

## Review Article

### Home remedies for dental diseases in the Pandemic of COVID-19 - A Systematic Review

Sucheta Mahant<sup>1</sup>, Sanjay Kumar Thakur<sup>2</sup>

<sup>1</sup>MDS, Pediatric and Preventive Dentistry, Medical Officer (Dental), Civil Hospital Sujampur, Distt. Hamirpur, Himachal Pradesh, India;

<sup>2</sup>MS, Assistant Professor, Deptt. Of Orthopaedic Surgery, Dr Radhakrishnan Government Medical College Hamirpur, Himachal Pradesh, India

#### ABSTRACT:

**Background:** During COVID-19 lock down, ancient home remedies and google information help has been used by patients at home for dental disease emergency in crucial time. Primitive medicine can be used in home to stay safe during outbreak of COVID 19, a public health global emergency. **Highlight:** This systematic review aimed to search and collect scientific evidence of alternative home remedy for dental disease using primitive medicinal herbs. But it is essential to adopt a scientific attitude toward herbal medicine to open a new knowledge. **Conclusion:** Holistic dentistry is an alternate approach, an emerging field of dental medicine and more research are to be done in this field.

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**Corresponding Author:** Dr. Sanjay Kumar Thakur, MS, Assistant Professor, Deptt. Of Orthopaedic Surgery, Dr Radhakrishnan Government Medical College Hamirpur, Himachal Pradesh, India

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#### INTRODUCTION

Most of the procedures performed in dental clinic have potential to create contaminated aerosol and splatters. Aerosols are the tiny particle or droplets which remain suspended in air. Blood, saliva, tooth debris, dental plaque, calculus and removal of restorative materials are source of air borne particles while performing various dental procedures.

The International community on Taxonomy of viruses disease leveled SARS COV 2 (SARS-Severe Acute Response Syndrome) corona virus disease, was outbreak in Wuhan, China in the end of 2019. The present outbreak of the 2019 corona virus strain (COVID-19), infectious disease is a public health global emergency. The transmission of disease is via contact with droplets from talking, coughing, sneezing (related to human respiratory activities) and aerosols generated during clinical procedures. Droplets are the biggest

threat to the dentist profession as well as for patients. It is not same as before the lock down due to Covid-19 pandemic emergency. It's like putting hand in lion mouth as all dentistry happens inside patient mouth. So there are worries and apprehensions for both dentist and patient. Holistic dentistry incorporates Ayurveda, Hypnosis, Homeopathy, Aromatherapy, Nutrition, Neural therapy, hematology immunology and electropuncture.<sup>1</sup>

Toothache is defined as an orofacial pain originated from a dental element and/or adjacent structures in consequence of several diseases or conditions, like cavity, periodontitis, trauma, occlusal dysfunction, and abscess.<sup>2</sup> Toothache negatively impact quality of life such as lack of sleep, hypertension, speech, diet, school/office absentism and work efficiency. In long term allopathic drugs alter oral microbiota and have

undesirable side effects such as vomiting, diarrhea and toothstaining.<sup>3</sup>

During COVID-19 lock down, visiting dentists in present scenario is at high risk until new guidelines (hand hygiene, all personal protective equipment (PPE), strategies and caution in performing aerosol-generating procedures) to be followed to avoid the COVID-19 infection. During that crucial time various ancient home remedies and google information help was used by patients at home for acute dental disease especially toothache relief by holistic approach. The primitive medicine used in home to stay safe and to fight against oral disease in pandemic crisis. In current article information was searched from MEDLINE, Pubmed, and AYUSH Research Portal for Systematic Review to discuss primitive medicine use for dental disease.

