



## An Insight on Herbal Mouthwashes

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### Abstract

An oral rinse or mouthwash is a liquid solution used to clean teeth, gums, and the entire mouth. It contains antiseptics to prevent harmful bacteria and improve oral health by freshening breath, reducing tooth decay with sodium fluoride, and shielding against gum disease. There are various types of mouthwash, including antiseptic, analgesic, antibiotic, anticavity, steroid, and herbal (ayurvedic) mouthwashes. Herbal mouthwashes, formulated using extracts from various herbs, offer a natural alternative to chemically prepared mouthwashes. They are gentle, non-irritating, and alcohol-free, making them a safer and more natural choice for oral care. Herbal mouthwashes eliminate bad breath, reduce plaque and gingivitis, and prevent caries, promoting overall oral health and wellness.

**Keywords:** Mouthwash, Antiseptic, Antiplaque, Herbal mouthwash, Herbal extracts

### INTRODUCTION

Herbal remedies have been used for centuries in traditional medicine, drawing from systems like Ayurveda, Unani, and Siddha. In India, over 2,500 plant species are used by healers, with around 100 species being consistent sources of medicine. Recently, there has been a global interest in studying medicinal plants and their traditional applications. For centuries, herbal medicines have been used in dentistry to combat microorganisms, reduce inflammation, soothe irritations, and alleviate pain. Recent studies have shown that herbal mouthwashes have shown promising results in controlling plaque and gingivitis. These mouthwashes are formulated with extracts and essential oils from plants, containing active compounds like catechins, tannins, and sterols. They offer gentle therapeutic effects and anti-inflammatory and antioxidant properties, unlike synthetic chemicals. Essential oil mouthwashes are the most extensively researched and widely marketed oral antiseptic solutions [1-3].

### TYPES OF MOUTHWASHES

1. Fluoride mouthwash: Protects teeth from cavities, but be cautious not to ingest too much fluoride.
2. Antiseptic mouthwash: Alcohol-based, prevents bacterial growth, freshens breath.
3. Cosmetic mouthwash: Masks bad breath, lacks oral health benefits.
4. Natural mouthwash: Safer, gentler, maintains oral hygiene, freshens breath, and soothes mouth sores.

### INDICATION [4]

1. Gingivitis
2. Mucositis
3. Halitosis
4. Periodontal disease
5. Xerostomia
6. To clean septic sockets
7. To control plaque
8. To relieve pain
9. To effectively delivered fluoride to prevent dental caries
10. Reduce inflammation

### ADVANTAGES [18-20]

1. **Freshens breath:** Leaves your mouth feeling clean and fresh.
2. **Prevents tooth decay:** Contains sodium fluoride to strengthen tooth enamel and prevent decay.

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3. **Prevents gum disease:** Antiseptic and anti-plaque ingredients help prevent gum disease by killing bacteria and reducing plaque.
4. **Reduce canker sores:** help to alleviate the symptoms of canker sores, promote healing, and reduce the risk of future occurrences.
5. **Strengthens teeth:** Some mouthwashes can help strengthen tooth enamel, prevent plaque formation, and prevent tooth decay by remineralizing teeth.
6. Free from harsh additives, providing a safe and non-abrasive cleaning experience.
7. Herbal mouthwash is a dry mouth-free alternative to chemical mouthwashes, providing a refreshing and moisturizing experience for your mouth and gums.

#### DISADVANTAGES [18-20]

1. Mouthwash can be harmful to young children under 6 years old, so it's essential to keep it out of their reach.
2. Certain mouthwashes can stain or darken teeth, so use them with caution.
3. Mouthwash can potentially damage delicate mouth tissues, such as gums and mucous membranes.
4. Many mouthwashes contain alcohol, which can increase tooth sensitivity, so use them judiciously.

#### HERBS USED IN MOUTHWASH

##### 1. Peppermint (*Mentha Piperita*)

Peppermint oil, derived from *Mentha Piperita*, is a popular essential oil used in soaps, toothpaste, and mouthwash. Its main constituents include menthol, menthyl acetate, menthone, cineol, and limonene. It is used to treat various ailments like gingivitis, headaches, and indigestion. Peppermint oil has a refreshing aroma and antiviral and antibacterial properties, making it an effective mouth freshener. To enhance its benefits, adding anise, caraway, or cinnamon to tea can enhance its breath-freshening effects. However, it should be used cautiously in individuals with liver damage, gallbladder inflammation, or bile duct obstruction [4].

