

# Herbal Products as Mouthwash – A Review

Sandhya R

**Abstract:** *The first known references to mouth rinsing are in Ayurveda and Chinese medicine around 2700 BC.<sup>[1]</sup> Various natural and commonly available substances like salt, alum, vinegar, olive oil, etc. were used. Mouthwash or mouth rinse is a chemotherapeutic agent used as an effective home care system by the patient to enhance oral hygiene.<sup>[2][3]</sup> This review is an attempt to outline various natural products that can be used as a mouthwash and also to discuss the advantages of using herbal mouthwash over synthetic ones.*

**Keywords:** Mouthwash, herbal, gingiva, plaque, oral health

## 1. Introduction

Mouthwash is an aqueous solution which is most often used for its deodorant, refreshing and antiseptic properties or for control of plaque.<sup>[4]</sup> It may contain alcohol, glycerin, synthetic sweetness, surface active agents, flavoring agents, colouring agents, etc.

Many popular herbal products have helped to control dental plaque and gingivitis and they have so far been used as adjunct to other oral hygiene measures such as brushing and flossing.<sup>[5]</sup> Over 50% of the modern drugs are of natural products origin and as such natural products play an important role in drug development<sup>[6]</sup>.

## 2. History

Egyptians are known for the first artistic drawings that emphasize the importance of beauty and hygiene. An unclean body was thought to be impure. In addition to washing their bodies in oils, the Egyptians used many products to freshen their breath.<sup>[7]</sup> They chewed sodium carbonate or rinsed their mouth with honey and water to which goose fat, frankincense, cumin, and ocher had been added. There are surviving recipes for chewable tablets: made of dried plant matter such as myrrh, mastic, cypress grass, and lily which were finely grounded, mixed with honey, heated and dried in balls. Dioscorides, a Greek physician and surgeon whose writing served as a medical textbook for medical education in his field, suggested for treatment of bad breath, a mouth-wash mixture of the following: a decoct of the leaves of the olive tree, milk, the juice of pickled olives, gum myrrh with wine and oil, pomegranate peelings, nutgalls, and vinegar. The ancient Romans included teeth cleaning as part of their religious ceremonies. The patriarchy employed slaves, forerunners of modern dental hygienist, to clean their teeth. The Romans were really the first to invent toothpaste and mouthwash, but it included a secret ingredient: human urine.<sup>[8]</sup> They imported Portuguese urine because they thought it had more strength. Until the 18th century, urine continued to be an active ingredient in toothpaste and mouthwash, because of the ammonia's cleansing abilities.<sup>[9]</sup> Ammonia still continues to be an added ingredient in a lot of dental dentifrices. Writings between 120 and 162 AD, refer to mouthwashes for help in the treatment of diseases.<sup>[10]</sup> Findings also revealed that the ancient Indians and Chinese thought that the caries was caused by worms, and decayed teeth were extracted, if necessary.<sup>[11]</sup> The treatments of oral disease drugs were applied in powders, tablets, ointments, or

lotions. Ingredients of the various mixtures consisted of herbs, minerals, or, often, esoteric agents such as ground up mouse bones.

## 3. Uses of Mouthwash

Many conditions within the oral cavity require the use of a mouthwash. This can vary from breath fresheners to treatment of life threatening secondary infections such as oral mucositis in patients undergoing bone marrow transplant therapy.

The use of mouthwashes requires a correct diagnosis of the oral condition and a thorough knowledge of the product to achieve effective treatment.<sup>[12]</sup> The selection needs to take into consideration factors such as the patient's oral condition, their disease risk and the efficacy and safety of the mouthwash. Recommending particular mouthwashes should take into consideration the patient's ability to perform good oral hygiene practices (tooth brushing and dental flossing), the condition of their teeth, gingiva and oral mucosa, their risk of oral disease (for example, presence of xerostomia, and the proven efficacy of the mouthwash and its potential adverse effects.

Mouthwashes should only be used for short periods of time and should never be the sole means of oral hygiene.<sup>[13]</sup> It can be used in the following cases:

- Halitosis
- Mucositis
- Periodontal Diseases
- Gum disease
- Xerostomia
- To clean septic sockets
- Vincent's angina
- To control plaque
- To relieve pain
- To effectively deliver fluoride in order to prevent dental caries
- Reduce inflammation

## 4. Natural Products Used as Mouthwash

### a) Neem

Botanical name: Azadirachta indica

Composition: nimbin, nimbinin, and nimbidin<sup>[14]</sup>

The leaves, twigs, and seeds of neem have been used in India and South Asia for thousands of years to clean the teeth and fight bacterial and fungal infections. Neem extract also has an excellent effect as a non-toxic repellent, insecticide and pesticide.<sup>[15]</sup>

Neem extract gel is appropriate for treating gingivitis and oral infections because it inhibits the formation of plaque and the growth of bacteria. The neem gel may be particularly useful in younger children and others who are not able to use a mouthwash properly.

