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ROLE OF SIDDHA SYSTEM IN MANAGEMENT OF ORAL HYGIENE

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ABSTRACT

Oral diseases continue to be a major health problem world-wide. Oral health is integral to general well-being and relates to the quality-of-life that extends beyond the functions of the craniofacial complex. The standard Western medicine had only limited success in the prevention of periodontal disease and in the treatment of a variety of oral diseases. Hence, the search for alternative products continues and natural phytochemicals isolated from plants used in traditional medicine are considered to be good alternatives to synthetic chemicals. The botanicals in the Siddha material medica have been proven to be safe and effective, through several hundred to several thousand years of use. The exploration of botanicals used in traditional medicine may lead to the development of novel preventive or therapeutic strategies for oral health. The present scientific evidence based review is focused on the possible role of Siddha System in the management of oral hygiene.

KEYWORDS: oral hygiene, siddha system, herbals for general oral health, *Thandhathavanam* (brushing), *Naa Vazhithal* (Tongue scrapping), *Vai Kopalithal (gargling).*

INTRODUCTION

Oral diseases continue to be a major health problem world-wide. Dental caries and periodontal diseases are among the most important global oral health problems, although other conditions like oral and pharyngeal cancers and oral tissue lesions are also of significant concern.[1] Oral health is integral to general well-being and relates to the quality-of- life that

extends beyond the functions of the craniofacial complex.[2] The link between oral diseases and the activities of microbial species that form part of the micro biota of the oral cavity is well-established. The global need for alternative prevention and treatment options and products for oral diseases that are safe, effective and economical comes from the rise in disease incidence (particularly in developing countries), increased resistance by pathogenic bacteria to currently used antibiotics and chemotherapeutics, opportunistic infections in immunocompromised individuals and financial considerations in developing countries.[3] Despite several chemical agents being commercially available, these can alter oral micro biota and have undesirable side-effects such as vomiting, diarrhea and tooth staining.[4,5] Furthermore, the standard Western medicine has had only limited success in the prevention of periodontal disease and in the treatment of a variety of oral diseases.[6,7] Hence, the search for alternative products continues and natural phytochemicals isolated from plants used in traditional medicine are considered as good alternatives to synthetic chemicals.[8]

This 5000-year-old system of medicine recommends treatments with specific herbs and minerals to cure various diseases. The botanicals in the Siddha material medica have been proven to be safe and effective, through several hundred to several thousand years of use. The exploration of botanicals used in traditional medicine, may lead to the development of novel preventive or therapeutic strategies for oral health. As most of the oral diseases are due to bacterial infections and it has been well-documented that medicinal plants confer considerable anti-bacterial activity against various microorganisms including bacteria's responsible for dental caries.[9]

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. Considering the importance of various traditional or CAM systems, the present scientific evidence based review of literature is focused on the possible role of Siddha System in the management of oral hygiene and to prevent various orofacial disorders.

Siddha system and the concepts of oral health

Siddha System recommends some daily use therapeutic procedures for the prevention of various oral disease and maintenance of oral health. These include: *Thandhathavanam* (Brushing), *Naa Vazhithal* (Tongue scrapping) and *Vai Koppalithal*[10](gargling). Some of the scientifically proven beneficial effects of these procedures are described below:

- ***Thandhathavanam* (brushing):** Siddha System recommends chewing sticks in the morning as well as after every meal to prevent diseases. Siddha System insists on the use of herbal brushes, approximately nine inchs long and the thickness of one little finger. These herb sticks should be either "*Thuvarpu*" (astringent), "*Kasapu*" (bitter) in taste. The method of use is to crush one end, chew it and eat it slowly. The *neem* (*margosa* or *Azadirachta indica*) is a famous herbal chewing stick. Fresh stems of, *black catechu* or the *cutch tree* (*Acacia Catechu*Linn.), *Arjuna* tree (*Termmalia arjuna*), Maa (*Mangifera indica*) and *Ithi* (*Ficus microcarpa*) can also be used for brushing. Chewing on these stems is believed to cause attrition and leveling of biting surfaces, facilitate salivary secretion and possibly, help in plaque control while some stems have an anti-bacterial action.
- ***Naa valithal* (Tongue scrapping):** It is ideal to use herbal sticks for the scrapping of the tongue. Tongue scrapping stimulates the reflex points of the tongue. Removes bad odor (halitosis). Improves the sense of taste, stimulate the secretion of digestive enzymes. Removes bacterial growth.
- ***Vai Kopalithal (Gargling):*** After completing the brushing technique, 12times gargling with water is necessary according to Siddha Text.