##### 2. Cinnamon (Ceylon Cinnamon, Chinese Cinnamon, *Cortex Cinnamoni*)

*Cinnamomum verum*, also known as the "true cinnamon tree" or "Ceylon cinnamon tree," is a small evergreen tree with significant medicinal and culinary value. Its essential oil, extracts, and compounds have antifungal properties, making them potential for use in mouth rinses, toothpastes, and root canal irrigants. Cinnamon's essential oil and extract can be derived from various parts of the plant, including leaves, bark, fruits, flowers, and buds. Research by Wiwattanarattanabut et al. has shown that cinnamon essential oil has effective antimicrobial properties against cariogenic bacteria, preventing tooth decay and promoting oral health [18].

##### 3. Clove (Clove Flowers, Clove Bud)

Clove, a reddish-brown spice derived from the dried flower buds of *Eugenia caryophyllus* Thumb, is a versatile herb with antibacterial, antifungal, antiviral, and anti-inflammatory properties. It is used in dentistry as an oral anesthetic and root canal disinfectant, relieving toothaches. Clove oil is also used in the formulation of mouthwashes and toothpastes, with eugenol, a key component, combined with zinc oxide to create temporary fillers for cavities. It is available in various forms, including tincture (1:5, 25% ethanol), Lozenges, and mouthwash. Clove oil's anti-inflammatory properties and versatility make it a valuable asset in oral healthcare [21].

##### 4. Pomegranate pomegranate (*Punica granatum* L.)

Pomegranate, a fruit from the Punicaceae family, has been found to reduce pathogens in chronic periodontal disease and inhibit viral infections. Its extract contains antibacterial compounds and anti-inflammatory properties, soothing irritated tissues and preventing microorganisms from adhering to tooth surfaces. Pomegranate also has antiviral activity, reducing poliovirus infectivity when combined with ferrous salt. Its seeds and juice are used as a tonic for heart and throat health, with sensitivity against various bacteria [17].

##### 5. Neem (*Azadirachta Indica*)

Neem, a plant from the Meliaceae family, has been used for centuries in India and South Asia to maintain oral health. Its active compounds inhibit plaque formation and bacterial growth, making its extract effective against gingivitis and oral infections. Neem's broad-spectrum activity against various bacteria makes it a valuable natural remedy for preventing and treating dental and oral diseases [12].

##### 6. Tulsi

Tulsi, also known as holy basil, is a potent natural immunity booster with Vitamin C and zinc properties. Its antibacterial, antiviral, and antifungal properties protect against various infections. Tulsi has been used for centuries for its therapeutic properties, with its essential oil being a potential natural remedy for skin infections and pain relief. Phytochemical screening of Tulsi leaves confirms its potential as a pharmaceutical ingredient, offering a natural and accessible treatment option for low-resource populations [13].

##### 7. Guava (Lemon Guava, Apple Guava)

Guava leaves, rich in bioactive components like tannins, terpenes, phenols, flavonoids, essential oils, saponins, lectins, and carotenoids, have been found to not only prevent bleeding gums and bad breath but also possess antimicrobial properties similar to those found in antiseptic mouthwashes, making them a natural remedy for maintaining good oral health [14,15].

##### 8. Miswak (Drum Stick, Match Stick)

Miswak extract, used for oral health benefits since ancient times, has been found to increase plaque pH in mouth washing. It has been used in Africa, South America, the Middle East, and Asia, with ancient Babylonians using it around 5000 B.C. Miswak extract promotes gingival health, inhibits cariogenic bacteria growth, and exhibits antimicrobial properties, with *Streptococcus mutans* being more susceptible to its effects [6].

## 9. Ajwain

Ajwain is a versatile herb used as a natural antiseptic, effective in wound cleaning, skin infection treatment, and breath freshening. Its oil is used in toothpaste and perfumery, while crushed leaves are applied to infections. Ajwain seeds contain thymol, a key ingredient in mouthwashes, and regular chewing with fennel seeds provides a natural remedy for bad breath [5].

## 10. Myrrh

Myrrh, an oleo-gum resin extracted from the *Commiphora molmol* tree, has potent antimicrobial properties against *Streptococcus mutans*, *Candida albicans*, and *Staphylococcus*. It promotes oral wound healing, reduces gingival inflammation, and maintains oral health. Myrrh's main constituents are resin, gum, and volatile oil, with the gum component containing proteins and carbohydrates. Other herbs used in mouthwash formulations include green tea, ginseng, cranberry, caraway, bloodroot, catechu, and aloe vera. Myrrh has been shown to promote healing in pyorrhea cases and freshen breath [16].