Neem has been shown to have significant effects on both gram-positive and gram-negative organisms and other bacteria that cause a wide array of human and animal diseases including *E. coli*, streptococcus and salmonella.

Some of the more recent work has focused on oral care, a critical issue in both developing countries where professional dental care is limited and in developed nations where populations are aging.

Several studies conducted on uses of neem show that extracts from neem sticks or bark has the ability to inhibit the growth of streptococcus mutans.<sup>[16]</sup>

#### **b) Basil**

Botanical name: *Ocimum sanctum*

Composition: It contains – Eugenol, Carvacrol, Eugenol methyl ether, Caryophyllin, linalool, Anole, Chavicol, nerol, terpinin, decylaldehyde, r-selinene, champhor sesquiterpenes. Besides the volatile oil, the plant is reported to contain alkaloids, glycosides, saponins and tannins. The leaves contain ascorbic acid carotene, appreciable amount of Vitamin C, traces of maleic acid, citric and tartaric acid.<sup>[17],[18]</sup>

Tulsi/Basil is described in Ayurveda having many medicinal properties and a wide therapeutic range. It is used specially in the management of cough, Asthma, fever and common cold.

Tulsi leaves contain bright, yellow coloured and pleasant odour of volatile oil. The leaves are quite effective for the ulcer and infections in the mouth. A few leaves chewed will cure these conditions. The herb is useful in teeth disorders. Its leaves, dried in the sun and powdered, can be used for brushing teeth. It can also be mixed with mustered oil to make a paste and used as toothpaste. This is very good for maintaining dental health counteracting bad breath and for massaging the gums. It is also useful in pyorrhea and other gum disorders. The anti-inflammatory and anti-infectious properties of tulsi make it a powerful treatment for gum disease.<sup>[19]</sup>

#### **c) Lemon Grass Oil**

Botanical name: *Cymbopogon citrates*

Composition: myrcene, citronellal, geranyl acetate, nerol, geraniol, neral and traces of limonene and citral.<sup>[20]</sup>

Lemongrass oil has antibacterial, anti-inflammatory, and also superoxide scavenging property.<sup>[21][22][23]</sup> Reduction in the bacterial load, decrease in inflammation and reduction of the oxidative stress will bring about the overall health of the tissues. Based on above property, studies have been done to prove lemongrass oil mouthwash can be used as an adjunct along with the nonsurgical therapy.<sup>[24]</sup>

#### **d) Peppermint**

Botanical name: *Mentha piperita*

Composition: menthol, menthone, 1,8-cineole, methyl acetate, methofuran, isomenthone, limonene, b-pinene, a-pinene, germacrene-d, trans-sabinene hydrate and pulegone.<sup>[25]</sup>

Peppermint is the mint that is most often used commercially -- in liqueurs, toothpastes, soaps, and mouthwashes because of its strong, pure qualities. In medicines, it is used not only as a pleasant flavoring, but also because it contains healing properties as well. Mint has been known as both a seasoning and a medicine for centuries.

Menthol and menthyl acetate are responsible for the pungent and refreshing odour; they are mostly found in older leaves and are preferentially formed during long daily sunlight periods. On the other hand, the ketones, menthone and pulegon have a less delightful fragrance.

Traditionally, peppermint essential oil has been used to treat gingivitis, indigestion, headaches, colic, etc. It has antiviral and bactericidal qualities, is an analgesic and Counterirritant. Peppermint is an excellent breath freshener. When using peppermint tea as a breath freshener, increase the effectiveness by adding a pinch of anise, caraway or cinnamon. Mint is also a good remedy for gingivitis.

Minty mouthwash: Steep 4 tbsp. of chopped fresh mint leaves in 1 qt. of boiling water. Let cool, and then refrigerate. Once chilled, strain the mixture and keep in a bottle in the refrigerator.<sup>[26]</sup>

#### **e) Turmeric**

Botanical name: *Curcuma longa*

Composition: 0.3–7.2% (usually 4–5%) of an orange-yellow volatile oil that is composed mainly of turmerone (ca. 60%), ar-turmerone,  $\alpha$ -atlantone,  $\gamma$ -atlantone, and zingiberene (25%), with minor amounts of 1,8-cineole,  $\alpha$ -phellandrene, d-sabinene, borneol, and dehydroturmerone, among others; yellow coloring matter including 0.3–5.4% curcumin, monodesmethoxycurcumin, and didesmethoxycurcumin; p-coumaroylferuloylmethane and di-p-coumaroylmethane; sugars (28% glucose, 12% fructose, and ca. 1% arabinose); fixed oil; protein (ca. 8%); minerals (especially high in potassium); vitamins (especially C); resin; and others.<sup>[27]</sup>

