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A Review: Formulation and Evaluation of Herbal Mouthwash

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Abstract: ***This study focuses on developing herbal mouthwash formulations. These mouthwashes may serve as antibiotics, topical pain relievers, anti-inflammatory agents, or even prevent dental caries. Alcohol and fluoride, commonly found in commercial mouthwashes, can be harmful if swallowed. However, this issue is less common with herbal variants. When mouthwash contacts the oral mucosa, its components can enter the bloodstream quickly. Herbal formulations are derived from natural ingredients such as clove, peppermint, ajwain, green tea, neem, tulsi, and guava leaves. These substances aid in fighting tooth decay, plaque, gingivitis, and help in maintaining fresh breath. Regular use can significantly improve oral hygiene. Medicinal plants are known for their antibacterial and antiviral benefits, making them effective in managing and preventing oral infections. Compared to synthetic alternatives, herbal mouthwashes are gaining popularity due to their quick action and fewer side effects.***

Keywords: Neem Leaves, Clove, Tulsi Leaf, Peppermint Oil, Tea Tree Oil, Sodium Lauryl Sulphate, Salt.

I. INTRODUCTION

A. Mouthwash:

A water-based solution generally used to reduce plaque. It is held and swished inside the mouth using facial muscles to eliminate bacteria.

B. Herbal Mouthwash:

These are made from natural plant extracts obtained from various parts such as leaves, seeds, fruits, and tree oils. Initially developed to address oral hygiene concerns, many mouthwashes also offer therapeutic effects. Both herbal and chemical types exist, though herbs are often preferred due to their extended antimicrobial benefits. Since around 70–100% of the global population deals with oral health issues, managing plaque becomes crucial. While gingivitis is reversible, if neglected, it can lead to periodontitis, tooth loss, and reduced life quality. Gum diseases damage the ligament, gingiva, cementum, and alveolar bone. The main cause is plaque. Therefore, using herbal mouthwash daily can help prevent such complications.[1-3]

C. Why Prefer Herbal Mouthwash?

Herbal variants are widely preferred because they provide quick relief from pain, target oral pathogens, and have fewer side effects. Unlike chemical types that use agents like hydrogen peroxide and chlorhexidine (which may cause staining or other reactions), herbal options are safer and still cost-effective.[4-5]

Types of Mouthwash:

1) Fluoride Mouthwash:

Contains fluoride salts that prevent tooth decay. However, overuse can be harmful, especially when combined with fluoride-rich toothpaste or water.

2) *Antiseptic Mouthwash:*

This common type usually contains alcohol. It's used to manage bacterial infections, halitosis, and is often combined with brushing and flossing for better oral hygiene.

3) Cosmetic Mouthwash:

These provide temporary breath freshness but don’t offer long-term oral care or antibacterial properties.

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4) Natural Mouthwash:

Similar in function to other types, but made from plant-based, alcohol-free ingredients—making them safer for regular use.[6-7]

D. Uses of Herbal Mouthwash:

- Beneficial in several oral health issues.
- Used for breath freshening and in treating severe conditions like mucositis in transplant patients.
- Requires correct diagnosis of the condition and knowledge of the formulation.
- Helps control plaque and is useful for gum disorders.
- Kills bacteria in the oral cavity.
- Reduces inflammation and pain.
- Important for gum disease prevention and socket disinfection.
- Treats mucositis, halitosis, and periodontal diseases.[8-9]

E. Advantages of Herbal Mouthwash:

- Prevents gingivitis and gum infections by eliminating harmful bacteria.
- Offers plaque protection with antiseptic or anti-inflammatory agents.
- Helps whiten teeth with natural compounds.
- Strengthens enamel and supports remineralization to prevent decay.
- Reduces bacterial-induced gum swelling.
- Promotes fresher breath.[10]

F. Benefits of Herbal Mouthwash:

- No harsh chemical additives.
- Offers effective cleansing with gentle action.
- Prevents mouth dryness.
- Made from time-tested ingredients.
- Lacks synthetic or mystery chemicals.
- Safe even for sensitive users.
- Provides a pleasant, refreshing feeling.
- Contains natural antibacterial components.[11]

II. MATERIALS AND METHODS

1) Neem (Azadirachta Indica)

- Family: Meliaceae
- Constituents: Nimbin, Nimbidin, Nimbinin
- Uses: Helps inhibit plaque formation and bacterial growth. Effective for inflammation, fever, skin diseases, and oral disorders.[12]

2) Tulsi Leaf (Ocimum sanctum / Ocimum tenuiflorum)

- Family: Lamiacea
- Constituents: Volatile oil, flavonoids, oleanolic acid, rosmarinic acid
- Uses: Antimicrobial, anti-inflammatory, strengthens immunity, helps with gingivitis and plaque.[13]

3) Peppermint Oil (Mentha Piperata)

- Family: Lamiaceae
- Constituents: Menthol, menthone, limonene, cineole
- Uses: Cools the mouth, reduces bacteria, and freshens breath.[14]

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4) *Tea Tree Oil (Camellia sinensis)*
- Family: Myrtaceae
- Uses: Known for antiseptic action. Helps fight bad breath and plaque.[15]

5) *Clove (Eugenia caryophyllus)*
- Family:Myrtaceae
- Constituents: Eugenol, caryophyllene
- Uses: Antimicrobial, analgesic, treats cough, asthma, toothache, and oral infections.[16]

