



ROLE OF SIDDHA SYSTEM OF MEDICINE IN THE MANAGEMENT OF ORO-FACIAL DISEASES: A REVIEW

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ABSTRACT

Oral disorders persist to be an utmost health issue worldwide. The conventional Western therapy has had only restricted outcome in the management of a variety of oral diseases thus; the hunt for alternative products is continued. Organic phytochemicals from plants which are used in traditional medicine are believed to be a good substitute to synthetic chemicals. Through several hundred to several thousand years of use; the botanicals in the Siddha System of Medicine have been proven to be safe and effective. The investigation of botanicals used in traditional medicine, may lead to evolution of novel preventive or therapeutic policies for oral health. The current scientific evidence based review is concentrated on practicable role of Siddha medicine in the management of various orofacial diseases.

KEYWORDS: Siddha system of medicine, Dentistry, Oral health, Oro-facial diseases.

INTRODUCTION

Oral disorders persist to be an utmost health issue worldwide.^[1] Dental caries and periodontal diseases are the major oral health problems; however; other disorders like oral cancer and oral mucosal lesions are also of notable concern.^[2] Oral healthiness is inherent to general

well-being and links to the quality of life that spreads beyond the functions of the craniofacial complex. The relationship between oral diseases and the activities of microbial species present in the microbiota of the oral cavity is well confirmed.^[3] The global demand for the search of an alternative options that are safe, effective and economical in the management of oral diseases comes from the advancement in disease incidence, elevated resistance by pathogenic bacteria to presently used drugs, and financial aspects in developing countries.^[4,5] The commercially available chemical agents can modify oral microbiota and have unwanted side-effects such as tooth staining, vomiting, and diarrhea.^[6,7] Also the conventional Western therapy has had only restricted outcome in the management of a variety of oral diseases thus; the hunt for alternative products is continued. Similarly, organic phytochemicals from plants which are used in traditional medicine are believed to be a good substitute to synthetic chemicals.^[8]

By appraising the significance of various complementary alternative medical systems (CAM); we have reviewed the basic concepts and role of the five major CAM systems used in India i.e. AYUSH (Ayurveda, Yoga, Unani, Siddha and Homeopathy) and their use in the field of dentistry. The practicable role of Ayurveda, Unani and Homeopathy systems in management of oral diseases have been already published.^[9,10,11] In the current article we have tried to explore the role of Siddha system of medicine (SSM).

Siddha medicine is one among the two time-honored traditional medical systems of Indian subcontinent.^[9,10,11] The first one is "Ayurveda", which thrived especially in northern part of India and became favored all over the country and also in abroad, and the second one is "Siddha" medicine which emerged 2000 years ago from south-eastern state of India called Tamil Nadu. Since then SSM has been practiced in and around areas of its origin.^[12-14] The printed Siddha literature is available from the 18th century. Before that they were recorded on palm leaves. The name "Siddha" signifies "Siddhi" which symbolizes an attainment in life arts such as yoga, wisdom, philosophy, alchemy, medicine and above all the art of longevity.^[12] The individual, who acquired this Siddhi, were courteously called "Siddhars". Agasthiyar, one among the 18 Siddhars; is believed to be the "Hippocrates of Siddha medicine."^[13] Siddhars are the spiritual scientists of Tamil Nadu who reviewed and unfold the reality of nature and its association to man by their yogic awareness and experimental discoveries furthermore; they hypothesized the idea of spiritualism for self-improvement. The practices established by them are acknowledged as the "Siddha System".^[12,14]

The SSM is primarily concerned with the development of high potency herbal drugs, which have long life. It also focuses to initiate the generation of cells and to prolong the longevity.^[12-14] By attributing a divine or extra-human origin to its medicine, the Tamil Siddhars have assured Siddha medicine a legitimate place in the corpus of Hindu knowledge. The investigation of botanicals advocated in Siddha medicine, may guide in invention of novel preventive and therapeutic policies for oral health.^[15,16]

The dentist requires to be more knowledgeable concerning the safety, use, and effectiveness of diverse traditional medicines. As this is very rarely investigated part in dentistry, there is a necessity for amalgamation of professional dental treatments and traditional medical systems to deliver the best and unique from respective system to patients as a complementary therapy and an alternative choice of treatment.^[17] By giving consideration to the importance of various traditional medicinal systems; the current scientific review of literature is capitalized on practicable role of Siddha system of medicine in the management of various orofacial disorders.

MATERIALS AND METHODS

The current review of literature accounted only those studies that include plants or plant mixtures which are accordant with the philosophy of Siddha. The databases searched for the current review were NAPRALERT, MEDLINE, and parallel databases, such as National Library of *Ayurveda* Medicine, AYUSH Research Portal, Siddha Database, Systematic Reviews in Siddha, Indus Medicus, Web of Science, and Google Scholar. Also a comprehensive research was carried out by consulting existing bibliographies; by using both forward and backward reference chaining techniques; and by tracking recent activities in the field of Siddha which is primarily concerned with prevention and management of orofacial disorders. Furthermore, we collected available literature on traditional medicine. References that were primarily anecdotal or that were only peripherally related to the topic were excluded.