Siddha herbs with various oral health related properties

Siddha medications have stood the test of time and since time immemorial been used for various ailments. Recently, there is renewed interest in use of various Siddha drugs for oral and dental health. Various plants and natural products have been used for their pharmacological applications viz. antiulcer analgesic, wound healing, anti-inflammatory, antimicrobial, antioxidant properties etc. Herbal sticks used for brushing is mentioned in padhartha guna sinthamani and there scientific effects are mentioned below

"veluku pallirugum vembuku pal thulangum
Pooluku pogam pozhiyungan – aaluku
dhandamaraiyaalun saaruvale nayuruvi
kandaal vasigaramaag kaan"

Plants related to oral health

Acacia arabica (karuvel)

Family: Mimosaceae

Parts used: Twings

Action: Astringent

Constituent*[11]*: Polyphenoliccompounds, catechin, epicatechin, tannin.

Indication*[12]*: Gingivitis, Odontosis, Stomatosis.

Methods to use

- Burnt bark with burnt almond shell both pulverised and mixed with salt make a good tooth powder.
- As gargle it is useful in in spongy gums, sore throat, aphthous stomatitis etc.

Antibacterial activity

- The activity of different extracts (pod extract, bark extract, leaf extract) of acacia nilotica against dental pathogens Lactobacillus acidophilus, Streptococcus sanguinis, Streptococcus salivaris.[13]
- Streptococcus mutans is generally considered as the main oral pathogen responsible for dental caries, the fact that acacia inhibited the growth of *S.mutans* provides some scientific rationale for the use of this plant for the treatment of dental diseases.[14]
- Astringent action of *Acacia* resulted in drying of the oral cavity and it acts as a breath freshners.[15]

Azadiracta indica (Vembu)

Family: Meliaceae

Parts used: Tender Twings, Bark.

Action: Astringent, Vermifuge

Constituent*[11]*: Margosine, Nimbidiol, Margocin, Margocinin, Margocilin, Azadirachtin A,B,D,H and I.

Indication*[12]*: Gingivosis, Tooth ache, Furunculosis.

***Methods to use*[16]**

- Tender twigs of the tree are used as tooth brushes, which will keep the system healthy.
- Neem twigs are used as oral deodorant, toothache reliever and for cleaning the teeth.
- Neem bark possesses antibacterial and deodorant activity.

- Neem leaf is rich in antioxidants and helps to boost the immune response in gums and tissues of the mouth. Neem offers a good remedy for curing mouth ulcers.

***Antimicrobial activity*[16]**

The antimicrobial effects of neem have been reported against *S.mutans & S.faecalis.*

***Anti-Cariogenic activity*[16]**

The extract from the bark of neem is bactericidal against *S.sobrinus* indicates its anti-cariogenic activity.

***Anti-plaque activity*[16]**

Neem reduces the ability of *Streptococci* to colonize tooth surfaces. Neem oil shows significant antibacterial activity and has been suggested for use in treating dental plaque.

***Root canal irrigant*[16]**

Extract of neem leaf inhibits *S.mutans and E.faecalis* which cause root canal failure in endodontic procedure. Its antioxidant and antimicrobial properties makes it a potential agent for root canal irrigation as an alternative to sodium hypochlorite. Various parts of the neem tree possesss astringent and antiseptic activity. Literature suggested that the neem leaf extract has significant antimicrobial effect against *E. faecalis* derived from infected root canal.

