

Review Article

Herbal oral care: an old concept or a new model?

Junaid Ahmed¹, Nandita Shenoy^{1*}, Almas Binnal¹, Laxmish P. Mallya², Ashok Shenoy³

¹Department of Oral Medicine and Radiology, Manipal College of Dental Sciences, Manipal University, Mangalore, Karnataka, India, ²Department of Conservative Dentistry, Manipal College of Dental Sciences, Manipal University, Mangalore, Karnataka, India, ³Department of Pharmacology, Kasturba Medical College, Manipal University, Mangalore, Karnataka, India

Received: 27 May 2014

Accepted: 10 June 2014

*Correspondence:

Dr. Nandita Shenoy,

E-mail: nandita.shenoy@gmail.com

© 2014 Ahmed J et al. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Ayurveda, the oldest medical science originating from Indian subcontinent, has been practiced since the 12th century BC. Its objective is to accomplish physical, mental, social and spiritual well-being by adopting preventive, health promoting and holistic approach towards life. Ayurveda is the science that developed as humans evolved and has stood the test of time. Oral diseases are major health problems worldwide and are not limited to dental caries and periodontal diseases but to various autoimmune conditions. Oral health influences the general quality of life and poor oral health is linked to chronic conditions and systemic diseases. Recently there is renewed interest in use of various Ayurvedic drugs for oral and dental health.

Keywords: Ayurveda, Dentistry, Oral disease

INTRODUCTION

Indian subcontinent is the treasure house of numerous plants and medicinal properties have been assigned to several thousands. Recently there is renewed interest in use of various Ayurvedic drugs for oral and dental health. The objective of Ayurvedic medicine is to accomplish physical, mental, social and spiritual well-being by adopting preventive, health promoting and holistic approach towards life.¹ Ayurveda is the science that developed as humans evolved.

The dentist needs to be more informed regarding the use, safety and effectiveness of the various traditional medicines and over-the-counter products. As this is hardly explored part for the field of dentistry, there is a need for integration of professional dental treatment modalities and Complementary Alternative Medical (CAM) systems to provide the best and unique from each system to patients as a complementary therapy and an alternative choice of treatment.²

Various plants have immense potential in management of dental health. The commonly used Ayurvedic medications for oral and dental health can be classified based on their properties as

PLANTS WITH ANTIMICROBIAL PROPERTY

Aloe, betel pepper (*Piper betel*), black pepper (*Piper nigrum*), clove (*Syzygium aromaticum*), coriander, (*Coriandrum sativum*), eucalyptus (*Eucalyptus globules*), garlic (*Allium sativum*), turmeric (*Curcuma longa*), green tea (*Camellia sinensis*), Onion (*Allium cepa*), papaya (*Carica papaya*), potato (*Solanum tuberosum*) are few Indian plants species which contain antimicrobial activities.³

PLANTS WITH ANTIOXIDANT PROPERTY

Spinach, pepper, black tea, broccoli, green tea, carrot, potato tomato, blackberry, grape, olive, pineapple,

strawberry, orange to name a few known to have potent antioxidant activity.⁴

PLANTS WITH ANALGESIC PROPERTY

Plants with claimed analgesic activity are as follows:

Capsicum (*Capsicum annuum*), Chile (*Capsicum annuum*), clove (*Eugenia caryophyllus*), ginger (*Zingiber officinale*), marijuana (*Cannabis sativa*), menthol (*Mentha piperata*), peppermint (*Mentha piperita*), poppy (*Papaver somniferum*), tobacco (*Nicotiana tabacum*).⁵

PLANTS WITH ANTI-INFLAMMATORY PROPERTY

Aloe (*Aloe vera*), garlic (*Allium sativum*), ginger (*Zingiber officinale*), onions (*Allium cepa*), neem (*Azadirachta indica*), periwinkle (lesser) (*Vinca minor*) and turmeric (*Curcuma longa*).⁵

KANTKARI (*Solanum xanthocarpum*)

Dhoopana with seeds of kantakari has been considered one of the common treatment of dental caries;⁶ Kantkari, botanically known as *Solanum xanthocarpum*, anti-caries activity of the plant are attributed to the chemical constituent solanocarpine, carpesterol, solanocarpidine, potassium nitrate, fatty acid, diosgenin, sitosterol, isochlorogenic acid, neochlorogenic acid, chlorogenic acid, caffeic acid, solasodine, solasonine, solamargine, quercetin, apigenin, histamine, acetylcholine.⁷

CLOVE OIL (*Syzygium aromaticum*)

Another very common agent used to relief pain of dental caries is application of clove oil;⁶ the obtundent activity has been attributed to the presence of eugenol in clove oil. Eugenol extracts from clove have often been used in dentistry in conjunction with root canal therapy, temporary fillings, and general gum pain, since eugenol and other components of clove (including *beta-caryophyllene*) combine to make clove a mild anaesthetic as well as an anti-bacterial agent.⁷

GARLIC (*Allium sativum*. Linn.)