## 11. Wintergreen (*Gaultheria Procumbens*, *Winter Berry*, *Checker Berry*)

Wintergreen oil, derived from dried leaves from the *Gaultheria procumbens* Linn plant in the northern US, is a volatile oil with analgesic, antispasmodic, anti-inflammatory, and astringent properties. It has significant antimicrobial activity against *Pseudomonas aeruginosa* and inhibits *Candida* growth. Wintergreen oil also provides temporary relief for sore teeth. It belongs to the Ericaceae family [16].

## 12. Green Tea

Tea-leaf mouthwash is a natural remedy for various oral health issues, including dental decay, bad breath, laryngitis, mouth sores, plaque formation, pharyngitis, thrush, and tonsillitis. It can be used as a gargle, mouthwash, soak, or douche to treat fungal infections, parasitic infestations, and prevent *Candida* overgrowth. Studies show that tea-leaf mouthwash significantly reduces plaque accumulation without side effects, making it a safe and effective alternative to conventional mouthwashes. Green tea mouthwash offers a gentle, chemical-free, and anti-inflammatory approach to oral health [5].

## MOUTHWASH FORMULATION PROCESS [18]

### Preparation of Plant Materials

- Rinse and dry plant materials in sterile water.
- Crush dried materials into a fine powder.
- Store in airtight vials to maintain their potency.

### Extraction of Herbal Compounds

- Mix powdered plant parts with sterile distilled water.
- Incubate mixture at 37°C for 72 h
- Filter the extract using Whatmann filter paper.
- Wash residual plant material with 10mL of sterile distilled water to ensure maximum extraction of the herbal compounds.

### Formulation of Mouthwash

- Combine herbal extracts with essential oils, antimicrobial agents, and flavoring agents.
- Formulation and manufacturing processes may vary based on intended use, product type, and regulatory requirements (Figure 1).

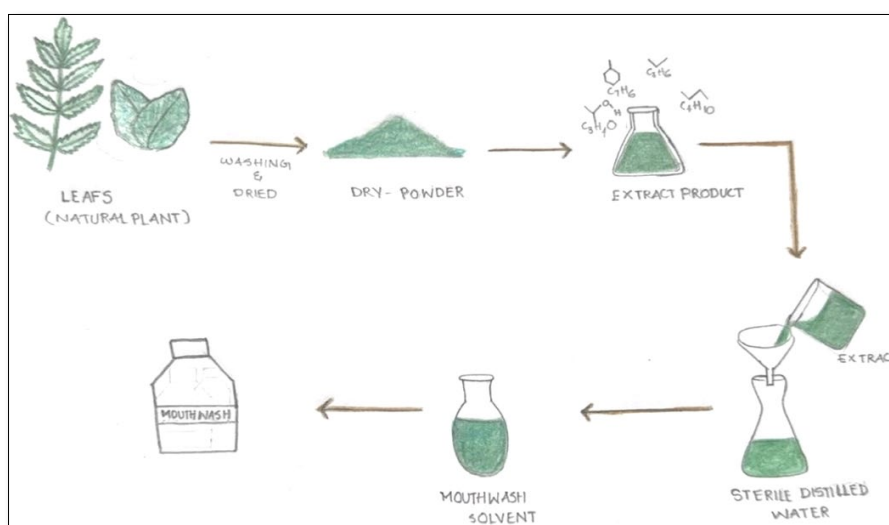


Figure 1. Steps in formulation of herbal mouthwash.

### Herbal Mouthwash Evaluation

- **Color and odor:** Visual examination of mouthwash's appearance and scent.
- **pH:** pH value measured using a pH meter calibrated with a standard buffer solution.
- **Microbial growth:** Tested using streak plate inoculation on agar media plates, incubated at 37°C for 24 h.
- **Stability Studies:** Physical and chemical stability evaluated, safety predicted through accelerated stability tests, according to ICH guidelines.
- **In Vitro Antibacterial Activity:** Tested against isolated *Streptococcus aureus* colonies using Agar well diffusion technique. Zone of inhibition measured in millimeters after incubation at 37±2°C for 24 h [17].

### LITERATURE REVIEW [19-23] (Table 1)






Table 1. Literature Review.

