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A Review of an Anti-Microbial Herbal Mouthwash



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ABSTRACT

Mouthwashes are pharmaceutical liquid dosage forms recommended for controlling plaque, bad breath, toothache and bacterial growth. Herbal mouthwash is preferred over chemical mouthwash, because of its less side effects, non-irritant and less toxic effect. The present work is aimed to explain the anti-microbial property of herbal mouthwash and its relevance in the current scenario. The overall study concludes with the advantages, use, types, preparation and evaluation of herbal mouthwash.



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INTRODUCTION

Mouthwashes are antiseptic liquid preparations used for cleaning mouth and teeth, also freshening the breath. These are liquids that contain anti-inflammatory, anti-microbial and analgesic actions. Recently, the use of naturally occurring products is on a large scale. Almost all chemical mouthwashes contain alcohol and fluorides, which are toxic to human body. Chemical mouthwashes have hydrogen peroxide and chlorhexidine for immediate tooth whitening, sterilizing and pain relieving. But they have a tendency to produce side effects. Hence, herbal mouthwashes are alternative to chemical mouthwashes. They act on oral pathogens and relieves the pain and also less effective.

The herbs neem, turmeric, mentha leaves, tulsi, cloves, liquorice, cinnamon, peppermint etc. are used in herbal mouthwashes, that fight against oral diseases. [1, 2]

Composition:

Cinnamon: It is obtained from dried bark of *Cinnamomum zeylanicum* belonging to the family Lauraceae. It is used as an aromatic, carminative, flavouring agent, analgesic, antibacterial, antifungal, etc.

Clove: It is dried flower buds of *Eugenia caryophyllus* belonging to the family Myrtaceae. It is used as flavouring agent, antiseptic, anti-bacterial, anti-fungal, anti-viral, local anesthetic, anti-inflammatory, anti-pyretic activities.

Neem: It consists of stem bark, root bark, leaves and fruits of *Azadirachta indica* which belong to the family of Meliaceae. It has anti-microbial property, anti-fungal, anti-viral, anti-tumour, anti-oxidant activity.

Liquorice: It is the root obtained from *Glycyrrhiza glabra* belonging to the family Leguminosae. It is used as an anti-inflammatory, anti-bacterial, anti-fungal, anti-diabetic, antiviral, anti-ulcer, anti-tussive, anti-oxidant, anti-diuretic and skin whitening agent.

Tulsi: It consists of fresh and dried leaves of *Ocimum sanctum* Linn, belonging to family Labiatae. Ethanolic extract and an aqueous suspension of tulsi have anti-pyretic and antiinflammatory action.

Peppermint: It is the oil obtained by the distillation of *Mentha piperita*, belonging to family

Labiatae. It has been used to treat gingivitis, headaches, indigestion and other ailments. [3, 4]

Advantages

- Non-irritant and non-staining property.
- They have less or no side effects.
- They are less harmful.
- Herbal mouthwashes do not contain fluorides and added sugars.
- Herbal mouthwashes are gentle for sensitive mouth.
- It has natural anti-bacterial property.
- It doesn't cause dry mouth.
- High demand.
- Cost effective.



Uses

- Used to improve oral hygiene.
- To control dental plaque.
- Used against gum diseases.
- Used for killing germs in oral cavity.
- Freshen breath and covers bad breath.
- Relieves from pain and inflammation.
- It is used in periodontal disease.
- It is used for treating gingivitis. [5]

Types of mouthwash

1. **Cosmetic mouthwash:** Consisting of water, flavour and colour. They also contain surfactants for the solubilization, penetration and cleansing of mouth and teeth. It refreshes the breath or masks bad breath.
2. **Anti-septic mouthwash:** This mouth contains alcohol and is utilized by people with mouth infections. Its primary purpose is to remove or destroy the bacteria normally found in large numbers in the oral cavity.
3. **Astringent mouthwash:** They flocculate and precipitate proteinaceous material so that it can be removed by flushing.
4. **Mouthwash concentrates:** These are designed for use after dilution.
5. **Fluoride mouthwash:** This mouthwash contain salt, which protects teeth from cavities.
6. **Buffered mouthwashes:** They control the pH within narrow ranges in the oral cavity.
7. **Deodorizing mouthwash:** They may depend on anti-bacterial action or on other mechanisms for their effect.
8. **Therapeutic mouthwash:** They are formulated for the purpose of relieving infection, preventing dental caries or mitigating some other pathological conditions of mouth, teeth or throat.
9. **Natural mouthwash:** Natural ingredients are used in this type of mouthwash. It is better alternative of chemical mouthwash. [6, 7, 8]