### PRIMITIVE HERBS USED IN DIFFERENT COUNTRIES FOR DENTAL DISEASE

Various procedures like Dant Dhavani (Brushing), Jivha Lekhana (Tongue scrapping) Gandoosha or Oil propulsion/Oil Pulling (Gargling) Dant Dhavani (Brushing) for maintaining oral hygiene are mentioned in Ayurveda.<sup>4</sup> In Cameroon, 32 medicinal plants are used in the treatment of toothache.<sup>5</sup> Burkina Faso, Local communities used 62 medicinal plant species for the treatment of oral diseases, out of which 41 plants are utilized for the treatment of toothache alone.<sup>6</sup> In Madagascar, 63 plant species are used to treat dental caries and 23 plants to treat periodontal diseases.<sup>7</sup> Ngari et al<sup>8</sup> and Delfanetal.<sup>9</sup> study showed that local people in Kenya and Lorestan Province of Iran used 12 and 14 medicinal plants, to get relief from toothache. *Acmella caulirhiza*<sup>10,11</sup>, *Allium sativum*<sup>11,12</sup>, *Datura stramonium*<sup>13</sup>, *Clausena anisata*<sup>11</sup>, and *Solanum incanum*<sup>13</sup> are the plant species frequently employed by local people in Ethiopia for toothache. Chinese traditional medicines are effective in treating oral diseases but most of them lacked standard criteria of post treatment assessment and laboratory evidence.<sup>14</sup> Malaysian aborigines (56.8%) use more than 50% of traditional medicine for relief of orofacial pain.<sup>15</sup>

### PRIMITIVE HERBS USED FOR DENTAL DISEASE IN INDIA

The most common methods of traditional medicine from plant extract/ material was chewing (56.5%), decoction (9.7%), crushing (5.4%), powdering and others (pounding, holding, rubbing, and inhaling) accounted 3.2% and 47%, respectively. Medicinal plants are used widely in rural area and family's old people as in ancient time. According to the World Health Organization, between 65% and 80% of the populations of developing countries in rural area use medicinal plants as remedies<sup>16</sup> and the use of traditional

medicine continues to expand rapidly across the world.<sup>17</sup>

**Clove Oil (*Syzygium aromaticum*)** –It has been used in India and China, for over 2,000 years to control both tooth decay and counter bad breath.<sup>18</sup> In fact, in a solution of Eugenol, clove oil is used as pulp dressings, cavity liners, and dry socket dressing. Crude clove extract has the potential to influence plaque-inducing properties of *Streptococcus mutans* strain by affecting cell adhesion, cell-surface hydrophobicity and glycosyl transferase activities. Eugenol fights bacteria, reduces tooth sensitivity, and reduces the pain. For immediate effect of clove, soak a cotton pellet in one drop of clove oil and put it gently in the tooth cavity. It is not wise to leave the cotton pellet in the tooth more than two minutes as it causes inflammation and chemical burns of the gum.

**Oleaceae europaea (olive)** -The University of Cambridge discovered a new anesthetic Gel from a plant deep in Amazon Jungle in Peru which may replace dental injections. It is a tree bearing silvery green leaves and small white-yellow feathery flowers. It is effective antimicrobial agent used for the treatment of Dental Pain.<sup>19,20</sup> Stem extracts of *O. europaea* using petroleum ether, acetone, methanol, and water successively showed a broad spectrum of activity against microorganisms liable for the foremost dental diseases.<sup>19</sup> Methanol extracts of *O. europaea* showed the maximum activity against *S. mutans* (16.6mm) and *C. albicans* (13.6mm). Sudjanaetal.<sup>21</sup> revealed, leaf extract of olive has activity against specific microbe and narrow spectrum antimicrobial agent. It blocks the nerve ending and functions as an effective anesthesia in the mouth which lasts more than an hour. This herbal remedy can be applied in root canal therapy, after dental implant surgery and pain reduction after tooth extractions in the children.

**Ajowain (*Trachyspermum ammi*)**-It significantly reduce cariogenic properties of *Streptococcus mutans* adherence on tooth surface, as well as biofilm formation on tooth.

**Babul (*Acacia Arabica Wild*)**-Gel containing *Acacia arabica* has shown significantly clinical improvements in dental plaque and gingival conditions without any discoloration of teeth.<sup>22</sup> Its antibacterial activity using fresh isolates showed inhibition of suspected periodontal pathogens like *P. Gingivitis* and *P. Intermedia* with great clinical value.<sup>23</sup>

**Garden Sage**- This herb is a natural and immediate pargoric used to reduce toothache. Its antibiotic and

anti-inflammatory help to soothe the pain. Dried sage is crushed with a teaspoon of salt in a glass of water and used for gargles until the pain subsides.

