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Review Article

# A literature review on various agents which can be used as a mouthwash for effective oral care

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ABSTRACT

There are various types of mouthwashes available in the market, which contains different types of ingredients in it, which are active and inactive in nature. A mouthwash can perform various functions like, it can provide an antimicrobial activity, can be used as a topical anti-inflammatory agent, as a topical analgesic and most commonly and importantly for the prevention of the occurrence of the caries in the oral cavity. Mouthwashes are the most common types of agents, which came in direct contact with the oral mucous membrane and can be absorbed directly into the blood stream. Different agents which can be used in the preparation of the oral mouthwashes are chlorhexidine, benzydamine hydrochloride, cetylpyridinium chloride and sodium benzoate, triclosan, oxygenating agents, sodium bicarbonate, alcohol, while on the other side the main content of the poly herbal mouth washes are clove, peppermint, green tea, ajwain, neem, tulsi and leaf of guava fruit. Usually, most therapeutic oral rinses or natural mouth rinses usually does not contain any alcohol or sugar or any type of artificial sweetener in it.



## 1. Introduction

Oral mouthwashes are liquid, which perform different functions like anti-inflammatory, analgesics, and anti-microbial actions. Mouthwashes are most commonly used for its property of refreshing the oral cavity, and antiseptic properties for the control of the plaque. It has been studied that more than fifty percent of the drugs that are used in the formation of the oral mouthwashes are natural original products and it has been found that these natural drugs plays an important role in the development of the drug. A mouthwash can be used to treat oral infections, helps in reducing inflammation, helps in reducing pain, helps in reducing halitosis from the oral cavity, and also helps in delivering the fluoride locally for the prevention of the caries. The most common and preventive use of an oral mouthwash is to control the dental caries and on the other side, the most common and therapeutic use of mouthwash is to inhibit or reduce the bacteria, which are associated in the formation of the dental plaque.

Different agents which can be used as a mouthwash are as follows:

### *1.1. Chlorhexidine*

It is most commonly used active agent in the mouthwash, which is formulated or designed to reduce the oral bacteria in the mouth and to reduce the dental plaque. It has been found that with the usage of chlorhexidine mouthwash shows two types of action; immediate action which is bactericidal in nature and prolonged action which is bacteriostatic in nature, due to absorption of chlorhexidine mouthwash on to the pellicle coated surface of the enamel. It can be used in the oral concentration of the 0.2%, it has

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been found that chlorhexidine is an antiseptic and as well as disinfectant which is found to be effective against different and wide range of vegetative gram positive as well as gram negative forms of organisms. It is found to be effective against some of the viruses and fungi. It has been found that it is ineffective against bacterial spores at room temperature and it can inhibit the growth of acid-fast bacteria but is ineffective in killing the acid-fast bacteria. It has been found that chlorhexidine is much effective against gram positive bacteria as compared to gram negative bacteria. Chlorhexidine is found to be most active at neutral pH and at slightly acidic pH. Chlorhexidine is most commonly used in the treatment of minor oral infections, such as most commonly gingivitis, oral mouth ulcers. The most common adverse effects of chlorhexidine are superficial staining of the teeth, if used for longer period may result in altered taste sensation, or burning sensation.[1–6]

### *1.2. Phenols and essential oils*

They are helpful in reducing gingivitis. The pH of this product is low at 4.3, it might result in erosion of enamel and dentine. These mouthwashes has a strong taste that can be unacceptable to some individuals. Due to low oral pH, this product results in dental erosion. This mouthwash contains four phenols related to essential oils, i.e. thymol, eucalyptol, menthol and methyl salicylate in 26% of alcohol. These products claims to penetrate the biofilm of the dental plaque and thus results in killing of the microorganisms. This mouthwashes shows broad spectrum of the antimicrobial activity and it prevents bacterial aggregation. Mechanism of action is by bacterial cell destruction, inhibition of bacterial enzyme and extraction of endotoxins from gram negative bacteria. Various studies has concluded that essential oils are effective in reducing plaque, gingivitis and halitosis. It has also been shown that these mouthwashes helps in supporting gingival health around the implant.[2–7]

### *1.3. Delmopinol*

It is a derivative of morpholinoethanol, shows effective results in reduction of plaque and as well as gingivitis. Adverse reactions include transitory numbness of the tongue, results in staining of the tooth structure and as well as staining of the tongue, also results in alteration of the taste and can rarely shows soreness or inflammation of the mucosa.

