

Role of Herbal Formulation in Dentistry

- ¹Azra Aisha, Assistant Professor, Department of Pharmacology, Era college of pharmacy, Lucknow, Uttar Pradesh, India.
- ²Md Shah Zafer Shamsi, Assistant Professor, Department of Orthodontic and Dentofacial Orthopedic, Career post graduate dental sciences & hospital, Lucknow, Uttar Pradesh, India.
- ³Gayyur Fatima, Assistant Professor, Department of pharmacognocny, Era college of pharmacy, Lucknow, Uttar Pradesh, India.

Corresponding Author: Md Shah Zafer Shamsi, Assistant Professor, Department of Orthodontic and Dentofacial Orthopedic, Career post graduate dental sciences & hospital, Lucknow, Uttar Pradesh, India.

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Abstract

In recent times, Oral diseases have considered as a major health problem worldwide. Dental caries, Gum diseases like gingivitis, periodontitis and Oral cancer are among the most important global oral health problems. Herbal plants are well described for medicinal uses in the history since 5000 B.C. The World Health Organization (WHO) has recognized the herbal formulation as an alternative medicine system. Herbal formulation is based on philosophy of Hippocrates; herbal formulations are considered as cheaper and relatively safer alternatives medicines system to conventional medicines system. Similarly, Unani formulations like Sunune Zard, Sunune Mulook, Sunune Mujalli, Buzidan, Majoon Suranjan, Majoon Azaraqi, Habbe Gule Aak etc. have been shown effective antibacterial, anti-inflammatory and analgesic.

Keywords: Alternative medicine, Herbal formulation, Oro-Dental diseases.

Introduction

Oral diseases have considered as a major health problem worldwide¹. Dental caries, Gum diseases like gingivitis, periodontitis and Oral cancer are among the most important global oral health problems². There is an entrenched between oral diseases and the microbial species that form part of the micro flora of the oral cavity³. The global need for safe, effective and economical preventive and treatment options for oral diseases, herbal formulations are considered as cheaper and relatively safer alternatives to conventional medicines⁴. The conventional medicines are synthetic chemicals whereas AYUSH (Ayurveda, Yoga, Unani, Siddha and Homeopathy) is a traditional medical systems.

The aim of current review article to explore the role of herbal medicine in orodental treatment. The herbal formulation is the fulcrum of complementary and an

alternative medicine which recognized by the World Health Organization, and gradually streaming toward integration into the healthcare system⁵. 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 treatment⁶



Fig. 3: Thyme (*Thymus Vulgaris*)



Fig. 1: Maryamgoli (*Salvia officinalis* L.)



Fig. 4: Bloodroot (*Sanguinaria*)



Fig. 2: Babul (*Acacia Arabica* Willd)



Fig. 5: Cara way (*Carum Carvi*)



Fig. 6: Chamomli (Matricaria recutid)

Herbal Formulation and the Concept of Health:

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 respectively⁷. 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^{7,8}. 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.⁵

Oro-Dental Diseases

- Halitosis
- Aphthous Stomatitis
- Dental caries
- Dental Anxiety
- Oral Cancer
- Oral Infection
- Periodontal disease
- Premalignant Lesion
- Dental Abscess

Herbal Formulation for Oral Diseases

The chewing sticks for brushing or cleaning of teeth for the prevention and maintenance of oral health⁹. 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 herbal formulation like Miswak (*Salvadora Persica*), Haldi (*Curcuma longa*), Aqarqarha (*Anacyclus pyrethrum*), Shahad (Honey), Lehsun (*allium sativum*), Babuna (*Matricariachamomilla* Linn.), Clove (*syzygiumaromaticum*) etc. are found to be useful in treatment of oral diseases^{9,10}. Similarly, unani formulations like Sunune Zard, Sunune Mulook, Sunune Mujalli, Buzidan, Majoon Suranjan, Majoon Azaraqi, Habbe Gule Aak etc. have been shown effective antibacterial, anti-inflammatory and analgesic effect and are used in the treatment of oral diseases^{10,11}. 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, antimicrobial, antiulcer, antioxidant and wound healing properties have been used for their pharmacological applications¹². Various studies undertaken in recent time to provide a scientific reasons to some of the widely used Unani medicines or herbal formulation and perspectives of herbal formulation in management of oral diseases. Various clinical

implications of commonly used herbal formulation in the management of oral diseases summarized in [Table 1].

