

## Review Article

### Herbal Dentistry: A Comprehensive Review

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#### ABSTRACT:

Herbal dentistry has gained significant attention as an alternative approach to oral health care, integrating traditional herbal remedies with modern dental practices. This review explores the efficacy, safety, and applications of various herbal products in dentistry. By analyzing existing literature on the antimicrobial, anti-inflammatory, and analgesic properties of herbs, this paper highlights their potential benefits in the prevention and treatment of dental diseases. Furthermore, the review discusses the challenges and limitations of incorporating herbal dentistry into mainstream practices, advocating for further research and clinical trials to establish standardized protocols and dosage. Ultimately, this review emphasizes the need for a holistic approach to dental care that respects both traditional knowledge and contemporary scientific evidence.

**Keywords:** Herbal Dentistry, Application, Holistic Dentistry

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#### INTRODUCTION

The field of dentistry has traditionally relied on pharmaceuticals and invasive procedures to manage oral health issues. However, there is a growing interest in alternative medicine, with herbal dentistry emerging as a promising amalgamation of traditional herbal remedies and modern dental treatments. Herbal remedies have been used for centuries across various cultures, valued for their therapeutic properties and minimal side effects.<sup>1</sup>

Recent studies have shown that several herbs possess antimicrobial, anti-inflammatory, and analgesic properties, making them suitable candidates for oral care applications. For instance, the use of clove oil for its analgesic effects or neem for its antibacterial properties reflects a growing body of evidence supporting herbal interventions in dental practice.<sup>2</sup>

Despite their promising potential, the integration of herbal remedies into mainstream dentistry faces

several challenges, including a lack of standardization, limited clinical evidence, and regulatory concerns. Therefore, this review aims to provide a comprehensive understanding of herbal dentistry by examining existing research, exploring the benefits and limitations of herbal interventions, and advocating for future studies to promote safe and effective applications in dental care. Through this holistic exploration, the review seeks to contribute to the dialogue surrounding the integration of herbal solutions within modern dentistry.<sup>3</sup>

**Historical Perspective:** Phytotherapy was first mentioned in writing from 200 B.C. The five-thousand-year-old Indian medical system, known as Ayurveda, is used to cure and manage a variety of illnesses. Ancient societies like the Egyptians, Greeks, and Chinese also used herbs for oral health, using them to cure dental issues and maintain good oral

hygiene. The medicinal benefits of certain herbs for oral hygiene have long been acknowledged by traditional medical systems such as Ayurveda and Traditional Chinese Medicine. The incorporation of herbal medicine into contemporary dentistry was made possible by these historical methods.<sup>1-3</sup>

**Classification:** They can be categorized according to their source and mode of action:

**a. General Classification:**

1. Plant products
2. Animal products
3. Mineral origin

**b. Based on mode of action**

1. Anti-microbial
2. Anti-inflammatory
3. Sedative and anxiolytic
4. Miscellaneous

**Common Herbal Products used in Dentistry:** Because of their possible advantages for dental health, a number of herbs and plant extracts are frequently utilized in herbal dentistry. Among the most widely used herbal treatments are:<sup>4-8</sup>

**Neem (Azadirachta indica):** Because of its antibacterial and anti-inflammatory qualities, neem has been utilized in Ayurvedic medicine for millennia. Because of their antibacterial qualities, the bark and twigs have been used to mechanically clean teeth and treat gingival issues. Nimbidin, a primary active ingredient with a wide range of biological activity, is derived from *Azadirachta indica* (*A. indica*) seed kernels. A natural antimicrobial with strong antiplaque properties is neem. By preventing the synthesis of insoluble glucans, neem extracts prevent plaque-forming bacteria from adhering, growing, and aggregating on hydroxyapatite. It may be used as a root canal irrigation agent due to its strong antimicrobial and antioxidant qualities. Therefore, it is thought that neem oil and neem-based dental care products can lessen plaque development, prevent gum disease, and improve breath quality.

**Triphala:** *Embllica officinalis*, *Terminalia chebula*, and *Terminalia bellerica* are the three (tri) fruits (phala) that make up triphala. Rich in vitamin C, carotene, anthraquinones, flavonoids, and tannins, triphala is recognized for its anti-aging, anti-microbial, immunomodulatory, and antioxidant qualities. One of two ways to prepare triphala is to use equal amounts of each of the three fruits (1:1:1) or a 1:2:4 ratio of *T. bellerica*, *T. chebula*, and *E. officinalis*, respectively.

**Clove (Syzygium aromaticum):** The clove tree's flower buds are used to make clove oil, which has antibacterial and analgesic qualities. It is frequently used to treat gum disease and toothaches.

**Tea Tree Oil:** Tea tree oil, which is extracted from the leaves of the *Melaleuca alternifolia* tea tree, is prized for its antifungal and antibacterial qualities. Due to its potent antibacterial qualities, tea tree oil is frequently used to fight oral germs that cause gum disease and foul breath. Tea tree oil can be harmful if consumed, so it's crucial to utilize it carefully. Apply tea tree oil directly to the gums or dilute a drop in a carrier oil to use as a mouthwash.