Turmeric is much more than the familiar spice that gives curry blends their yellow colour and imparts to them a slightly bitter or astringent taste. It is an amazing healing plant that has not only been valued for its therapeutic properties in Ayurvedic and Chinese medicine for thousands

of years but also has a significant role to play here in the West in the prevention and treatment of a wide range of modern day problems. It is an excellent natural antibiotic, and one of the best detoxifying herbs by virtue of its beneficial effect on the liver, a powerful antioxidant with health-promoting effects on the cardiovascular, skeletal and digestive systems<sup>[28]</sup>. Western science confirms that turmeric is a first rate anti-inflammatory herb. It contains at least two chemicals, curcumin and curcuminoids, that act to decrease inflammation much like NSAID COX-2 that inhibit the production of prostaglandins which are linked to arthritic inflammation.<sup>[29]</sup> In a recent study turmeric mouthwash (10 mg curcumin extract dissolved in 100 ml of water with a peppermint flavoring agent added) was found to be as effective as a solution made from chlorhexidine gluconate (CHX), the gold standard compound for plaque buildup in dentistry.

#### **f) Oil Pulling Therapy**

Oil pulling or oil swishing, is a traditional Indian folk remedy that involves swishing oil in the mouth.

Approximately one tablespoon of oil (sesame, sunflower and coconut oils are the most recommended) for 15–20 minutes on an empty stomach.<sup>[5]</sup>

Saline or salt water gargling is also an age old proven and effective mouthwash, which is still widely used by almost all people.<sup>[30]</sup>

### **5. Benefits of Natural Mouthwash**

Using a mouthwash for gum disease prevention is very important. There are few truly herbal mouthwashes available on the market. Substances like tea tree oil have been found to naturally fight bad bacteria. Various Echinacea extracts, gotu kola, mint essential oils and cinnamon have been found to help keep mouths healthy and fresh.

Unlike most commercial cosmetic and therapeutic oral rinses, natural mouth rinses typically do not contain:

Alcohol

Sugar

Artificial colors

Artificial sweeteners (such as saccharine)

Stannous fluoride, a processed form of fluoride that can stain teeth

Cetylpyridinium chloride (CPC), which also can cause staining

Sodium lauryl sulfate (SLS), a chemical that has been linked to various health problems such as premenstrual syndrome (PMS), menopausal symptoms, diminished male fertility and breast cancer.

Harsh chemical preservatives and dyes

Almost all conventional mouth rinses contain alcohol and fluoride, which are toxic (even lethal) if swallowed in large amounts. This is not the case with natural herbal mouth rinses. Mouth rinse comes into direct contact with your mucous membrane and can be absorbed directly into your bloodstream.

Most natural herbal oral rinses are deemed safe alternatives for pregnant women, people with dry mouth (xerostomia), diabetics and children two to 12 years of age.

Natural products are gentle enough for daily use and provide a less abrasive alternative to more potent prescription formulations meant for short-term use. Herbal antimicrobial mouth rinses are considered effective complements to tooth brushing and flossing for patients with gingivitis, providing a clinically significant benefit in the reduction of dental plaque.<sup>[31]</sup>

Using an herbal tooth and gums tonic can leave the mouth feeling even cleaner and fresher than it did using conventional oral care products. Natural oral health care tends to use ingredients that work more in harmony with the body instead of fighting against it. Keeping mouth properly moisturized, protected and fresh is the goal of herbal oral care products and they often tend to do so with more longer success than the conventional versions of the same product.<sup>[32]</sup>

A 2008 study published in the Australian Dental Journal suggested a possible link between the use of alcohol-based mouthwash products and certain oral cancers. Although the study was inconclusive, it drew consumer concern and confusion regarding the safety of alcohol-based mouthwashes. Nonetheless, almost all commercial brand mouthwashes sold in major retail outlets contain significant amounts of alcohol - some as much as 26.9%. While the health risks associated with alcohol-based mouthwashes are not clear, an alcohol and chemical free mouth rinse is less irritating to sensitive gums and tissue, and has proven to be more effective alternative.

### **6. Conclusion**

*An attempt has been made to outline some of the commonly available herbs and plants, and certain fruits, which are readily available, and can be used as effective mouthwashes by all. If people can use and promote such cost effective measures of maintaining the oral health which are also devoid of any untoward side effects, it may help in overcoming some common dental problems.*

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