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Review on "Dental Health by Herbal Medicine"

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ABSTRACT

The condition that has the greatest worldwide impact is dental disease. Periodontitis, cavities, and oral candidiasis are just a few of the oral disorders that can be prevented via good oral hygiene. Therefore, it is advised to use both chemical and mechanical plaque reduction methods for the best dental hygiene. In addition to being irritating to periodontal tissues, sodium hypochlorite has other drawbacks including corrosive to instruments, high toxicity, blazing of nearby tissues, unpleasant taste, inability to remove the smear layer, and decreased coefficient of elasticity and flexible strength of dentin. Herbs have been used for ages to treat and prevent disease. In a pharmacodynamic sense, herbal extracts are medications in and of themselves because of how they interact with particular chemical receptors in the body. Patients have been able to avoid numerous adverse effects associated with regular medications by taking herbal remedies. Bloodroot, Caraway, Chamomile, Echinacea, Myrrh, Peppermint, Rosemary, Sage, Thyme, Aloe Vera, Propolis, and a list of more herbs used in dentistry are among the herbs discussed in this article. While herbal medication is much more effective and has less negative effects in treating oral illnesses. The goal of the current study is to review the various herbal extracts and their impact on dental health. In dentistry, using herbal remedies can aid with plaque management and irritation reduction. According to the results of this review study, ginger, garlic, aloe vera, and miswak reduced tooth plaque and gingival irritation more effectively than traditional dentifrices.

Keywords: Bacterial Plaque, Dental Health, Gingivitis, Herbal Medicine, and Root Canal Irritators.

1. INTRODUCTION

Humans have sought treatment options for illnesses in nature when you consider that historical times; even recently, using natural drug treatments in nutritional supplements, strength drinks, multivitamins, massage, and weight reduction merchandise has won popularity. These makes use of have broadened the sphere of natural remedy and additionally improved its credibility.[1]

The area of dentistry additionally has all started to take advantage of natural homes for the motive of relieving enamel pain, gum inflammation, and canker sores. However, it's miles of extreme significance to apprehend the interactions of plant extracts with the frame and different medications, as lots of those extracts have anti-inflammatory outcomes and save you bleeding, that's critical in dental treatment. Antiseptics, antibacterial, antimicrobial, antifungal, antioxidant, antiviral, and analgesic dealers derived from flora are of large hobby in dentistry.[2]

For instance, various plant extracts, including propolis, noni fruit, burdock root, and neem leaf, have recently been employed as intra-canal drugs in the fields of periodontics and endodontics with great results, opening a fresh function for herbal agents in general dentistry therapy. [3]

1.1 Anatomy of Teeth

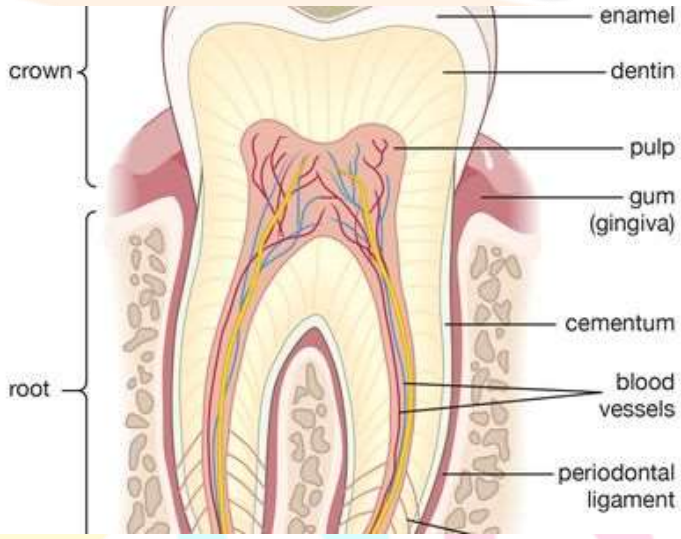

Figure 1 : Anatomy of teeth

1.2 History of Dentistry

Dentistry (Latin: "dens"; "odous" [odont]: tooth) or odontology (Greek: "odous" [odont]: tooth) is the medical science or art that deals with the development, physiology, pathology, and embryology of the oral-facial complex as well as the prevention, diagnosis, and treatment of its diseases, traumatic injuries, and deformities. Dental surgery and dentistry are essentially interchangeable terms.

