

# Perioveda: Inclusion of Ayurveda in Treating Periodontal diseases

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**Abstract:-** Ayurvedic drugs are in use since ancient times for various diseases out of which some of the drugs are used for the treatment of periodontal diseases since ages. Nowadays the treatment of periodontal disease involves lot of surgical and invasive methods but by the inco-operation of herbal treatment modalities we can minimize these invasive treatment modalities with minimum side effects. So, the aim of this article is to find a non-invasive, non-toxic herbal approach in the treatment of periodontal diseases.

**Keywords:-** Herbal drugs, Periodontal diseases.

## I. INTRODUCTION

In general, periodontal disease can be termed as a various pathological condition which affects the supporting structure around the teeth. [1] Use of natural substances in dentistry is getting popular day by day.

Recent studies have shown that herbal or plant based products have antimicrobial properties [2]. As the herbal product are non-toxic and non-invasive these can be the perfect choice for the treatment of various periodontal diseases. As the "saying prevention is better than cure" these herbal drugs can be used on regular bases as daily oral preventive measures. Thus, inco-operation of herbs in the field of periodontology will prove to be beneficial in curing various periodontal diseases.

## II. ADVANTAGES OF HERBAL DRUGS

Herbal based drugs are in use since ages, one of the main reason is that it is easily tolerated by majority of patients. Herbal drugs also have a huge acceptance among public as they are being used in day to day life since longtime.

Countries like india and its neighbourhood have excellent climatic condition and biodiversity for cultivation and production of various herbal drugs in descent amounts. thus making their enough availability in the market in a cheaper price range. [3]

## III. HERBAL PLANTS AND THEIR THERUPETIC USES IN PERIODONTAL DISEASES

### A. *Acacia catechu* Wild



Fig. 1: Acacia Catechu Wild

*Acacia catechu* wild belongs to the fabaceae and its sub-family. Katha which is a concentrated filtered extract of *acacia catechu* is widely obtained in northern parts of india. In various areas it is used as mouthwash while its extract is proved to be effective as anti-inflammatory, anti-darrhoeal, anti-pyretic, anti-oxidant and anti-microbial agent. [4][5] Its main chemical constituents present in it are catechin, epicatechin, catechutannic acid, dicatechin, kaempferol, D galactose, D-rhamnose and aldobiuronic acids. Catechinins is the most active ingredient and can be used as a haemostatic. [6]

### ➤ Uses of *Acacia catechu* in the Management of Periodontal disease

*Acacia catechu* have an excellent properties of removing plaque and stains and act as great cleaning and polishing agent. As a tooth powder it proves to be very beneficial due to its anti plaque and non-abrasive properties, this tooth powder can be enhance by adding camphor and menthol in a ratio of 91%, 6.3%, 2.7% respectively. [7]

### B. *Tulsi (Ocimum sanctum)*



Fig. 2: Tulsi (*Ocimum Sanctum*)

Tulsi is referred as *Ocimum sanctum* botanically. Tulsi is known as one of the ancient healing herb in Indian ayurvedic sculptures.[8] Tulsi is an erect, soft, aromatic herb that can be termed as undershrub which is found throughout India. Every part of the Tulsi plant including leaves, stem, flower, seeds and roots have their own therapeutic use. In traditional medicine it has been used as analgesic, anticancer, antifertility, antiemetic, anti-diabetic, anti-hypertensive and anti-stress agents. A part from this it has been used in treatment of fever and bronchitis.[9]

According to a study performed in vitro on streptococcus mutans, multiple concentrations of tulsi extract were taken out of which 4% of tulsi extract said to have the highest potential of anti-microbial activity.[10] Tulsi also known as holy basil contains a volatile oil of around 0.7% which comprises around 71% eugenol and around 20% of methyl eugenol.[11]

In a study it was found that doses of 100mg/kg has worked as an anti-ulcer in most of the cases.[12]

#### ➤ Uses in the management of periodontal disease

Holy basil is used since ages in treating various oral infections. It contains agents such as terpenes and caracrol which have excellent anti-microbial properties. One more component name is sesquiterpene bicyclic phyllene is also an anti-microbial agent. These ingredients are also approved by food and drug administration as food additive agents. Tulsi leaves can also be used as tooth powder when dried and ground.[13] Effect of tulsi in curing halitosis has been found in several studies. Due to its anti-inflammatory properties it is one of the best choices in the herbal category in treatment of gingivitis and periodontitis.[14] Presence of many vitamins such as vit. C, vit. A, minerals such as iron, calcium and zinc along with many phytonutrients makes it count under the category of a super herbal drug. It has been also found that deficiency of above mentioned substances has an association with many oral diseases [15]. Thus, it can be said that tulsi or holy basil can prove to be very beneficial in treatment of periodontal diseases.