**Turmeric/ Haldi (*Curcuma longa* linn.)** –Turmeric has been widely used in the management of oral diseases. It has antiinflammatory and antiseptic properties which may help to reduce pain and inflammations caused by dental abscesses, periodontitis. It is used in dental plaque detection, and as colorant in pit and fissure sealant.<sup>24</sup> Curcumin is the active component present in 3-4%. Turmeric extracts have a possible role in the treatment of potentially malignant oral mucosal lesions.<sup>25</sup> It inhibits/suppresses metastasis of melanoma cells by protecting free radical damage. It is useful in deactivating the tobacco containing carcinogens.<sup>26</sup> It is a strong antioxidant reduces inflammation by lowering histamine levels and by increasing the production of natural cortisone by the adrenal glands. Turmeric powder mixed with a little amount of water to form paste and applied on affected area to pain reduction.

**Garlic/lehsun (*Allium sativum* L.)**- It is used as antitussive, expectorant, diuretic, lipid and blood pressure lowering drug. Due to strong antibacterial activity; chopped garlic held in the mouth to sterilizes the oral cavity. Similarly, fresh garlic juice is effective in killing *Streptococcus pyogenes* and *Corynebacterium diptheriae*. It block cyclooxygenase pathways and prevent formation of inflammatory prostaglandins. Garlic has a high antibacterial effect against human dental plaque microbiota *Streptococcus mutans*, *S. sanguis*, and *S. salivarius*; *Pseudomonas aeruginosa* and *Lactobacillus* spp.<sup>26</sup> It is mashed and mix with a little salt and small amount of peanut butter, and then press it into the tooth for toothache. Unlike drug oriented antibiotics, there is no worry to tolerance or resistance and of its intake.<sup>27</sup>

**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.

**Maryamgoli (*Salvia officinalis*)**- Is a small perennial evergreen subshrub, native to the Mediterranean region, medical herb since the ancient times. The Latin *salveo* meaning be healthy.<sup>28</sup> It contains camphor, flavonoids, catechin tannins and antibacterial carnosol. *Salvia* extracts and infusions have antiinflammatory, 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.<sup>29</sup>

**Neem (*Azadirachta indica*)**- It contains the alkaloids margosine, resins, gum, chloride, fluoride, silica, sulfur, tannins, oils, saponins, flavonoids, sterols and calcium. Neem mouth rinse is highly efficacious and significant reduction of plaque, gingivitis and treatment of periodontal disease therapy as have antimicrobial property on *S. mutans* and *Lactobacillus* growth. Vanka et.al study revealed that it has inhibiting effect on *S. mutans* which has reversed incipient carious lesions.<sup>30</sup> Neem oil have bactericidal activity independent of the temperature and energy. The activity was mainly due to the inhibition of cell-membrane synthesis in the bacteria.<sup>31</sup> Aloe Vera(*Aloe barbadensis*)- Pure Aloe Vera juice and mouthwashes have role in reduction of dental plaques. It destroys the plaque formation by bacteria called *Streptococcus* and prevents fermentation of oral fungi.<sup>32</sup> Application of Aloe Vera gel not only accelerates the improvement of mouth sores (oral herpes) but also relieves the pain of ulcers. It has aloesin and aloemannan which are anti-inflammatory and immunosuppressive. Wound healing is enhanced by collagen turn over in the wound tissue. Oral treatment with Aloe vera found to have influence in the synthesis of glycosaminoglycans (GAGs), thus modulate wound healing. Salicept or gelfoam patch, a freeze dried pldget have Aloemannan hydrogel obtained from the clear inner gel of Aloe Vera reduces the incidence of alveolar osteitis compared with clindamycin soaked gel foam and significant effective result in lichen Planus. Miswak/Pelu tree (*Salvadora Persica*)

Miswak, a twig of the *Salvadora persica* tree, has shown an immediate antimicrobial effect on cariogenic bacteria esp. *S. mutans*, *Lactobacillus* and *S. fecalis*.<sup>33</sup> It possesses plaque inhibiting and analgesic effect to thermal stimuli thus suggests effective in the management of dental hypersensitivity.<sup>34</sup> Gazi et al., found in his study that Miswak produce significant increases in calcium (22-fold), chloride (6-fold), significant decreases in phosphate and pH which lead to inhibition of demineralization and promotion of remineralization of tooth enamel.<sup>35</sup> In Muslim countries Miswak datun is widely used for cleaning teeth as its use predates the origin of Islam. Zeid et.al revealed that miswak had an immediate antimicrobial effect on *S. mutans* than *Lactobacilli*.<sup>36</sup>