The renowned French medical scientist Louis Pasteur (1822–1895) once observed, "Science has no country." Today, dentistry is a highly developed science. Our dental detour is less significant than how we got

here today, which is more significant and thrilling. As we all know, history stumbles along the path of the past with its perpetual lamp, sometimes flickering and sometimes dazzling. This brief overview will attempt to explore that track of our arrival. attempting to revive its distant echoes, reconstruct its sciences, and ignite with pale gleams the passion, pleasure, and sometimes pain of earlier times. [4]

1.3 Significance of Dental Health by Herbal Medicine[1]

In dentistry, using herbal remedies can aid with plaque management and irritation reduction. According to the results of this review study, ginger, garlic, aloe vera, and miswak were more effective at reducing dental plaque and gingival inflammation than traditional dentifrices.

1.4 Factor Affecting on Dental Health by Herbal Medicine [5]

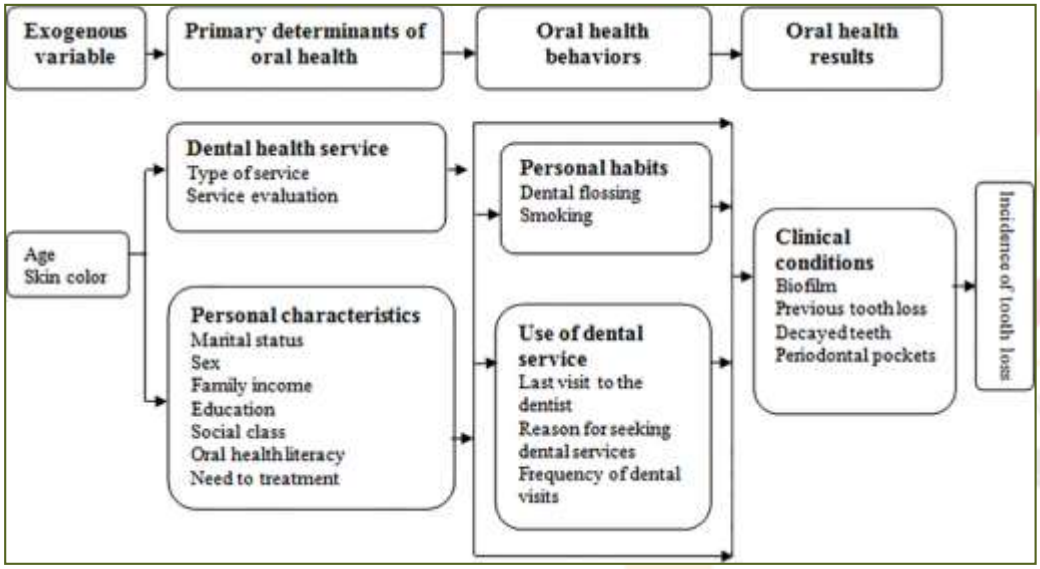

Figure 2: Factor Affecting on Dental Health by Herbal Medicine

1.5 Objectives

- To evaluate various medicinal herbs used in dentistry.
- To assess the effect of various medicinal herbs on the periodontal health. [6]

1.6 Advantages[7]

In dentistry, using medicinal plants might be advantageous. Eugenol, for instance, is a component of our toolbox of treatments. Regarding their ability to prevent oral disorders like dental caries, some herbal products have recently undergone a thorough examination.[7]

There are several potential benefits of using herbal medicine. The combination of some plants' active substances to have preventative effects, activate the regulatory action of the body's defence systems, and prepare for potential activity against external agents has demonstrated some plants to be more successful than pharmaceuticals at healing the entire body.

1) Reduced risk of side effects.
2) Effective with chronic condition.

3) Lower cost.
4) Widespread availability.
5) Safety.

1.7 Disadvantage[7]

1) Lack of regulation.
2) Patience needed.
3) Lack of dosage instructions.
4) Medication interactions.

2. DENTAL DISEASE

Figure 3 : Dental Disease

Gingivitis, periodontitis, and intra-canal medicine are all treated using plants' anti-inflammatory, anti-microbial, and anti-bacterial properties. No evidence is provided for the anticariogenic, sialagogue, or tooth-whitening effects.

