicalagins and ellagic acid), are believed to prevent gingivitis through a number of mechanisms including reduction of oxidative stress in the oral cavity, direct antioxidant activity, antiinflammatory effects, antibacterial activity, and direct removal of plaque from the teeth. In a study evaluating the effects of pomegranate on gingivitis results showed a significant reduction in gingival bleeding after using a dentifrice containing the pomegranate extract. Rinsing with Pomegranate extract also lowered saliva activities of alpha glucosidase, an enzyme that breaks down sucrose (sugar), while it increased activities of ceruloplasmin, an antioxidant enzyme¹³. "The pomegranate extract induced increase in ceruloplasmin activity can be expected to strengthen antioxidant defences," was noted by some investigators¹⁴.

CONCLUSION

Herbal and ayurvedic drugs have been widely acclaimed worldwide since several years in terms of both medicinal and economic implications. Herbal extracts in the form of dentifrice, medicated gel, ointment, solution etc. have been proved effective in preventing and treating periodontal disease. Thus, this review on herbal approaches in periodontics is useful for dentists, healthcare professionals and general public in terms of prevention, treatment and maintenance of various periodontal and dental diseases. Dentistry is seeking novel and effective alternative healing techniques. One possible approach is to review historical data and evaluate how people of the past cured oral disease. Through such review and analysis, new horizons in dentistry and other fields of medicine may be reached.

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