Siddha and Oro-facial Diseases

In Siddha system of medicine, a total of 108 herbs, collectively known as *karpa mooligaigal* are dominantly used for the human ailments including management of oral disorders. The *karpa mooligaigal* plants are believed to revolutionize health and consciousness to prevent and give relieves even from chronic diseases.^[18]

Most of the herbs prescribed in Siddha, possess anti plaque, cariogenic, antibacterial, anti-inflammatory, analgesic, antitumor, anti-stress, anti-fungal, rapid healing properties.

This section reviews various scientific studies that have been undertaken regarding the usage of natural products for oro-facial diseases. Also, a sincere attempt has been made to review the multitude prospects and perspectives of Siddha system of medicine in the management of oro-facial diseases.

Clinical implications of most of the commonly used Siddha plants in the management of oro-facial diseases have been summarized in Table.

Manjal Poo chedi (*Spilanthes acmella* Murr.): Traditionally; it's flowers are crushed and applied on the site of toothache. Furthermore; when evaluated scientifically, *S. acmella* showed a significant local anesthetic and antipyretic activities in a study conducted by Chakraborty et al.^[19]

Thotta sinungi (*Mimosa pudica* Linn.): It's root and leaf infusion is applied on the oral wounds including mouth ulcers. The pharmacological activities of the shoot and root extracts of *Mimosa pudica* Linn were identified by Kannan et al who showed a promising wound healing capacity compared to Gentamicin.^[20] Similarly, it has shown a promising antimicrobial property mainly against gram-positive bacteria. Flavonoids are believed to be responsible for this property.^[21]

Chukuti chedi (*Solanum nigrum* Linn.): its leaves and fruits are chewed and swallowed to cure mouth ulcer. Histological studies revealed a reduction of ulcer size by *Solanum nigrum* Linn.^[22] Enzymatic studies on H⁺ K⁺ ATPase activity to ascertain the anti-secretory action showed that SNE significantly inhibits H⁺ K⁺ ATPase activity and reduces the gastrin secretion in EtOH-induced ulcer model.^[23]

Vata or Vada tree (*Ficus Bengalensis* Linn.): Traditionally, paste of leaf along with their fruit combined with cumin is taken orally to cure swellings, and applied topically over the fractured bones. Phytochemical analysis showed that *Ficus Bengalensis* Linn. has a good anti-inflammatory property. This may be due to presence of active flavonoids, sterols, triterpene, tannins and saponins compounds.^[24] According to Mousa et al (1994), fruit extracts of *Ficus* species exhibited significant anti-tumor, antibacterial activity but no antifungal activity.^[25]

Karu oomathai (*Datura metel* Linn.): The fresh leaves are boiled with gingelly oil and applied topically on Tempero-mandibular joint to cure swellings. Sakthi et al performed various phytochemical tests which showed that the antibacterial activity of *Datura metel* plant

leaves was effective against nine pathogenic bacteria isolates viz., *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichiacoli*, *Bacillus cereus*, *Shigella flexneri*, *Salmonella typhi*, *Vibrio cholerae*, *Pseudomonas aeruginosa*, and *Klebsiella pneumoniae*. This is because of presence of phytochemical compounds like flavonoid, alkaloids, steroids, tripenoid, triterpenes, tannins, and phenolic compounds.^[26] According to Britto et al, the fruits and stem extracts did not show significant antibacterial activity.^[27]

Kundumani (*Abrus precatorius* Linn.): Leaves are used for Dentifrice, strengthening the gum and teeth. A study conducted by Arora et al showed that ethanolic extract of *Abrus precatorius* Linn. had potent antioxidant, anti-inflammatory and analgesic potential. The study concluded that seeds of *Abrus precatorius* Linn. can be used as good natural antioxidant to treat free radical induced diseases like gingivitis and periodontitis.^[28] Furthermore; study conducted by Anbu et al revealed that *Abrus precatorius* Linn. possessed significant anti tumour activity.^[29]

Semparuthi (*Hibiscus rosa sinensis* Linn.): its young stem is used for toothbrush. This plant *Hibiscus rosa sinensis* Linn.; belongs to “Malvacecae” family. It has various medicinal properties. The bud has a sweet odour, bitter taste. It’s cooling and astringent effect sub-sides burning sensations of mouth and relieves pain. A study conducted by Sawarkar et al showed that alcoholic preparations of dried leaves of *Hibiscus rosa sinensis* had significantly higher analgesic activities.^[30]

Karunelii (*Kirganelia reticulate* baill): Leaves and stems are used for bleeding gums and as a toothbrush. In an in vitro investigation carried out by Shruthi et al; the antibacterial activity of crude methanolic, chloroform and hexane extracts of the leaves of *Kirganelia reticulate* showed a very high bactericidal activities.^[31]

Mahila (*Mimusops elengi* Linn.): its parts can be used in various inflammatory conditions of oral cavity such as inflammatory swellings, traumatic ulcerations, gingival abscess and periodontal infections. As it has been shown promising anti-inflammatory activities.^[32]

Thandrikai (*Terminalia Bellirica roxb.*): many studies have shown various antioxidant, antibacterial activity, free radical, scavenging^[33] analgesic^[34] anti-microbial^[35] activities of *Terminalia Bellirica roxb*. Because of these, it may help in the management of various periodontal and pulpal infections.