2.1 Dental Diseases

Cavities, gum conditions, and oral cancer are the most prevalent diseases that affect our oral health.

2.1.1 Tooth Decay [6]

dental Tooth decay is also known as dental caries or dental cavities. It is the most common problem that dentists see in patients. Tooth decay occurs when bacteria form a film, called plaque, on the surface of teeth.

Figure 4 : Tooth decay

Other symptoms of tooth decay may include:

1) Bad breath

2) Black or brown spots on your teeth

3) An unpleasant taste in your mouth

2.1.2 Cracked or Broken Teeth[6]

Cracked or broken teeth are most often caused by:

Injury, chewing hard foods, Mouth piercings, grinding of teeth while you sleep

A cracked or broken tooth can cause you a lot of pain, depending on the extent of the damage.

Figure 5 : Cracked or Broken Teeth

2.1.3 Root Infection [7]

The base or root of your tooth can become infected and swollen with bacteria. This most often happens because of cavities, cracks, or fractures in the tooth. Root infection can lead to damaged tissues and nerves of the tooth.

Figure 6: Root Infection

2.1.4 Gum disease [6]

Gum diseases, called gingivitis, occurs when plaque accumulates between and around teeth and infects the gums, causing irritation and swelling. Gingivitis can progress to periodontitis, which can cause bleeding gums, painful chewing, receding gums, and tooth loss.

Figure 7: Gum diseases

2.1.5 Tooth sensitivity

Tooth sensitivity can occur when the enamel of the teeth is damaged, allowing substances to reach the nerve endings. People with sensitive teeth may experience discomfort and pain when they eat cold or hot foods. [8]

Figure 8: Tooth sensitivity

2.1.6 Impacted teeth

An impacted tooth is a tooth that has failed to erupt, usually due to lack of space. It can cause jaw and gum pain, bad breath, and an inability to open the mouth easily.

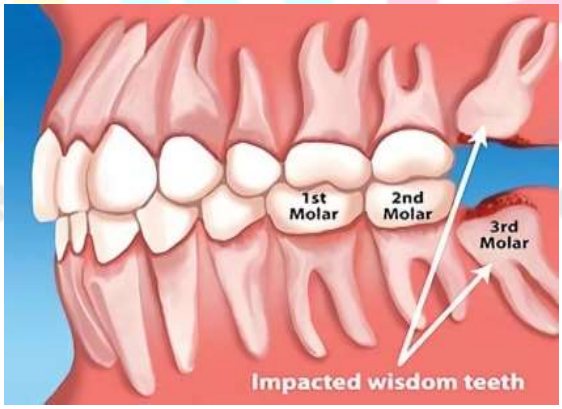

Figure 9 Impacted teeth

NAME OF HERBS	SYNONYM	BIOLOGICAL SOURCE	CHEMICAL CONSTCITUENTS	USES	FIGURE
3.1Aloe-Vera[9]	Curacao Aloe, cape aloe, socotrine aloe	Aloe is dried latex of leaves of aloe. It belongs to family Liliaceae.	Cinnamonic acid, phenols, sulfur, Lupeol, salicylic acid	Analgesic, Antibacterial, Antiviral, Antioxident, Used in site of periodontal surgery.	 **Figure 10: Aloe vera**
3.2 Ginger[10]	Zingibere, Rhizome zingiberis	Ginger is the dried rhizomes of the zingiber officinale belong to the family Zingiberaceae.	Gingerols, curcumin ,polyphenols ,6-gingerol ,oleoresin zingiberene , monoterpene ,aldehyde ,alcohol	Used to relive toothache, Antibacterial, Anti-Inflammatory ,Analgesic,Treatment of oral thrush.	 **Figure 11: Ginger**
3.3 Meswak[1]	Miswaak.	Meswak is a traditional chewing stick prepared from the roots, twigs, and stem of Salvadora persica	Nbenzylbenzamide,decane,stigmasterol	Used to prevent cavities,	 **Figure 12: Meswak**