Author & Year	Title	Target population	Sample size & Study design	Conclusion
Naiktari (2014) [15]	A randomized clinical trial to evaluate and compare the efficacy of triphala mouthwash with 0.2% chlorhexidine (CHX) in hospitalized patients with periodontal diseases.	Patients admitted in three different medical hospitals	120 patients double blinded randomized multicenter clinical trial	The herbal triphala mouthwash has been shown to be as effective as 0.2% CHX in preventing plaque formation and reducing gingival inflammation, making it a valuable tool in managing periodontal diseases for all patients. Additionally, it offers several advantages, including cost-effectiveness, easy availability, and excellent tolerability, with no reported side effects, making it a promising alternative for oral health care.
Kothiware (2013) [10]	A comparative study of antiplaque and antigingivitis effects of herbal mouth rinse containing tea tree oil, clove, and basil with commercially available essential oil mouth rinses.	Patients coming to the Department of Periodontics male or female, nonsmokers aged between 18 and 35 years with a plaque index (PI; Silness and Loe, 1964) and gingival index (GI; Loe and Silness, 1963) score of >1.5 were included in the study.	Fifty randomized, double-blinded, controlled, parallel-group design clinical trial.	A newly developed mouth rinse containing Tea Tree Oil (TTO), clove, and basil has demonstrated promising antiplaque, antigingivitis, and antibacterial properties, making it a potential adjunctive treatment to mechanical therapy for the prevention and management of periodontal diseases. This herbal mouth rinse may offer a complementary approach to traditional oral care, helping to reduce plaque, gingivitis, and bacterial growth.
He (2013) [9]	Short-term microbiological effects of scaling and root planning (SRP) and essential oil mouthwash in Chinese adults.	Fifty Chinese adults with chronic periodontitis	Randomly assigned to full-mouth SRP or a 7-day essential oil mouthwash regimen. In addition, 22 periodontally healthy adults used essential oil mouthwash for 7 days	In a 7-day study on Chinese periodontitis patients, both SRP (Scaling and Root Planning) and essential oil mouthwash showed an impact on saliva and gingival plaque flora, with SRP demonstrating greater microbiological improvement.
Priya (2015) [16]	Efficacy of CHX and green tea mouthwashes in the management of dental plaque-induced gingivitis-a comparative clinical study.	Patients seeking periodontal treatment at Chettinad Dental College in an age-group of 18 and 24 years.	Single-blinded, randomized controlled trial.	The green tea-containing mouth-wash is equally effective in reducing the gingival inflammation and plaque to CHX.
Balappanavar (2013) [5]	Comparison of the effectiveness of 0.5% tea, 2% neem, and 0.2% CHX mouthwashes on oral health-a randomized controlled trial	Thirty healthy human volunteers of age-group 18-25 years.	Triple-blinded, randomized controlled, parallel design trial.	The effectiveness of 0.5% tea was more compared to 2% neem and 0.2% CHX mouth rinse.

## Commercially Available Mouthwashes (Table 2)

Table 2. Commercially Available Mouthwashes.

SI No	Brand	Ingredients	Category
1	Spicta 	Green tea, Aloe vera juice, Fitkari, Peach fruit extract	Cleansing, freshener, anti-plaque, anti-cavity
2	Banyan botanicals 	Mint, refined sesame oil, Refined coconut oil, cinnamon oil, Fennel	Freshener, Cleansing
3	Himalaya Active Fresh 	Fennel, Menthol	Germ protection, Fresh breath, Anti-plaque, Gingivitis
4	Eco dent 	Witch hazel, Aloe vera, Essential oil, Mint	Cleansing
5	K P Namboodiris 	Tea tree oil, Ginger, Menthol, Sodium benzoate	Freshener
6	Perfora	Peppermint, lemon, hyaluronic acid, xylitol.	Sensitivity relief

			
7	<p>Feel sattvic</p> 	Ajwain, cardamom, Indian gooseberry, chitrak	Freshen breath, sensitivity, heals mouth, cleanser
8	<p>Sylveco</p> 	Peppermint, sage, clove, rosemary.	Breath freshener, Anti-inflammatory, prevent caries.
9	<p>Bioayurveda basics</p> 	Tulsi, Turmeric, Neem, Lemon.	Anti-bacterial, Anti-plaque
10	<p>Amarantha herbal mouthwash</p> 	Amarantha, gandhapura leaf, nimba.	Freshener
11	<p>Biomed sensitive</p> 	Brich leaf, red grape, plantin, oak bark.	Reduce sensitivity, anti-plaque



## CONCLUSION

Mouthwashes are designed to improve oral hygiene and protect gums from disease. Herbal mouthwashes are economical, safe, and efficient. They treat oral infections and strengthen immunity by utilizing the analgesic, antiseptic, and antioxidant qualities of herbs. Additionally, herbs have antibacterial qualities that help treat bad breath, gingivitis, and plaque. This natural and effective way to promote oral wellness is promising.

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