**Tulsi (*Ocimum sanctum*)**- It act as COX-2 inhibitor hence have significant effect on toothache,

periodontal disorders, candidiasis, lichen planus, leukoplakia, and oral submucous fibrosis, pemphigus, aphthous ulcerations Sesame Seed- For more than 1600 years, sesame is used to relieve toothache in China .Its properties are similar to Aspirin that acts as an anodyne agent. Sesame seed oil has sesamin, sesamol and sesamol like antioxidant which act upon the living tissues by detoxification of toxins and potentiates the action of Vitamin-E. It also possess high concentration of polyunsaturated fatty acids which are good source of fat soluble vitamins.<sup>37,38</sup> There is significant reduction in Streptococcus mutans count in saliva and plaque after oil pulling therapy by sesame which reduce the incidence of dental caries, prevent halitosis, xerostomia and angular cheilitis.<sup>39</sup>

#### **Oregano oil**

This oil has antibacterial and antioxidant herbal medicine to treat dental abscesses. Avicenna wrote in his book "The Canon of Medicine" that oregano is a drug of choice for oral ulcers. Chewing oregano is effective in eliminating bad breath<sup>41</sup>. Oregano oil is mixed with a small amount of olive oil which will reduce the toothache. Mouthwash is prepared by mixing drops of oregano oil in 1/4 cup of warm water.

#### **Asafoetida**

Asafoetida seeds powder are mixed with fresh lemon juice, and heated the mixture slowly. This mixture is applied on the painful area with cotton ball which help in relieving toothache.

#### **Green Tea/ Camellia sinensis**

It possess antimicrobial properties which prevents the adhesion of Streptococcus mutans, Porphyromonas gingivalis, and Streptococcus sobrinus . It also has anti-inflammatory properties which help to reduce pain. Tea bag is wet and leave on the painful tooth to reduce pain.

#### **Salt Water**

Its properties are similar to Aspirin that acts as an anodyne agent. Salt disinfect the tooth by reducing inflammation.

#### **Ice**

It has always been a good temporary pain reliever before get to the dentist. Some ice cube are put on plastic bag and wrap a thin cloth around the bag. Hold the bag for 15 minutes until tooth feel numbness.

#### **Honey (Propolis)**

It is used for the treatment of aphthous ulcers, candidiasis, acute necrotizing ulcerative gingivitis, gingivitis, periodontitis, and pulpitis.

#### **Onion**

Onions contain a potent antioxidant agent called Flavonoids. Quercetin in onion helps to relieve a toothache.<sup>42</sup> Due to presence of Vitamin C, onions strengthen and firm the gums.

#### **Guava Leaves**

Guava fresh leaves are used as anti-inflammatory, antimicrobial and reduction of toothache. Fresh leaves are boiled in water. After cooling, add some salt to the solution which is used as a mouthwash.

#### **Mango Leaves**

Its leaves are widely used by chewing and oil pulling which have antibacterial property. Mangifera indica contains tannins, bitter gum and resin. Tannins and resins have an astringent effect on the mucous membrane that form a layer over enamel so providing protection against dental caries. Mango leaves contain mangiferin a compound which had significant antibacterial property against certain stains of streptococci, staphylococci, pneumococci and lactobacillus acidophilus.

#### **Apple Cider Vinegar**

It is applied directly on the teeth and rinse after a few minutes. To whiten teeth, gargling of this solution is recommended in the morning. It can remove teeth stains and oral bacteria from the surface area.

#### **Amla (Phyllanthus emblica)**

It is also known as the fruit of a tree, general builder of oral health and used for mouth rinse as a stewing. It reduces the frequency of early caries and reverses its process by decreasing the count of S. mutans, S. mitis, S. sanguinis, and S.salivarius and can be used to treat toothache by decreasing the plaque index and bacterial count and healing of soft tissues especially the gums.

#### **Conclusion:**

According to World health Organization (WHO) 75% of the world's population uses herbs for basic health care needs. WHO has recommended for the incorporation of the traditional systems of medicine like Ayurveda into the primary health care system, for those communities where it is accepted. Holistic dentistry is an alternate approach, an emerging field of dental medicine and more research are to be done in this field. The natural traditional phytochemicals are reported an alternative to antibiotics and NSAIDS in rural area and in pandemic crisis of COVID 19 when faced problem in getting oral health services. These recommendations are merely suggested to reduce the pain associated with dental abscesses and dental infections until the patient refers to the dentist as soon as possible.

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