3.4 Clove oil [12]	Clove tree, spice tree, syzygium aromaticum	Clove is obtained from the dried flower buds of Eugenia caryophyllus. belong to family Myrtaceae	Eugenol,B-Caryophyllene , Eugenyl acetate	Analgesic, Antioxident, Antibacterial, Antiviral, Anti-inflammatory , used in peridontitis	 **Figure 13: Clove oil**
3.5 Tulsi[10]	Tulasi	Tulasi is an aromatic shrub in the basil family Lamiaceae.	Tannins, essential oil, eugenol, methyl eugenol, linalool	Analgesic, Antipyretic, Antibacterial, Anti-inflammatory , used in peridontitis.	 **Figure 14: Tulsi**
3.6 Garlic[12]	Garlic clove, Allium sativum.	Garlic is a part of Allium sativum, belongs to family Liliaceae	Organosulfur compounds, Diallyl thiosulfate, Diallyl sulfides	Antibacterial, Antiviral, Antiseptic, Bacteriostatic , used to treat dental caries and peridontitis .	 **Figure 15: Garlic**
3.7 Green Tea [13]	Herbal Tea, cambric tea, caffein	Green tea comes from the plant camellia sinesis. belongs to family Theaceae.	Polyphenol, catechin, epicatechin	Antibacterial, Antiviral, used in treatment of periodontal disease.	

					Figure 16: Green Tea
3.8 Neem[11]	Neem tree, Nim tree	Neem consists of the fresh or dried leaves and seed oil of Azadirachta indica.	Genin, Sodium nimbinate, salannin, Nimbin, Nimbidiol .	Antiviral, Antibacterial, Anti – inflammatory , used in treatment of dental caries, gingivitis, periodontitis.	 **Figure 17: Neem**
3.9 Peppermint[15]	Mentha piperita, mint.	Peppermint is derived from fresh leaves of mentha piperita.	Menthol, menthofuran, menthyl acetate, menthone.	Peppermint oil is use for topical use.	 **Figure18: Peppermint**
3.10 Turmeric[1]	Seasoner, Flavorer, curcuma longa.	Turmeric is a rhizome of the Curcuma longa belongs to the family Zingiberaceae	Curcuminoids, Curcumin, Volatile oil.	Antibacterial, Antiseptic, Antispasmodic, it is use in oral submucous fibrosis.	 **Figure19 :Turmeric**

3.11 Cinnamon [15]	Ceylon cinnamon, Cinnamomum zeylanicum.	It is the bark of Cinnamomum zeylanicum.	Cinnamaldehyde, trans-cinnamaldehyde.	Antibacterial activity against periodontal pathobionts, Cinnamomum is used as an irrigent.	 **Figure20: Cinnamon**

Table No. 01: Herbal Medicine

3. HERBAL MEDICINE

3.1 Aloe- vera[9]

1) applications directly at the sites of periodontal surgery;

2) as a supplement to scaling and root planing in periodontitis;

3) fast relief of chemical burns brought on by aspirin-related mishaps; Aloe vera can also be used around dental implants to reduce swelling brought on by bacterial contamination.

(4) Extraction sites respond comfortably and empty purses do not form when aloe vera is applied.

(5) angular Cheilitis.

(6) Patients with sore gums and teeth with maladaptive dentures may also benefit.

Endodontics:

Drugs administered intracanally: When located in pulp space, resistant microorganisms like Enterococcus faecalis and Candida albicans are susceptible to the antimicrobial effects of aloe vera. Aloe Vera extracts in the form of water, alcohol, and chloroform also have antibacterial effectiveness and can be applied intravenously.[8]

Can be used as a sedative dressing and file lubricant in root canal procedures. By putting the gel inside the pulp chambers and broaching next to them, aloe vera helps lessen the sensitivity of the extremely sensitive nerve ends found in the root canal.