Achyranthus aspera (Naayuruvi)

Family: Amaranthaceae

Parts used: Entire plant

Action*[11]*: Astringent, diuretic, alterative, anti periodic.

Constituent*[11]*: Achyranthine and betaine.

Indication*[12]*: Tooth ache, Odontosis.

***Methods to use*[11]**

Washing the mouth with *A.aspera* decoction will cure tooth ache and also pain in the hinder part of the tongue.

Anti-bacterial

- The anti bacterial activity of *A.aspera* can be attributed to the alkaloids and tannins. Tannin is a phenolic compound which is soluble in water and it could be one of the components responsible for the antibacterial activity.[17]

- *A.aspera* shows significant antimicrobial activity against *S.mutans* and *E.faecalis.*[18]

Ficus benghalensis(aal)

Family: Urticaceae

Parts used: Milky juice, aerial root, bark

Action: Astringent, tonic.

Constituent: Leucoanthocyanin, Taraxasterol tiglate, phytosterolin.

Indication: Tooth ache, gingivitis.

Methods to use

- Milky juice and seeds or fruits are useful as external application to the teeth and gums for toothache.
- Slender twigs of the tree forms a good toothbrush, and its use strengthens gums and teeth.

***Anti-bacterial activity*[19]**

Areal roots of ficus benghalensis species screened for its antibacterial potential against seven strains of oral bacteria i.e *Lactobacillus rhamnosus, Streptococcus mutans, Staphylococcus aureus, Bacillus subtilis, Escherichia coli and Staphylococcus epidermidis.*

DISCUSSION

Oral diseases are one of the most important promblems in public health and are on the rise in developing countries. Over the centuries, india has used its rich knowledge of traditional medicine to prevent and treat diseases. In the past decade there has been renewed attention and interest in the use of traditional medicine in india. Because of younger generation's lack of knowledge on the identification, collection, preservation and processing of the plant species for medicinal use it is therefore very crucial to conserve these ethno-cultural practices before they are lost definitively.

All the siddha medicines and local remedies discussed above (herbal plants like karuvel, vembu, naayuruvi, aal) are easily available in the rural areas where socioeconomic condition of the people is not good enough to buy costly toothpaste or curative medicine. Most of the oral diseases are caused due to the bacterial infections. The anti-bacteria activity of siddha plants are due to the presence of potential bioactive compounds, which help to reduce bacterial load in the oral cavity and thus prevent the formation of plaque, dental caries and ulcers. Siddha recommends and insist on the use of herbal brushes. It can be a good

alternative to the toothbrush as a means of preventing oro-dental diseases. The herbal sticks described in ancient siddha text have medicinal and anti-cariogenic properties. These procedures and herbs costs little, posses various medicinal properties and are easily available.

CONCLUSION

In this paper, an attempt has been made to review various herbal plants mentioned in Siddha system that can be used as an adjunct for the maintenance of oral health. The literature showed that there are numerous Siddha drugs, which can be used in prevention as well as management of oral diseases. Many Siddha herbal plants, which are reviewed, possess antimicrobial, anti-inflammatory, analgesic, antiulcer activities when screened according to the modern parameters. However, among them very negligible amount of herbals extracts are used in clinical practice and the rest of others are not practiced because of their unknown toxicological effects. The clinical studies should be encouraged to assess the efficacy as well as toxicity of herbal drugs.

The traditional knowledge of Siddha system should be integrated with the modern dentistry. For this, the active principles of plants should be incorporated into modern oral health-care practices and dentists should be encouraged to use natural remedies in various oral health condition. This will make dentistry much safer, affordable and more accessible for the lower socio-economic groups in society.