Nuna (*Morinda citrifolia/Noni*): It is generally used in many conditions like arthritis (including TMJ Ankylosis), toothache, muscle ache, oral cancer, aphthous ulcer, recurrent stomatitis, depression, blood vessel problems, and drug addiction etc. This may be due to its antibacterial,^[36] antiviral,^[37] antitumor activity,^[38] and analgesic,^[39] properties.

Sitaphalam (*Annona squamosa*): it has shown a very high anti-bacterial,^[40] anti-microbial,^[41] and anti-tumour^[42] activities. This may help in management of various oral conditions like periodontal abscess, dry socket, gum bleeding, wound healing, squamous cell carcinoma, and malignant tumors etc.

Velaippapolam (*Commiphora myrrha*): Shulan et al investigated *Commiphora myrrha* for its anti-inflammatory and analgesic activities of. The findings suggested that therapeutically prepared traditional application of *Commiphora myrrha* extract is quite useful in the treatment of various diseases which are associated with inflammatory pain.^[43]

Sivakaranthai (*Sphaeranthus amaranthoides* Burm): *Sphaeranthus amaranthoides* Burm belongs to the family Asteraceae. It is a rejuvenator herb of *Siddha* system which is also known as ‘*Sivakaranthai*’ in Tamil. It has been advocated for various oral conditions like burns, latex allergies, leukoplakia, erythroplakia and oral submucous fibrosis etc.^[44]

Bhasma (metal-based herbal medicines): In both Ayurveda and Siddha; bhasma has been used as a medicinal preparation together with appropriate herbs for the treatment of critical ailments. Till date, very little information is available on the antibacterial activity of Bhasmas. Considering the use of metal based herbal preparations to treat various disorders, Tambekar et al (2010) studied the antibacterial potential of some preparations such as Mandura bhasma, Tamra bhasma, Lauha bhasma and Kashis bhasma against various bacterial pathogens. The results revealed that Tamra bhasma possesses strong antibacterial activity while Lauha bhasma and Mandura bhasma showed significant antibacterial activity. Study suggested that the use these bhasma may useful to control the enteric as well as oral bacterial infections.^[45]

Some of the Siddha Plants which are often used to treat various oro-facial problems are: Kundumani (*Abrus precatorious* Linn.), Peekaruvel (*Acacia farnesiana* Linn. willd.), Thuvarai (*Cajanus cajan* Linn. Millsp.), Velaippapolam (*Commiphora Myrrha*), Alamarum (*Ficus benghalensis* Linn.), Shemmuli (*Barleria prionitis* Linn.), Mozhukupirkankai (*Luffa cylindrical* M. Roem.), Palvalipoondu (*Spilanthes calva* DC.) and Vaagai (*Albizia lebbek Benth.*).^[46]

CONCLUSION

Oral diseases are one among the most dominant problems in public health and are on the continuous rise in both developing and underdeveloped countries. Majority of the oral diseases occur due to bacterial infections. The various medicinal plants show antibacterial activity due to presence of potential bioactive compounds. These bioactive compounds aid to limit the bacterial load in the oral cavity. This prevents the plaque formation, dental caries and ulcers. Role of use of indigenous herbs in oral health has a very long background

worldwide. But, these skills are likely to dissipate soon as large number of ethnophytotherapeutic medicaments is practiced by only few in rural region. Furthermore, new cohort is unschooled of this traditional knowledge. Young professionals are lacking in identification, collection, preservation and processing of the herbal plants for medicinal use. Henceforth, it is vital to preserve these ethno-cultural customs before they vanish completely. Our review attempted to evaluate various herbal species mentioned in *Siddha* system of medicine that may complement in the preservation of oral health. Literature found suggested that there are countless *Siddha* medicaments which can be used in the prevention and treatment of oral disorders. Multiple *Siddha* herbs reviewed here; possess anti-inflammatory, antimicrobial, anti-ulcerogenic and analgesic activities when curtailed off as per the present-day parameters. But among these, very small amount of herbal extracts are utilized in clinical practice and remaining others are not used due to their unspecified toxicological outcomes. Therefore, the clinical investigations should be stimulated to estimate the effectiveness as well as toxicity of herbal medicines.

The customary knowledge of *Siddha* medicine should be united with modern dental therapies. For this, the active ingredients of traditional herbs should be consolidated into contemporary oral health practices. Additionally, dental professionals should be uplifted to use organic remedies in varied oral health therapies. This will formulate dentistry into accessible, affordable, and much safer for the socio-economically deprived groups in the community.

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