**Thyme vulgaris (Thyme Oil):** The primary ingredients of thyme oil include phenol, thymol, and carvacrol. Because of its antimicrobial properties against *S. mutans*, *C. albicans*, *Enterococcus faecalis* (*E. faecalis*), and *Pseudomonas aeruginosa* (*P. aeruginosa*), it is widely used in dental cement powders and varnishes to drastically lower microbial counts.

**Sage (Salvia officinalis):** Sage is well-known for its astringent and antibacterial qualities. It is thought to support gum health and lessen oral microorganisms.

**Clove oil:** Because of its antibacterial and analgesic qualities, clove oil has long been utilized. Eugenol, a natural anesthetic found in it, can help relieve gum and toothaches. Apply a tiny bit of clove oil to the afflicted area with a cotton swab after diluting it with a carrier oil (like coconut oil). As an alternative, you can bite down gently on a whole clove adjacent to the tooth that is afflicted to release its essential oil.

**Peppermint oil:** Menthol, an ingredient in peppermint oil, provides a cooling and numbing impact that can help ease gum and tooth discomfort. Additionally, it possesses antibacterial qualities that help support good dental hygiene. To produce a cool mouthwash, dilute a few drops of peppermint oil with water.

**Cocos nucifera (Coconut):** Sterile and non-haemolytic, coconut water is a nutrient-dense powerhouse. With a high osmolarity of 372 mOsm/L, coconut water can sustain cell life for 15-120 minutes with minimal cell loss. There were significantly more viable periodontal ligament cells in coconut water than in 50% propolis and oral rehydration solution.

**Propolis:** In essence, propolis is a resinous substance that is extracted from bee colonies and is high in flavonoids and phenolics, which give it its potent antioxidant qualities. It affects *S. mutans* survival by inhibiting the activity of glucosyltransferase and F-type adenosine triphosphatase (F-ATPase). Propolis has been demonstrated to dramatically lower biofilm levels and is used in mouthwash, chewing gum, dental varnish, and cavity disinfectants. It is similar to traditional irrigants and exhibits bactericidal activity against a variety of root canal infections. It has been

utilized as a pulp capping material because of its reparative and anti-inflammatory qualities.

**Chamomile (*Matricaria chamomilla*):** The soothing and anti-inflammatory qualities of chamomile are well known. In herbal dentistry, it is used to reduce gum irritation and encourage calmness.

**Allium sativum (Garlic):** Garlic's active component, allicin, can break down the cell wall and membrane of several root canal pathogens, including *Fusobacterium nucleatum* (*F. nucleatum*) and *Actinobacillus actinomycetemcomitans* (*A. actinomycetemcomitans*). As a result, it may be used as a root canal irrigant in both primary and permanent teeth.

**Calendula:** Because of its antibacterial and anti-inflammatory qualities, calendula, sometimes referred to as marigold, is good for dental health. It can aid in the healing of oral sores and reduce inflammation of the gums. Calendula can be used as a mouthwash or gel to promote good oral hygiene and treat mild gum disease.

**Aloe vera:** The calming and restorative qualities of aloe vera gel are widely recognized. Gum inflammation, mouth sores, and other minor dental problems may benefit from its use. Choose an aloe vera gel that is pure and free of flavourings or dyes, then apply it topically to the afflicted area. Citrus limonum, or extract from lemons Because citrus limonum extracts contain a variety of bioactive components, including flavonoids, alkaloids, volatile oil, and citric acid, they have antimicrobial properties.

**Curcuma longa (Turmeric):** Turmeric's constituents are referred to as curcuminoids; the most potent of them is curcumin, a polyphenol. Turmeric has been used in dentistry to make it simple to identify pit and fissure sealants and tooth plaque. It can be used as an intracanal medication because it inhibits *S. mutans* and *E. faecalis*. *Curcuma longa*, or *C. longa*, has been used as a mouthwash, 2% topical gel, or 1% subgingival irrigant since sesquiterpenes are what give it its anti-inflammatory properties. Turmeric chips are just as efficient as chlorhexidine in treating gingival and periodontal diseases. It is an excellent substitute for treating dry socket due to its analgesic and wound-healing qualities.

**Psidium guajava (Guava):** Guaijaverin, an active ingredient in guava, has the potential to be utilized as an antiplaque agent because it attaches to the proteins on the cell surface and reduces the pathogens' hydrophobicity, which stops them from adhering to the tooth surface. As a strong source of vitamin C, it aids in wound healing, while other ingredients, including flavonoids and tannins, are crucial in reducing inflammatory mediators.

