

Role of Unani System of Medicine in Management of Orofacial Diseases: A Review

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ABSTRACT

In recent times, oral diseases have gained an importance and are considered as a major health problem worldwide. Oral cancer, dental caries, and periodontal diseases are among the most important global oral health problems. Although new treatments and technologies for dealing with them are plentiful, nonetheless more and more patients are now looking for simpler, gentler therapies for improving the quality of life and avoiding iatrogenic problems. Traditional medical systems are easily accessible, cheaper and relatively safer than other conventional medicines. The time tested herbal formulations indicated in Unani material medica have been proven effective and safe. The exploration and identification of various botanicals used in traditional and complementary medicine, may lead to development of novel preventive or therapeutic strategies for oral health. The present scientific evidence based review is focused on possible role of Unani system of medicines in the management of various orofacial disorders.

Keywords: Complementary and alternative medicine, Holistic dentistry, Orofacial diseases, Oral healthcare, Unani medicine

INTRODUCTION

Modern western practitioners suffer from ethnocentricity. Many believe that their medicine is the ultimate, and the only one that really works. We often forget that modern scientific medicine reaches only a relatively small group of people, and that perhaps over a third of the world has no share in it [1].

Allopathic medicine is too expensive and capital intensive for a developing country like India. Modern medical doctors are too few in certain areas and are not always ready to live with the poor in the slums, the desert areas, the remote forests, or the high mountains [1]. Along with it, the longer expectancy of life and life style related diseases have led to an increased risk of chronic, debilitating diseases such as heart disease, diabetes, cancer and mental disorders. Although new treatments and technologies for dealing with them are plentiful, nonetheless more and more patients are now looking for simpler, gentler therapies for improving the quality of life and avoiding iatrogenic problems [2].

In recent times, oral diseases have gained an importance and are considered as a major health problem worldwide [3]. Oral cancer, dental caries, and periodontal diseases are among the most important global oral health problems [4]. There is a well-established link between oral diseases and the activities of microbial species that form part of the micro biota of the oral cavity [5]. The global need for safe, effective and economical preventive and treatment options for oral diseases arises from the increase in disease incidence, resistance of pathogenic bacteria to antibiotics and chemotherapeutics, opportunistic infections and financial considerations in developing countries [6].

Traditional medical systems are easily accessible, cheaper and relatively safer than other conventional medicines. 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 [6].

By considering the importance of various traditional or 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 possible role of Ayurveda and Homeopathy systems in management of oral diseases have

been already published [7,8]. In the current article we have tried to explore the role of Unani system of medicine.

Unani-tibb or Unani Medicine also spelled Yunani Medicine (in Arabic, Hindi-Urdu and Persian) means "Greek Medicine." Its origin is traced back to the Greek literature, which has been a source of quite a lot of scientific contributions and also was developed by Arabs and Persians into an elaborate medical science. Since that time Unani Medicine has been known as Greco-Arab Medicine [9].

Unani system of medicine is a great healing art as well as science. It treats a person as a whole not as a group of individual parts. It is aimed at treating body, mind and soul. This system is based on hippocratic theory of four humors viz. blood, phlegm, yellow bile and black bile [9].

The World Health Organization (WHO) has recognized the Unani System of Medicine (USM) as an alternative system to cater the health care needs of human population. Unani is one of the most well-known traditional medicine systems and draws on the ancient



[Table/Fig-1]: Depicting the role of Unani system of medicine in the management of various orofacial diseases

traditional systems of medicine of China, Egypt, India, Iraq, Persia and Syria [10].

Unani healing is vibrant and vigorous today and is being practiced, taught and researched under its local names in over 20 countries including Afghanistan, China, India, Canada, Denmark, Germany, Finland, Netherlands, Norway, Poland, Korea, Japan, Saudi Arabia, Sweden, Switzerland, Turkey, UK and USA [10]. India has accepted it as one of the alternative health care system and has given it official status.

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 systems (CAM) to provide the best and unique from each system to patients as a complementary therapy and an alternative choice of treatment [11]. Literature search revealed that till date there is no published data enlightening the relevance of Unani system pertaining to field of dentistry, hence a scientific evidence based review focusing on possible role of this system of medicine in the management of various orofacial disorders has been undertaken.

Asgard (*Withaniasomnifera*): Adaptogenic and anti-stress activities of asg and in experimental animals have been found to be effective in protection against a variety of chemical, physical and biological stressors [18]. These properties can provide a better assistance in treatment of patients with dental anxiety.