#### C. Aloe vera (*Aloe barbadensis miller*)



Fig. 3: Aloe vera (*Aloe barbadensis miller*)

The botanical name of aloe vera is *Aloe barbadensis miller*. It is widely found in areas with dry climatic conditions such as Africa, Asia, Europe and America. In India it is mainly grown in states such as Rajasthan, Gujarat, Maharashtra and some of the southern states. Aloe vera is a widely used plant in India due to its various medicinal properties.[16][17] It

contains 75 active constituents mainly vitamins, minerals, sugars, amino acid, lignin, saponins, and salicylic acids. [18][19]

Aloe vera is found to have a high wound healing activity[20]. Ingredients such as lupeol, cinnamic acid, sulphur, urea and nitrogen are said to have antiseptic properties. Aloe vera is also used in dermatological diseases as well as it also has cancer prevention agents.[21][22]

It has shown inhibitory actions on virus, bacteria as well as fungi.[23] Aloe vera has excellent anti-inflammatory properties[24] Aloe vera is also a potent laxative, it exhibits potent anti-viral and anti-tumoral activity.[25] There are two types of micro-organisms whose growth has been said to be inhibited by aloe vera gel they are namely streptococcus pyogenes and streptococcus fecalis [26]

#### ➤ Uses of Aloe Vera in Management of periodontal disease

Anthraquinone glycosides which are found in latex form is used as an antiparasitic agent.[27] Antioxidative phenolic compound which is a derivative of aloeresin is also found in aloe vera[28] Due to its availability in abundance and because of its no known side effect properties aloe vera can be easily used in treating various periodontal conditions.[29] Reducing the inflammation is the main property of aloe vera other than some anti-cancer, anti-diabetic properties have also been reported.[30]

#### D. Turmeric (*Curcuma Longa*)



Fig. 4: Turmeric (*Curcuma Longa*)

The botanical name of turmeric is *Curcuma longa*. The optimum temperature required for the cultivation of turmeric is around 20 degrees Celsius to 30 degrees Celsius. This plant is native to South Asia, many ayurvedic textbooks have mentioned that turmeric has antiseptic and anti-inflammatory properties[31,32]. Along with that it also contains anti-oxidant and anti-carcinogenic properties. Turmeric contains flavonoid curcumin and many volatile oils mainly turmerone, atlantone, zingiberone and other constituents such as sugar, resin and protein in adequate amounts[33]

#### ➤ Uses of turmeric in the management of periodontal disease

Gel of turmeric helps in eliminating pain and swelling[34]. In a study conducted it was found that apart from chlorhexidine gluconate mouthwash turmeric contained mouthwash can also be used as an adjunct in mechanical plaque control which can lead to prevention of periodontal diseases like gingivitis and periodontitis. A study shows that in local

drug delivery of 2% whole turmeric gel has significantly reduce the activity of "Red Complex" microorganisms.<sup>[35]</sup>

One more study has shown that, 1% of curcumin solution has done a better resolution of inflammation than chlorhexidine and saline as sub-gingival irrigant. There was a significant greater reduction in periodontal probing depth in curcumin group as compared to other groups.<sup>[36]</sup>

#### E. *Neem (Azadirachta indica)*



Fig. 5: *Neem (Azadirachta indica)*

Botanical name of neem is *Azadirachta indica*. It is mostly found in India and its neighbouring countries from centuries. In ayurvedic literature it has been mentioned that all the parts of this tree have some medicinal properties which we are still using in this modern era.<sup>[37][38]</sup>

There are about 135 compounds which have been found in neem plant. Ingredient named nimbin, nimbinin, nimbidin makes up the major component of neem. Leaves of neem contain nimbandiol, nimbolide, 6-desacetyl nimbinene which also have anti-carcinogenic properties. Studies have shown that 6-desacetyl nimbinene helps in inhibition of breast cancer growth.<sup>[39] [40]</sup> Parts and products of neem such as neem oil, bark extract and leaf extract are still used as a medicine to treat conditions like leprosy, constipation and respiratory disorders. Studies have shown that the extract of neem leaf has anti-viral, anti-oxidant and anti-arthritis properties.<sup>[41][42]</sup>

#### ➤ *Uses of Neem in management of periodontal disease*

In various clinical trials it has been proved that neem is helpful in healing gingival tissue and also helps in preventive caries. Neem sticks are said to have anti-plaque properties and help in mechanical plaque debridement due to its fibrous nature which provides it a bristles-like structure.<sup>[43]</sup>

The presence of gallotannins during the early stages of plaque formation could effectively reduce the number of bacteria available for binding to the tooth surface by increasing their physical removal from the oral cavity through aggregate formation. Additionally, the effective inhibition of glucosyl transferase activity and the reduced bacterial adhesion to SHA, suggest some potential anti-plaque activity.<sup>[44]</sup> The microorganisms found in inflamed gingiva are resistant to penicillin and tetracycline but are not resistant to antibacterial plant extracts like neem. Unlike antibiotics, antibacterial plant extracts produced no allergy in the gingiva that could inhibit their effectiveness.<sup>[45]</sup>

## IV. CONCLUSION

Herbal medicine is continuously expanding in current scenarios across the world. Researches in the field of dentistry have shown various documentation on using herbal products in reduction and prevention of dental diseases. Therefore, much research has to be done in implementing ayurvedic treatment modalities in clinical dental therapies.

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