S.NO.	Name/Biological Name	Genral use and contents	Oaro-Dental uses
01	Kulzam	It has terpenes and their oxidative derivatives. An antibacterial, antifungal, analgesic, anti-inflammatory, antioxidant, and immunomodulatory agents ¹³	Toothache, soft tissue inflammation.
02	Haldi (Curcuma longa linn.)	Active component is Curcumin, it has anti-inflammatory, antibacterial property.	Dental pain, periodontitis, plaque detection, ¹⁴ malignant oral mucosal lesions ¹⁵ . Metastasis of melanoma cells and deactivating the tobacco containing carcinogens ¹⁶ .
03	Heel khurd (Elettaria cardamom Maton)	An antibiotic properties	Treatment of oral infections ¹⁷
04	Maryamgoli (Salvia officinalis L.) fig 1	It has camphor, flavonoids, catechin tannins. An anti-inflammatory, antibacterial, antimycosal, astringent, antihydrotic and antilactative properties.	Rinsing oral cavity and throat in cases of inflammations including purulent diseases, in cough and to assist expectoration ¹⁸
05	Kulanjan (Greater Galanga)	Main compound is myrcene. An anti-bacterial, anti-fungal, anti-protzoal, anti-allergic, anti-tumor, anti-ulcer and expectorant activities.	Mouth cancer, bad breath/halitosis remedy ¹⁹
06	Oak (Quercus.L.)	Its contain tannins. An astringent, bactericide, inactivates toxins. It also influences the capillaries by decreasing permeability and micro bleeding.	Oral cavity and throat inflammations, varicose ulcers, mild bleedings ²⁰
07	Majoon Suranjan (MS):	Anti-inflammatory conditions ²¹	Toothache and related pain.
08	Asgand (Withaniasomnifera)	Adaptogenic and anti-stress activities, protection against a variety of chemical, physical and biological stress ²²	Treatment of patients with dental anxiety.
09	Babul (Acacia Arabica Willd); fig 2	Antibacterial activity, inhibition of suspected periodontal pathogens such as P. Gingivitis and P. Intermedia ²³	Dental plaque and gingival conditions without any discoloration of teeth ²⁴
10	Gul-e-Surkh (Rosa damascena Mill)	Active ingredients like tannins and vitamin C, Astringent and antibacterial agents.	Oral infections including gingival diseases ²⁵
11	Kutki (Picrorhizakurroa Royle ex Benth.)	Ethanoic extract of rhizomes and roots	Oral ulcers ¹⁴
12	Zanjabil or Ginger (Zingiberofficinale)	Analgesic properties	Reducing pain those occur due to oral infections ²⁷ .
13	Miswak (Salvadora Persica)	An antimicrobial effect on S.mutans, Lactobacillus and S. fecalis ²⁸ , also shown an analgesic effect to thermal stimuli.	For dental hypersensitivity ²⁹ Miswak produced increases in calcium and chloride, decreases in phosphate and pH which lead to inhibition of demineralization and promotion of remineralization of tooth enamel ³⁰
14	Kalonji (Nigella sativa Linn.)	Nigelliasativa oil	Rise in glutathione level, mucin content and free acidity and fall in mucosal histamine content in ethanol induced ulcers in rats ³¹
15	Thymol (2-isopropyl-5-methylphenol, IPMP)	It has 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
16	Thyme (Thymus vulgaris L.);fig 3	It has thymol, tannins and gentians. Due to contents of essential oil with phenolic acids thyme has strong disinfecting and analgesic properties. It has antibacterial properties.	Treatment of MRSA infections ³²
17	Lehsun/ Garlic (Allium sativum.L)	Strong antibacterial activity, fresh garlic juice effective in killing Streptococcus pyogenes and Corynebacterium diphtheriae ³³	Chopped garlic held in the mouth for five minutes sterilizes the oral cavity.
18	Katha (Acacia catechu wild)	Constituents like Catechin, epigallocatechin, epigallocatechingallate, epicatechingallate, protocatechuic acid, poriferasterolacyglucosides, phloroglucin, luteone,kaempferol, poriferasterolglucosides, dihydrokaempferol, Quercetin, Taxifolin etc ³⁴ Strong antioxidant and astringent, Analgesic, Antibacterial, Anti-ulcer, and Antipyretic, bactericidal.	It is helpful in wound healing, gingivitis, dental caries, tonsillitis, and halitosis. Similarly, action against cariogenic streptococcus sanguis, lactobacillus acidophilus and streptococcus mitis bacterial strains.
19	Neem (Azadirachta indica)	An analgesic, antibacterial, anti-inflammatory, antiviral, antifungal, antioxidant, and immuno-stimulant properties ³⁵ Similarly, it contain Gallotannins.	It has both chemotherapeutic as well as mechanical antiplaque properties. The plaque formation could effectively reduce number of bacteria responsible for periodontitis ³⁶
20	Mur Makki (Commiphora myrrh Linn.)	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 ³⁷
20	Mur Makki (Commiphora myrrh Linn.)	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 ³⁷
21	Ajwain (Trachyspermum ammi L.)	An antiseptic, stimulant, carminative, diuretic, anesthetic, antimicrobial, antiviral, nematocidal, antiulcer, antihypertensive, antitussive, bronchodilatory, antiplatelet and hepatoprotective as well as antihyperlipidemic effects	Used for oral infection
22	Bloodroot (Sanguinaria anadensis); fig 4	An Alkaloids	Uses for gingivitis and periodontal disease, Inhibit the growth of oral bacteria ^{38,39}
23	Caraway (Carum carvi); fig 5	Contains 3–7% volatile oil, with the main components divided into carvone (50–60%) and limonene (40%) ⁴⁰	Gingivitis or periodontal disease. Uses as a mouth wash.
24	Chamomile (Matricaria recutita); fig 6	Contain 1–2% volatile oils ²² .Active constituents include the flavonoids, apigenin, luteolin, and quercetin. These are anti-inflammatory, antispasmodic, and smooth-muscle relaxing action, particularly in the gastrointestinal tract ^{41,42,43,44,45}	To prevent periodontal disease.

Conclusion

Most of oral diseases found due to bacterial infections. Many medicinal plants have antibacterial and analgesic

activity which helps to minimize bacterial load and dental pain and also prevent occurrence of dental plaque, caries and ulcers. Studied indicated that there are many herbal formulations that can be utilized in prevention as well as management of oral diseases. The 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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