3.2 Ginger

Ginger, the actual official name for ginger is roscoe, and it is a vital plant with many dietary and therapeutic advantages that belongs to the Zingiberaceae family. Ginger has been demonstrated to have an inhibitory effect

on the growth of germs that cause tooth decay in terms of oral health. In addition to serving as a dental anaesthetic, it can help with dentine remineralization. Numerous studies have also been done on ginger's ability to reduce plaque and freshen breath. Tartar and cavities are prevented by using ginger tooth powder and toothpaste. To profit from ginger's help in the prevention of oral illnesses, it is added to various formulations.[12]

3.3 Meswak

Even when used in place of other tooth-cleaning techniques, meswak has been scientifically shown to be quite effective in preventing tooth decay. However, chewing gum with meswak extract may improve periodontal health by reducing plaque, bleeding, and gingival indexes. Due to the lowered immune response caused by diabetes mellitus and kidney transplant patients (who are typically treated with immunosuppressive drugs), oral candidiasis is known to predispose to these conditions. When tested, Meswak displayed excellent antibacterial activity. The tannins and resins in meswak produce a coating over the enamel that actually protects the teeth by having an astringent impact on the mucous membrane.[13]

3.4 Clove Oil

Because of its antibacterial characteristics, clove is a common ingredient in mouthwashes, throat sprays, dental creams, and tooth pastes. Additionally, it helps to enhance general oral health and relieves the discomfort of sore gums.

In dentistry, eugenol and zinc oxide are used to temporarily fill cavities. For dental emergency, clove is an anodyne (a substance that dulls or relieves pain).

3.5 Tulsi[13]

0.7% of the volatile oil found in ocimum sanctum leaves is made up of roughly 71% eugenol and 20% methyl eugenol. Tulsi is a potent COX-2 inhibitor because it contains a substantial amount of eugenol (1-hydroxyl-2 methoxy-4 allyl benzene). Tulsi's antianalgesic properties are used to relieve mucosal and dental pain. You can use the powdered tulsi leaves combined with mustard oil as toothpaste. The pulverised tulsi leaves were used to treat halitosis and keep teeth healthy. Numerous gingival and periodontal problems have been shown to respond very favourably to massage with tulsi powder. Streptococcus mutans is highly susceptible to the tulsi extract's significant antibacterial activity. According to reports, the main bacteria causing tooth caries is streptococcus mutans. According to an in vitro investigation, the maximum antibacterial activity of tulsi extract is seen at a 4% concentration. The Tulsi has excellent antifungal properties as well.[14]

3.6 Neem

Neem leaf or bark extract is found in neem dental care products. The immunological response in the gum and oral tissues is boosted by the antioxidant content of neem leaf. Neem is a good treatment for tooth decay, mouth ulcers, and acts as an analgesic for toothaches.

3.7 Peppermint

The strong antibacterial activity is present in M. piperita essential oil against the lactobacilli and S. mutans that cause tooth caries. Peppermint leaves and essential oil are used to create mouthwashes and gels that have an anti-periodontal bacterial effect. There are many different types of oral bacteria in the oral cavity, but only a few specific bacterial species—namely Streptococcus mutans, Lactobacillus acidophilus, Actinomyces viscosus, and Nocardia spp.—are thought to be responsible for dental caries. Caries and Streptococcus mutans are closely related. Additionally, mouthwash with menthol is popular because it works well against plaque and gingivitis.

3.8 Turmeric

Turmeric is frequently used to treat a variety of medical ailments and is also used in dentistry. Its anti-inflammatory properties aid in the treatment of periodontitis, gingivitis, and discomfort. Additionally, it serves as a colouring agent in dental plaque detecting systems and pit-and-fissure sealants. Treatment of premalignant lesions and disorders in the oral cavity is aided by its chemopreventive activities.[11]

3.9 Cinnamon

Cinnamon extract irrigant demonstrates a greater reduction in E. faecalis when compared to neem extract irrigant and three percent sodium hypochlorite. By reducing the anaerobes that produce volatile sulphur compounds in the mouth, the sugar-sweetened cinnamon chewing gum may aid with halitosis. Ethanolic extracts of Cinnamomum zeylanicum (Ceylon cinnamon) and Tooth brush tree (Miswak) were made using the soxhlet method. The antibacterial effectiveness of these extracts against periodontal pathobionts varied. Cinnamomum and chlorhexidine both successfully helped to decrease the bacterial count in dental aerosols during Ultrasonic scaling when used as an irrigant through Dental Unit Water Lines (DUWL).[15]