Babul (*Acacia Arabica* Willd): Gel containing *Acacia arabica* has shown significantly greater clinical improvements in dental plaque and gingival conditions without any discoloration of teeth [19]. Its antibacterial activity using fresh isolates showed inhibition of suspected periodontal pathogens such as *P. Gingivitis* and *P. Intermedia* which can be of great clinical value [20].

Gul-e-Surkh (*Rosa damascena* Mill.): The various parts of rose like hips, leaves and flower contain active ingredients like tannins and vitamin C which are proven to be effective as an astringent and antibacterial agents in various oral infections including gingival diseases [21].

Haldi (*Curcuma longa* Linn.) –Turmeric has been widely used in the management of oral diseases. Curcumin is the active component present in it. Turmeric has shown its effectiveness in dental pain, periodontitis, in dental plaque detection, and as colorant in pit and fissure sealant [22]. It has been concluded that turmeric extracts can have a possible role in the treatment of potentially malignant oral mucosal lesions [23]. It inhibits/suppresses metastasis of melanoma cells and may be found useful in deactivating the tobacco containing carcinogens [24].

Heel khurd (*Elettariacardamomum Maton*): Many Extracts of *Elettariacardamomum Maton* have shown encouraging antibiotic properties and can be indicated as a novel antibiotic for the treatment of oral infections [25].

Kalonji (*Nigella sativa* Linn.): Studies have shown that the administration of Nigella sativa oil causes a significant rise in glutathione level, mucin content and free acidity and a significant fall in mucosal histamine content in ethanol induced ulcers in rats [26].

Katha (*Acacia catechu* Willd): *Acacia catechu* is highly recommended for its strong antioxidant and astringent activities. It is helpful in wound healing, gingivitis, dental caries, tonsillitis, and halitosis. Similarly, it also has few pharmacological properties like Analgesic, Antibacterial, Anti-ulcer, and Antipyretic. The ethanolic bark extract of *Acacia catechu* willd was found to be bactericidal in action against cariogenic *Streptococcus sanguis*, *Lactobacillus acidophilus* and *Streptococcus mitis* bacterial strains. These actions may be due to the presence of phytochemical constituents like Catechin, epigallocatechin, epigallocatechingallate, epicatechingallate, protocatechuic acid, poriferasterolacyglucosides, phloroglucin, lupenone, kaempferol, poriferasterolglucosides, dihydrokaempferol, Quercetin, Taxifolinetc [27].

Kulanjan (Greater Galanga): Kulanjan's rhizomes constitute a main compound called myrcene is used for mouth cancer, bad breath. Rhizomes have anti-bacterial, anti-fungal, anti-protozoal, anti-allergic, anti-tumor, anti-ulcer and expectorant activities. It is also used as halitosis remedy. The major compound responsible for these actions is myrcene [28].

Kulzam: It is a popular Unani quid formulation used for several ailments including dental problems. Main contents of kulzam include terpenes and their oxidative derivatives, which are believed to be highly effective antibacterial, antifungal, analgesic, anti-inflammatory, antioxidant, and immunomodulatory agents [29].

Kutki (*Picrorhizakarroa Royle ex Benth.*): Ethanolic extract of rhizomes and roots on oral administration showed significant prevention of oral ulcers [30].

Lehsun/ garlic (*Allium sativum* L.): Due to strong antibacterial activity; chopped garlic held in the mouth for 5 minutes sterilizes the oral cavity. Similarly, fresh garlic juice has been found effective in killing *Streptococcus pyogenes* and *Corynebacterium diptheriae* [31].

Majoon Suranjan (MS): It is a poly herbal formulation used in Unani system of medicine for toothache and related pain. It has been found that disease modifying properties of MS are responsible for its efficacy in various inflammatory conditions [32].

Maryamgoli (*Salvia officinalis* L.): Is a small perennial evergreen subshrub, native to the Mediterranean region. It has been known as a kitchen and medical herb since the ancient times. The plant owes its name to Latin word *salve* meaning be healthy [33]. The main material of Maryamgoli is essential oil. It also contains camphor, flavonoids, catechin tannins and antibacterial carnosol. *Salvia* extracts and infusions have anti-inflammatory, antibacterial, antimycosal, astringent, antihydrotic and antilactative properties. The infusions are used for rinsing oral cavity and throat in cases of inflammations including purulent diseases, in cough and to assist expectoration [34].