REFERENCE

1. Petersen P. E, Bourgeois D, Ogawa H, Estupian Days, Ndiaye C. The Global burden of oral diseases and risk to oral health; Bull world Health Organ, 2005; 83: 661-9. (PMC Free article)[Pub Med]
2. Peterson PE The World Oral Health Report 2003; Continous improvement of oral health in the 21st century: The approach of the WHO Global Oral Health Programme, Community Dent Oral Epidemiol, 2003; 31(supp1): 3-23 [pub med].
3. Jenkinson HF, Lamont RJ; Oral Microbial Communities in sickness and in health. Trends Microbiol, 2005; 23: 589-95[Pub Med].
4. Tichy J, Novak J. Extraction, assay and analysis of antimicrobials from plants with activity against dental pathogens(strep sp)J Altern Complement Med, 1998; 4: 39-45[Pub Med]
5. Badria FA, Zidan OA; Natiralproducts for dental caries prevention.J Med Food, 2004; 7: 381-4[Pub Med].

6. Park KM, You JS, Lee HY, Back NI, Hwang JK, Kuwanon G:An antibacterial agents from the root bark of Morus alba against oral pathogens; J Ethnopharmacol, 2003; 84: 181-5[Pub Med]
7. Chung JY, Choo JH, Lee MH, Hwang JK, Anticariogenic activity of macelignan isolated from Myristica fragrans (nutmeg) against Streptococcus mutans; Phytomedicine, 2016; 13: 261-6[Pub Med].
8. Prabu GR,Gnanamani A,Sadulla S,Guaijaverini;A plant flavanoid as potential antiplaque agent against Streptococcus mutans;J Appl Microbiol, 2016; 101: 487-95[Pub Med]
9. Kelmanson JE,Jager AK,Van Staden J Znlu medicinal plants with antibacterial activity;J Ethnopharmacol, 2000; 69: 241-6.
10. Dr. Durairasan H.P.I.M, Siddha Hygiene and Preventive Medicine, First Edition; Noori Press, 127, 128.
11. Dr. J. Raamachandran, Herbs of Siddha Medicine Murugan Pathipagam, 1: 12, 8 - 32.
12. James A Duke with Marry Jo Bogenschutz-Godwin.Judi ducellicer, Peggy-Ann K. Duke; Handbook of Medicinal Herbs Second Edition; CRC Press, 1,521,522,173,174.
13. Mukesh Pote, Pradip Hirapue. Antimicrobial Potential of Acacia nilotica extracts on few dental pathogens. International Journal of Pharmaceutical Sciences and Research, 2014; 4756-4759.
14. Deshpande S. N, Kandam D. G. Phytochemical analysis and Antibacterial activity of Acacia nilotica against Streptococcus mutans ;International Journal of Pharmacy and pharmaceutical sciences, 2013; 5(1): 238.
15. Devanand Gupta, Rajendra kumar Gupta; Investigation of antibacterial efficacy of Acacia nilotica against salivary mutans Streptococci: a randomized control trial; Academy genral dentistry, 2015; 26.
16. T. Lakshmi, Vidya Krishnan, Rajendran R, N. Madhusudhanan, Azadiracta indica:A Herbal Panacea in Dentistry-an update; phcog rev, 2015; 9(17): 41-44.
17. Roma Yadav, Radhika Rai, Abishak Yadav,Meethika pahiya,Savitha solanki, Himani Yadav; Achyranthus aspera extract against streptococcus mutans: An vitro study; Journal of Advanced Pharmaceutical Technology and Research, 2016; 7(4): 149-152.
18. Deshpande R.R,Kontham UR, Shep SV, Gupta SL; Comparative Evaluation of Antimirobial properties of Extracts of A.aspera plant and Chlorohexidine against S.mutans, E. faecalis andwhole salivary; sample of children in mixed dentition age group; International Journal of Pharmaceutical and clinical research, 2016; 8(12): 1657.

19. Priti D Diwan, Yashashree A. Gadhikar; Phytochemical composition and inhibition of oral pathogens by Ficus bengalenus root extract; International Journal of Pharmacy and Pharmaceutical science, 2014; 6; 114.