Garlic can be effective in relieving the pain of tooth due to the allicin - a compound with a powerful antibiotic effect that is released when garlic is crushed.⁷

EUCALYPTUS (*Eucalyptus globulus*)

Recent studies have suggested that ayurvedic treatment can be employed supportively in the therapy of periodontal diseases and for routine prophylaxis. Nagata H and co-workers⁸ found that eucalyptus extract chewing gum had a significant effect on plaque accumulation, gingival index, bleeding on probing, periodontal depth probing. The effectiveness of medicinal herbs in both a

toothpaste and oral rinse on dental plaque, sulcus bleeding, and the pH of total saliva was investigated in a single-blind study. Compared with the placebo preparations, the herbal ingredients significantly reduced both the approximal plaque index API and the SBI. Various other studies by found that herbal toothpaste and gum therapy produced statistically significant differences in reducing plaque and stain thus reduces gingivitis and gingival bleeding. The efficacy of an herbal-based mouthrinse to reduce gingival inflammation was found by Pistorius et al.⁹

NEEM (*Azadirachta indica*)

The isolation of bioactive compounds from *Azadirachta indica*, commonly known as the Neem plant, has led to an expanding number of scientific reports on its other interesting biological properties and uses. Some of the observed anti-plaque activity of neem chewing sticks is attributed to the fibrous nature of these sticks resulting in mechanical plaque removal. However, neem plant also contains chemotherapeutic antiplaque agents. The presence of gallotannins during the early stages of plaque formation could effectively reduce the number of bacteria available for binding to the tooth surface by increasing their physical removal from the oral cavity through aggregate formation.¹⁰

TURMERIC (*Curcuma longa* Linn.)

There are many uses of turmeric in dentistry. The benefits of turmeric include: analgesic, antibacterial, anti-inflammatory, anti-tumor, anti-allergic, antioxidant, antiseptic, antispasmodic, appetizer, astringent, cardiovascular, carminative, cholagogue, digestive, and diuretic. The active constituent of turmeric is known as curcumin. Turmeric can be used in relief from pain and bleeding of gingival in gingivitis and periodontitis, as colorant in pit and fissure sealant or in dental-plaque detection system.¹¹ It is suggested that turmeric extracts can be extensively used in the treatment premalignant lesions in oral cavity.

POMEGRANATE (*Punica granatum*)

Topical applications of pomegranate preparations have been found to be particularly effective for controlling oral inflammation, as well as bacterial and fungal counts in periodontal disease and Candida-associated denture stomatitis. Pomegranate extracts have been shown to scavenge free radicals and decrease macrophage oxidative stress and lipid peroxidation in animals and increase plasma antioxidant capacity in elderly humans. The ellagitannin, punicalagin, is thought to be the fraction responsible for pomegranate's antibacterial activity.¹²

HONEY (MADHU)

Many studies have shown that honey has antibacterial activity in vitro, and clinical case studies have shown that

application of honey to severely infected cutaneous wounds is capable of clearing infection from the wound and improving healing. The mechanism of action is thought to be its chemical pH and osmotic effects, which aid in its antibacterial actions. Research has also indicated that honey may possess anti-inflammatory activity and stimulate immune responses. It can also be tried in treatment of various oral ulcerative conditions.

SESAME (*Sesamum indicum*)

The sesame plant (*Sesamum indicum*) of the Pedaliaceae family has been considered a gift of nature to mankind for its nutritional qualities and desirable health effects. Ashokan S et al. found that the oil pulling therapy with sesame oil has the following advantages over chlorhexidine: no staining, no lingering after-taste, and no allergy. Sesame oil is 5 to 6 times more cost effective than chlorhexidine and is readily available in most households. There are no disadvantages for oil pulling therapy except for the extended duration of the procedure compared with chlorhexidine.¹³

GRITA KUMARI (*Aloe vera*)

Aloe vera (A.V.) is a tropical plant grown in North Africa and most parts of Asia with succulent leaves that has been used for thousands of years as herbal medicine. Recent studies on the gel of the A.V. leaves have shown that it might be of benefit in a wide range of inflammatory diseases, including healing of different types of wounds. A study investigated the effect of acemannan (*Aloe vera* gel polysaccharide) on dentin formation. The acemannan-treated group also exhibited a complete homogeneous calcified dentin bridge and good pulp tissue organization; the data suggested that acemannan promotes dentin formation by stimulating Primary human dental pulp cells proliferation, differentiation, extracellular matrix formation, and mineralization.¹⁴