Miswak (*Salvadora Persica*): Miswak has shown an immediate antimicrobial effect on *S. mutans*, *Lactobacillus* and *S. fecalis* [35]. It has also shown an analgesic effect on thermal stimuli which suggests its effectiveness in the management of dental hypersensitivity [36]. Furthermore, Gazi et al., investigated an immediate and medium-term effect of Miswak on the composition of mixed saliva. They found that, Miswak produced significant increases in calcium (22-fold) and chloride (6-fold), and significant decreases in phosphate and pH which lead to inhibition of demineralization and promotion of remineralization of tooth enamel [37].

Mur Makki (*Commiphora myrrh* Linn.): It is a sap-like substance (resin) that comes out of cuts in the bark of trees that are members of the *Commiphora* species. It has analgesic, antibacterial, astringent, anticancer properties. Its active ingredients are volatile oil, resin and gums. It is applied directly to the mouth for inflamed gums, bad breath, soreness, swelling, loose teeth, canker sores and chapped lips [38].

Neem (*Azadirachta indica*) – Neem is having well established analgesic, antibacterial, anti-inflammatory, antiviral, antifungal, antioxidant, and immuno-stimulant properties [39]. Similarly, it has both chemotherapeutic as well as mechanical antiplaque properties. This anti-plaque efficacy of neem stick was effectively demonstrated by Bandyopadhyay et al. They concluded that presence of gallotannins during early stages of plaque formation could effectively reduce number of bacteria responsible for periodontitis [40]. The neem mouth rinse has also shown its effectiveness in treatment of periodontitis [41].

Oak (*Quercus* L.) has a bark, which can be used in medicinal formulations. The bark is rich in tannins which create an astringent effect. Tannins also help in creating permanent and insoluble complexes with microorganism proteins. The oak bark has a bactericide property, which inhibits bacterial growth and inactivates toxins. It also influences the capillaries by decreasing permeability and micro bleeding. Oak bark infusions are used in the treatment of oral cavity and throat inflammations, skin irritations, varicose ulcers, mild bleedings, frostbites and burns [33].

Thymol (2-isopropyl-5-methylphenol, IPMP): Thymol and carvacrol are major compounds of thyme, origanum and satureja oils. Thymol precipitates in the form of blank crystals with a strong thyme smell. It has antibacterial and antimycosal properties. It has been found effective in 1–10% alcohol solutions to disinfect root canals in the treatment of pulp necrosis [42].

Thyme (*Thymus vulgaris* L.): Thyme contains mostly essential oil, the minor compounds are thymol, tannins and gentians. Due to contents of essential oil with phenolic acids thyme has strong disinfecting and analgesic properties. Thyme oil can be used as an antibacterial additive in the treatment of MRSA infections [43].

Zanjabil (*Zingiber officinale*): *Z. officinale*, commonly known as ginger, has been widely used traditionally for a variety of medicinal purposes, one of which is for the treatment of pain. A systematic review conducted by Rohini et al., showed that *Z. officinale* is effective in reducing any type of subjective pain including those occur due to oral infections [44].

[Table/Fig-2]: Showing clinical implications of various unani herbs in the management of oro-facial diseases

MATERIALS AND METHODS

In this review of literature, we only considered those studies that include individual plants or mixtures of plants consistent with the philosophy of Unani medicine. The databases searched for the current review were MEDLINE, NAPRALERT, and related databases, such as AYUSH Research Portal, Systematic Reviews in Unani, Web of Science, Indus Medicus, and Google Scholar; by consulting existing bibliographies; by using both forward and backward reference chaining techniques; and by tracking recent activities in the field of Unani which is primarily concerned with prevention and management of orofacial disorders. In addition, we also collected literature on traditional medicine and searched some Indian journals not included in MEDLINE. References that were primarily anecdotal or that were only peripherally related to the topic were excluded.

Unani medicine and the Concept of Health

Unani System of Medicine considers human body as a single unit, made of seven components known as Umoor-e-Tabiya [12]. According to Unani philosophy, the body is made up of the four basic elements i.e. Earth, Air, water and fire which have different temperaments i.e. cold, hot, wet and dry respectively [13]. After mixing and interaction of four elements a new compound having new Mizaj (temperament) comes into existence i.e. hot wet, hot

dry, cold wet, and cold dry [12,13]. The body has the simple and compound organs, which receive their nourishment through four Akhlaat (Humors) i.e. Dam (Blood), Baigham (Phlegm), Safra (Yellow Bile) and Sauda (Black Bile). Each humor has its own temperament blood is hot and moist, phlegm is cold and moist, yellow bile is hot and dry and black bile is cold and dry [12,13]. Every person attains a temperament according to the preponderance of the humors in his/her body and it represents the person's healthy state. The temperament of a person may be sanguine, phlegmatic, choleric or melancholic [10].