**Sedative Action of Herbs:** Herbs like *Passiflora incarnata*, *Erythrina mulungu* (*E. mulungu*), and lavender have been used in dentistry to reduce anxiety and promote muscular relaxation, according to clinical investigations. While erythravine and hydroxy-erythravine found in *E. mulungu* are what give these herbs their anxiolytic properties. *Passiflora* inhibits mono-amino oxidase and the activation of the Gamma-aminobutyric Acid (GABA) receptor. Because it includes linalyl acetate, which has a narcotic effect, and linalool, which influences GABA receptors, lavender oil can be used orally or inhaled.

**Advantages:** Herbal dentistry proponents contend that using natural treatments can improve oral health in a number of ways, such as:<sup>9-12</sup>

**Adjuvant option:** Compared to the harsh chemicals and synthetic chemicals sometimes found in commercial dentistry solutions, herbal therapies are frequently thought to be a safer option. To avoid the possible negative consequences of using traditional dental care products, many people choose natural solutions.

**Antimicrobial and Anti-inflammatory Belongings:** The anti-inflammatory, antibacterial, and antiseptic qualities of some herbs used in herbal dentistry may aid in the fight against oral infections, the reduction of inflammation, and the encouragement of recovery.

**General Method:** By taking into account the connection between oral and general health, herbal dentistry promotes a comprehensive approach to oral health. Herbal medicines, according to some supporters, can enhance general wellbeing and aid in the body's natural healing processes.

**Ecofriendly Reflections:** Herbal dentistry is in line with the aim to limit exposure to artificial chemicals and additives as well as the growing awareness of environmental sustainability. Numerous herbal medicines are biodegradable and made from renewable plant sources.

**Drawbacks:** Although herbal dentistry has potential benefits, there are a number of drawbacks and restrictions to take into account:<sup>9-13</sup>

**Inadequate research:** The dearth of thorough research and clinical trials demonstrating the effectiveness and safety of herbal treatments for dental health is one of the main obstacles facing herbal dentistry. A large portion of the data is derived from anecdotal stories and traditional use, which might not satisfy the exacting requirements of contemporary scientific confirmation.

**Dosage:** The content and potency of herbal products might vary, making quality control and consistency

difficult to guarantee. Herbal extracts must be standardized in order to ensure their safety and effectiveness in dental applications.

**Regulatory Considerations:** Not all natural products are as high-quality as traditional dental products, and herbal medicines are governed by regulations. Following legal specifications and quality control procedures is necessary to guarantee the security and effectiveness of herbal treatments.

**Interactions and Allergies:** Some people may experience adverse reactions or drug interactions when using herbal medicines. Before utilizing herbal products, patients should speak with their healthcare practitioners, particularly if they are taking medication or already have a medical issue.

**Conventional Dentistry and interactions:** Rather than serving as a substitute for traditional dental care, herbal dentistry is frequently seen as an adjunct to it. A customized and comprehensive approach to oral health can be provided by combining herbal remedies with traditional therapies. In order to help patients integrate natural oral hygiene practices into their entire dental hygiene regimen, dentists that support herbal dentistry may collaborate with their patients.

**Clinical implementation and Upcoming studies:** More thorough scientific studies are required to assess the effectiveness, safety, and possible uses of herbal dentistry as interest in natural and herbal therapies grows. To create evidence-based recommendations for the use of herbal remedies in dentistry practice, clinical trials and research addressing particular oral health issues are crucial.

By keeping up with the most recent research, participating in interdisciplinary teamwork, and investigating evidence-based methods for integrating natural remedies into their patient care plans, dentists can help integrate herbal dentistry into clinical practice.

Additionally, continuing education and training in herbal dentistry can assist dental practitioners in gaining the know-how required to counsel patients on the proper application of herbal medicines, handle possible interactions, and track the effects of herbal therapies on oral health.

## CONCLUSION

Herbal dentistry presents a unique opportunity to enhance oral health care by integrating traditional herbal remedies with contemporary dental practices. The growing body of evidence suggests that numerous herbs possess valuable therapeutic properties, including antimicrobial, anti-inflammatory, and analgesic effects, which can effectively support the prevention and treatment of various dental conditions. However, despite the potential benefits, the incorporation of herbal remedies into mainstream

dental practice is hindered by challenges such as the lack of standardized protocols, insufficient clinical research, and varying regulatory frameworks.

To fully realize the benefits of herbal dentistry, it is imperative that further studies are conducted to establish dosage guidelines, efficacy, and safety profiles of herbal products. Collaborations between herbalists, dental professionals, and researchers can foster a more comprehensive understanding of how these remedies can be safely and effectively applied in dental care.

Ultimately, embracing a holistic approach that values both traditional and modern practices will enrich oral health care, promote patient-centered solutions, and address the diverse needs of patients seeking alternatives to conventional treatments. Through rigorous research, education, and standardization, herbal dentistry has the potential to become a valuable component of comprehensive dental care, ensuring that patients benefit from the best of both worlds.

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