JASMINE (*Jasminum grandiflorum*)

The leaves of *Jasminum grandiflorum* are used in the treatment of odontalgia, fixing loose teeth, ulcerative stomatitis, leprosy, skin diseases, otorrhoea, otalgia, stangury dysmenorrhoea, ulcers, wounds and corns. The leaves of this species have a distinction of being used in Indian folk medicine for treating ulcers. Antioxidant property is responsible for antiulcerogenic activity of the extract.¹⁵

NIMBU

Lemon solution is a natural source of citric acid with lower acidity. Because of its wide antibacterial efficacy a freshly prepared lemon solution is recommended as a root canal medicant.¹⁶

CONCLUSION

Ayurvedic therapy can be used to treat a variety of oral diseases by using predominantly preventive traditional care. Larger, population-based studies are needed to completely understand the current role of Ayurvedic medicine in oral health care. Ayurvedic treatment modalities aimed at oral diseases need to be evaluated through rigorous randomized controlled trials for safety and effectiveness. Practitioners can incorporate preventive Ayurvedic treatments, which are based mainly on natural products, into overall preventive care regimens, if proven safe and effective.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

1. Sharma S. Ayurveda and health. In: Sharma PS, eds. *Realms of Ayurveda*. 1st ed. New Delhi: Arnold-Heineman Publishers; 1979: 117-134.
2. Hartzell JF, Zysk KG. Health, science, and the spirit: Veda and Ayurveda in the Western world. *J Altern Complement Med*. 1995;1:297-301.
3. Cowan MM. Plant products as antimicrobial agents. *Clin Micro Rev*. 1999;12:564-82.
4. Petti S, Scully C. Polyphenols, oral health and disease: a review. *J Dent*. 2009;37:413-23.
5. Colvard MD, Cordell GA, Villalobos R, Sancho G, Soejarto DD, Pestle W, et al. Survey of medical ethnobotanicals for dental and oral medicine conditions and pathologies. *J Ethnopharmacol*. 2006;107:134-42.
6. Amruthesh S. Dentistry and Ayurveda - IV: classification and management of common oral diseases. *Indian J Dent Res*. 2008;19:52-61.
7. Amruthesh S. Dentistry and Ayurveda - V: an evidence based approach. *Int J Clin Dent Sci*. 2011 Feb;2(1):3-9.
8. Nagata H, Inagaki Y, Tanaka M, Ojima M, Kataoka K, Kuboniwa M, et al. Effect of eucalyptus extract chewing gum on periodontal health: a double-masked, randomized trial. *J Periodontol*. 2008;79(8):1378-85.
9. Pistorius A, Willershausen B, Steinmeier EM, Kreisler M. Efficacy of subgingival irrigation using herbal extracts on gingival inflammation. *J Periodontol*. 2003;74(5):616-22.
10. Wolinsky LE, Mania S, Nachnani S, Ling S. The inhibiting effect of aqueous *Azadirachta indica* (Neem) extract upon bacterial properties influencing *in vitro* plaque formation. *J Dent Res*. 1996;75:816-22.
11. Kawamori T, Lubet R, Steele VE, Kelloff GJ, Kaskey RB, Rao CV, et al. Chemopreventive effect of curcumin, a naturally occurring anti-inflammatory agent, during the

- promotion/progression stages of colon cancer. *Cancer Res.* 1999;59(3):597-601.
12. Jurenka J. Therapeutic Applications of pomegranate (*Punica granatum L.*): a review. *Altern Med Rev.* 2008;13(2):128-44.
 13. Ashokan S, Emmadi P, Chamundeswari P. Effect of oil pulling on plaque induced gingivitis: a randomized, controlled, triple-blind study. *Indian J Dent Res.* 2009;20(1):47-51.
 14. Lee JK, Lee MK, Yun YP, Kim Y, Kim JS, Kim YS, et al. Acemannan purified from *Aloe vera* induces phenotypic and functional maturation of immature dendritic cells. *Int Immunopharmacol.* 2001;1:1275-84.
 15. Umamaheswari M, Asokkumar K, Rathidevi R, Sivashanmugam AT, Subhadradevi V, Ravi TK. Antiulcer and in vitro antioxidant activities of *Jasminum grandiflorum L.* *J Ethnopharmacol.* 2007;110:464-70.

DOI: 10.5455/2320-6012.ijrms20140859

Cite this article as: Ahmed J, Shenoy N, Binnal A, Mallya LP, Shenoy A. Herbal oral care: an old concept or a new model? *Int J Res Med Sci* 2014;2:818-21.