### *1.4. Fluoride rinses*

These fluoride mouthwashes are not given in cases of children below the age of six years. Fluoride mouthwashes results in prevention of dental caries by promoting the process of re-mineralization with the help of fluor-apatite and fluor-hydroxyapatite, results in increases resistance of enamel to the acid. These fluoride mouthwashes are recommended for patients with high caries include those with patients having xerostomia.[5–7]

### *1.5. Cetylpyridinium chloride*

It is a quaternary ammonium compound with antiseptic and antimicrobial properties. It acts by binding to the bacterial surface and results in disruption of the cell membrane, which leads to leakage of the intracellular components which ultimately results disruption of the metabolism. These mouthwashes results in inhibition of the dental plaque.[6–11]

### *1.6. Povidone-iodine*

It does not show appreciable plaque inhibitory activity, it is largely without any side-effect but when used as an oral rinse for longer period shows adverse functioning of the thyroid gland. It shows no plaque inhibitory activity when used at a concentration of 1%.

Various natural plant extract which can be used in the preparation of poly-herbal mouthwashes are as follows:

### *1.7. Peppermint*

It contains high amount of menthol in it, peppermint is usually used as a tea for the purpose of flavoring the dessert, it is also incorporated in chewing gums as well as in tooth pastes. It has been found that the essential oil extract from peppermint is also very helpful in the treatment of migraine, bronchitis, sinusitis, nausea, indigestion of the food, irritable bowel syndrome, patient suffering from nervous condition, peppermint is also found to be the most common ingredient used in the preparation of the mouthwashes. The other natural extract which can be used as an ingredient in the preparation of the poly-herbal mouthwash is clove. Cloves are found to be a natural anthelmintic.[10–12] It has been found that the essential oil from the cloves can be applied over the decayed cavity of the tooth, helps in relieving the dental pain. Ajwain, which is most commonly used in day-to-day life, is an antiseptic which is used as an antiseptic and helpful in treating the superficial infections of the skin. It has found that essential extract from the ajwain can be incorporated as an antiseptic in the toothpaste fabrication, the oil extract from the ajwain when used in the preparation of the mouthwash helps in reducing the halitosis from the mouth. Thymol, which can be extracted from the seeds of ajwain, is utilized in various mouthwashes. It has been revealed by different phytochemical studies, active components from the guava leaves like phenols, flavonoids, essential and stuck oils, sapinins, lectins, carotenoids are very much helpful in reducing the bleeding from the gums. Studies stated that simply chewing the guava leaves also helps in reducing bleeding from the gums. Usage of neem in the formulation of the mouthwash, shows promising results in inhibiting the spread of Streptococcus mutans.[7–9] The oil

extracted from tulsi is very much helpful in the treatment of mouth ulcers and infection of the oral cavity. The oil extract of tulsi when mixed with mustard oil can be used in the preparation of the tooth paste and in the preparation of mouthwashes. Oil of tulsi promise superb results in maintaining the oral dental health. Tulsi when used in a mouthwash provides promising anti-infectious properties.

Mouthwashes can be used in the treatment of halitosis, mucositis, and periodontal disease, and as a treatment modality in xerostomic patients, to clean the septic sockets, helps in reducing the inflammation, and helps in controlling the plaque. [12–15]

## 2. Conclusion

One should use mouthwash as a supplemental aid in day-to-day oral health care, some of the adverse effects from the mouthwashes have been seen. One should know the proper use of mouthwashes in terms of concentration, so as to avoid any harmful side effect.

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