Unani medicine and Orofacial Diseases

Similar to Ayurvedic medicine, Unani medicine also recommends daily use of therapeutic procedures like chewing sticks for brushing of teeth in the morning as well as after every meal for the prevention and maintenance of oral health [14].

Many Unani physicians advocate use of herbal formulations in their Usool-e-Ilaj (Unani principles for treatment) for the prevention and management of dental health. Herbs which are advocated in Unani system like Miswak (*Salvadora Persica*), Haldi (*Curcuma longa*), Anar (*Punicagranatum*), Aqarqarha (*Anacyclus pyrethrum*), Suddab (*Rutagraveolens*), Amla (*Embllica Officinalis*), Aqaqia (*Acacia nilotica*), Shahad (Honey), Lehsun (*allium sativum*), Aspaghol (*Plantagoovata Forsk*), Babuna (*Matricariachamomilla Linn.*), Clove (*syzygiumaromaticum*) etc. are found to be useful in treatment of orofacial diseases [14,15]. Similarly, Unani formulations like Sunune Zard, Sunune Mulook, Sunune Mujalli, Buzidan, Majoon Suranjan, Majoon Azaraq, Habbe Gule Aak etc. have been shown effective anti-bacterial, anti-inflammatory and analgesic effect and are used in the treatment of orofacial diseases [15,16].

However, since most of the drugs which have been described in Unani material medica and are widely used by the physicians of Unani medicine in the treatment of dental diseases have still not been studied scientifically for their claimed effects. Therefore, there is an element of doubt regarding their efficacy and safety that can only be removed by scientific validation.

Scientific validation of Unani medicinal herbs with various oral health related properties: Unani formulations have been successfully tested over a period of time and have been used effectively for treating various diseases since time immemorial. Various herbs and natural ingredients with anti-inflammatory, anti-microbial, antiulcerogenic, antioxidant and wound healing properties have been used for their pharmacological applications [17]. In this section we have reviewed various studies undertaken in recent time to provide a scientific reasons to some of the widely used Unani medicines and also have looked into the multitude prospects and perspectives of Unani system of medicine in management of orofacial diseases [Table/Fig-1]. Various clinical implications of commonly used Unani herbs in the management of orofacial diseases summarized in [Table/Fig-2].

CONCLUSION

In developing country like India, continuous increase in oral health disease has aroused as one of the important public health problem. Many oral diseases occur due to bacterial infections. Various medicinal plants with antibacterial activity contain potential bioactive compounds which help to minimize bacterial load in the mouth and prevent occurrence of dental plaque, caries and ulcers.

The role of indigenous herbs in the management of oral health and hygiene have a long history worldwide. But, this knowledge is likely to vanish soon as many of these ethno-phytotherapeutic remedies are followed only by a few in rural areas. New generation seems to be having ignorant approach towards this precious traditional knowledge. Many people of our generation have a deficient knowledge on the identification, collection, preservation and processing of the various species of medicinal plants. Therefore

it becomes crucial to conserve and preserve these ethno-cultural practices before they lost in time.

In this paper a sincere attempt has been made to review various plants with medicinal properties which are mentioned in Unani system of medicine that can have an adjuvant role in the maintenance of oral health. Searched literature indicated that there are many Unani formulations that can be utilized in prevention as well as management of oral diseases. When screened according to the modern parameters, number of Unani herbs which are reviewed in this paper showed significant analgesic, anti-inflammatory, anti-microbial, antiulcerogenic activities. But among them very negligible percentage of herbal plant extracts are used in routine clinical dental practice and rest of others are not practiced because of their possible unknown toxicological effects. Therefore, various clinical studies are advocated to assess the efficacy as well as toxicity of these herbal products.

Furthermore, an attempt should be made to integrate the traditional knowledge of medical systems like Unani with modern conventional dental practice. For this, incorporation of active ingredients of herbal plants into oral healthcare practices are advised. Similarly, dentists should be encouraged and trained to use natural remedies in a proper scientific way. These efforts will help in making dentistry much safer, affordable and more accessible for the lower socio economic groups in the society.

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