4. TREATMENT ON THE DENTAL DISEASE

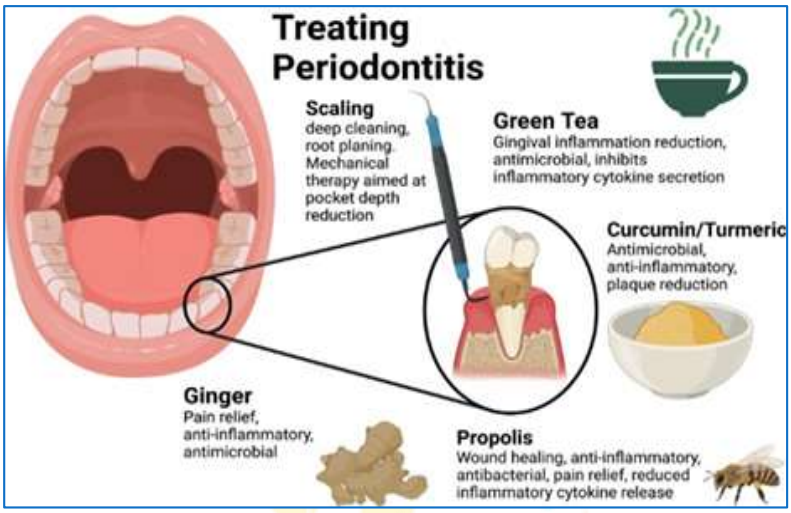

Figure 21: Treating peridontitis

4.1 Herbal Tooth Preparations[8]

To prevent and control of teeth disorders, which include herbal tooth paste, herbal tooth powder, dentifrices, and mouthwash.

4.1.1 Dentifrices

A dentifrice should ideally be able to:

1. Remove food particles, plaque, and stains.

2. It ought to leave the mouth feeling clean and fresh.

3. It should be risk-free, enjoyable, and practical to use.

4.1.2 Tooth Paste:

To remove adherent soiling matter from a hard surface with minimal damage.

Eg. Patanjali Dant Kanti, Colgate Herbal Toothpaste, Pepsodent Herbal Toothpaste, Dabur Meswak Toothpaste, Himalaya Herbal Dental Cream, Sensodyne Toothpaste, Vicco Vajradanti, Babool Neem.

Figure 22 Toothpaste

4.1.3 Herbal Chewing Tablet:[15]

In cases of dental disorders, herbal chewable pills are a useful substitute and more practical than traditional tablets. Due to their lack of a water requirement, these pills have several tremendous potential benefits. It suggests that the patient may receive the tablets whenever they choose, wherever they are. Chewable pills provide patients extra benefits to ensure better compliance, to enhance the experience, and to get beyond swallowing challenges.

4.1.4 Polyherbal Formulation:

The preparation of toothpaste and assessment of its anti-microbial efficacy using a polyherbal composition. The following polyherbal plant parts were used in the formulation of toothpaste: the bark of Acacia arabica, A. indica, Mimusops elengi, Salvadora persica; the fruit of E. officinalis; the fruit of Piper longum; the leaves of Ocimum sanctum or Ocimum tenuiflorum; the rhizome of Curcuma longa; and the root of Glycyrrhiza glabra.

4.1.5 Herbal Mouthwashes:

Mouthwashes are concentrated aqueous anti-microbial preparation solutions that are frequently used in the oral cavity after dilution to fight infections, clean and treat sepsis, and hydrate the area. The symptoms of gingivitis, canker sores, inflamed gums, sore mouth, irritated or ulcerated throat, oral infections, bleeding gums, and teeth sensitivity can all be relieved by using herbal mouthwashes. Mouthwashes are frequently used for oral hygiene and to deliver active ingredients to the gums and teeth.[15]

6. CONCLUSION:

Given the limitations of the current study, it can be said that herbal dentifrice may help gingivitis patients with their regular dental hygiene routines by reducing plaque and inflammation. The main benefits of adopting herbal medication are its accessibility, affordability, and lengthened time and little toxicity. If used in greater amounts, the drawbacks of using herbal medicines like clove oil are supposed to result in major issues including pharyngitis, vomiting, cytotoxicity, kidney failures, liver damage, convulsions, difficulties breathing, and others. Therefore, before herbal medicines can frequently firmly be suggested for oral care, preclinical and clinical investigations are needed to evaluate biocompatibility and safety.

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