LIST OF HERS AND EXCIPIENTS

Sl no.	Ingredients	Use
1.	Cinnamon (bark)	Antimicrobial
2.	Liquorice (root)	Antimicrobial, antibacterial, flavouring agent.
3.	Alcohol	Solvent, solubiliser.
4.	Glycerin	Thickening agent, humectant
5.	Polysorbate 80	Surfactant, solubiliser.
6.	Methyl paraben	Preservative
7.	Peppermint oil	Fight against bad breath, antimicrobial
8.	Distilled water	

[9, 10]

PRINCIPLE

- Mouthwashes wash the mouth quickly and remove the “soil” needed to grow the bacteria.
- Mouthwash itself contains antibacterial ingredients, which can be retained in the mouth to produce a sustained antibacterial effect.
- Mouthwash can also improve bad breath to a certain extend. It also reduces the bacteria in the mouth that decompose food to produce odour.

PROCEDURE:

In this method, the herbal mouthwash was prepared using cinnamon and liquorice powder. Firstly, cinnamon and liquorice powder (1:1 ratio) was transferred into 100ml sterile beaker.

Then equal amount of ethanol was added to the powder and mouth of beaker was tightly closed using aluminium foil and kept aside for 24hrs after which it was filtered.

In another beaker a little quantity of distilled water was added, to this add polysorbate 80, glycerin was added and mixed well using magnetic stirrer. This was poured into powder extract, to this, preservatives (methyl paraben) and a flavouring agent (peppermint oil) were added. Final volume was made by the remaining quantity of distilled water. [11]

CONTAINERS:

Mouthwashes are packed in clear plastic flasks.

DIRECTION:

Dilute the mouthwash in water in a ratio of 1:3. Use a small amount to rinse the mouth for 3060 seconds after brushing the teeth. Rinse again with water.

STORAGE:

Store in room temperature (59-77°F)



EVALUATION METHODS

Physical examination:

Physical parameters like odour, colours, phase separation and homogeneity were examined by visual examination.

pH:

The pH of herbal mouthwash was measured using digital pH meter. The pH meter was calibrated using standard buffer solution about 1 ml of mouthwash was weighed and dissolved in 50 ml of distilled water and its pH was measured.

Viscosity:

Using Ostwald viscometer, the viscosity of mouthwash formulation was measured. The viscometer was mounted vertically position on a suitable stand. Mouthwash was filled in to

the viscometer up to mark A. The time was counted for mouthwash to flow from A to B. Then viscosity was measured.

Foam test:

The foam ability of the product was evaluated by taking small amount of preparation with water in measuring cylinder initial volume was noted and then shaken ten times. Final volume of foam was noted.

Microbial evaluation:

In the microbial evaluation, agar disk diffusion method is used. Agar plates are inoculated with a standardized inoculum of the test microbes (*Escherichia coli*). Then, filter paper disks, containing the test compound at a desired concentration, are placed on the agar surface. The petri dishes are incubated under suitable conditions for 24hrs. Generally, antimicrobial agent diffuses into the agar and inhibits germination and growth of test microorganisms. Then, the inhibition growth zones are measured.

DISCUSSION

Medicinal plants play an important role in curing diseases because of their anti-microbial property. Herbal products help to control the formation of dental plaque, inhibit the growth of bacteria and freshen the breath. Various herbs such as cinnamon and liquorice have shown significant advantages over chemical once. Such formulations can be used safely by people at home. It makes an improvement in the dental health of population with less or no side effects. They have several advantages such as being non-irritant, non-staining, no added chemical or sugars, cost effective, free from fluorides etc.

CONCLUSION

Herbal mouthwashes are liquid preparations, applied to provide cleanliness and anti-microbial property against oral pathogens. Mouthwashes are common oral care products used to control plaque and other deposits on the tooth surface, thereby reducing oral diseases.

From this study, we concluded that herbal mouthwashes have been shown better anti-microbial properties and provide better safety when compared to chemical mouthwashes. The impact of mouthwashes in the healthcare system can't be excluded.

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