III. PROCEDURE

1) Three herbal extracts were formulated using neem, tulsi, and clove.
2) Each herbal component was ground into powder.
3) 10g of each was soaked in 100 ml distilled water.
4) The soaked mixtures were filtered using Whatman paper.
5) Extracts were boiled separately and cooled.
6) Salt solution (as preservative) and sodium lauryl sulphate (buffering agent) were added.
7) Water was added to adjust volume to 100 ml.
8) Peppermint oil was added for freshness and tea tree oil for antibacterial properties.[17-18]

Ingredients Table

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IV. EVALUATION TESTS

1) *Physical Evaluation:* Color, odor, taste, and consistency were checked visually.
2) *pH Test:* Measured with a digital pH meter.
3) *Stability Studies:* Changes in physical properties and pH were monitored at room temperature and 40°C.
4) *Taste:* Strong flavor maintained through the week, except for the room-stored sample.
5) *Flavor Retention:* Pleasant clove and peppermint aroma remained initially, but slightly faded after a week at ambient temperature.[20-23]

V. CONCLUSION

Today, there is a noticeable shift toward using natural remedies due to their minimal side effects. Herbal extracts, whether used wholly or partially, have shown beneficial effects in dentistry.

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They effectively resolve gum issues and serve as mouth fresheners. These plant-based alternatives present a promising substitute to synthetic agents for treating dental caries, plaque, gingivitis, and periodontitis, offering both preventive and therapeutic benefits.

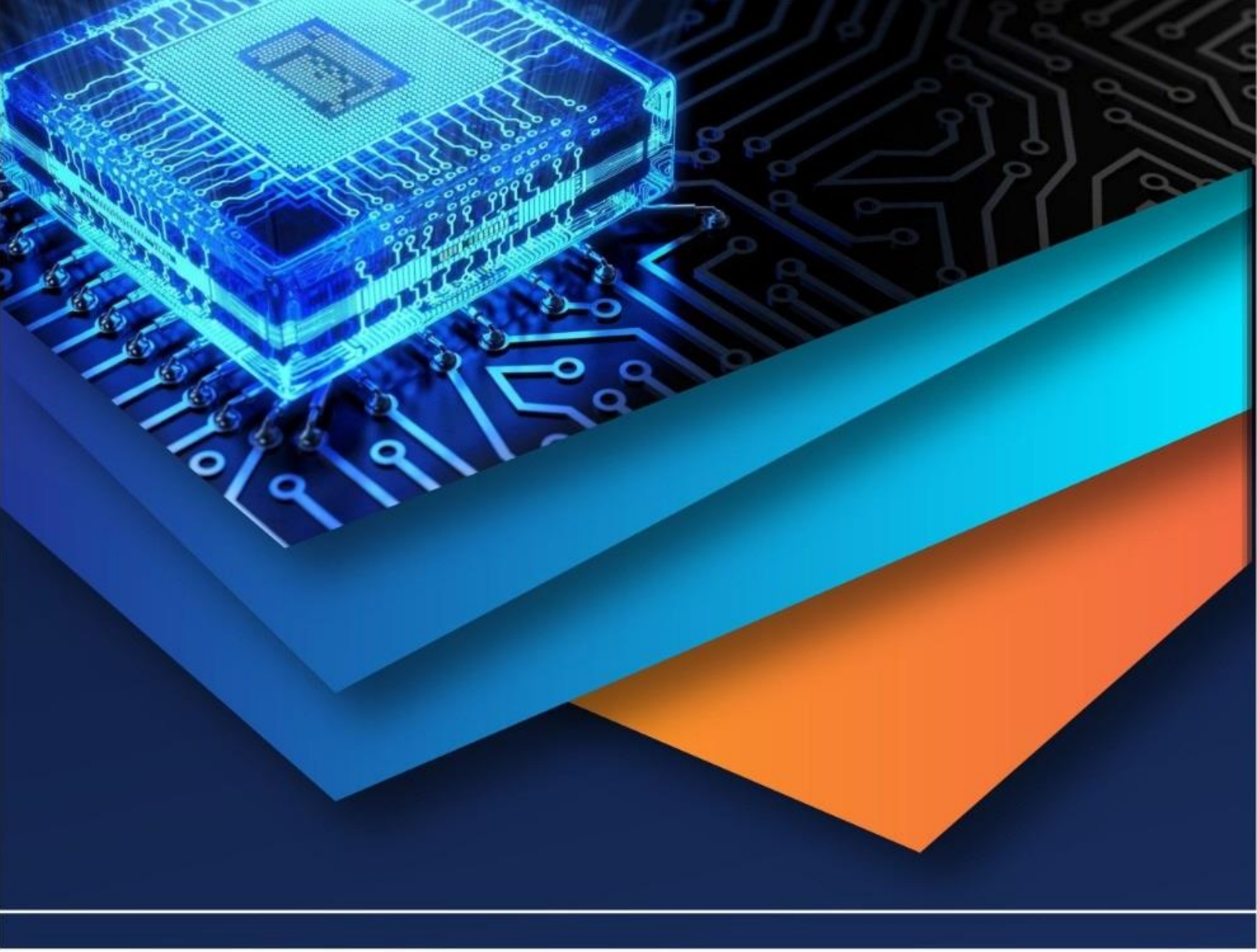
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