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"FORMULATION AND EVALUATION OF AN HERBAL MOUTHWASH FOR ORAL HYGIENE AND ANTIMICROBIAL ACTIVITY"

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ABSTRACT:

The design and evaluation of a herbal mouthwash with antibacterial properties for oral hygiene is the major objective of this study. Natural ingredients with therapeutic qualities, like peppermint, tulsi, neem, and Liquorice, were used to make the mouthwash. The formulation was assessed for organoleptic properties, stability, pH, and appearance. When tested against common oral infections, antimicrobial activity demonstrated effective inhibition. The findings imply that the herbal mouthwash is a cost-effective, safe, and efficient substitute for traditional mouthwashes with chemical bases for enhancing oral health.

KEYWORDS: Antioxidant, Formulation, Antimicrobial, Evaluation, Anti-inflammatory.

1. INTRODUCTION:

Maintaining good oral hygiene is essential to general health and wellbeing. As a portal to the human body, the oral cavity is home to a wide variety of microorganisms, such as viruses, fungus, and bacteria. Dental caries, gingivitis, periodontitis, halitosis, and oral infections are just a few of the dental conditions that can result from poor oral hygiene. The majority of oral disorders are primarily caused by dental plaque, a biofilm created by bacteria colonization.

The prevalence of oral disorders has dramatically increased in recent years as a result of

tobacco use, sugar consumption, dietary changes, and poor oral hygiene habits. To reduce oral microbial load, chemical-based mouthwashes with ingredients like triclosan, alcohol, and chlorhexidine are frequently used. However, extended use is linked to a number of negative effects, such as disruption of natural oral flora, mucosal irritation, tooth discoloration, and changed taste perception. The creation of safer and more efficient substitutes is becoming more and more popular as a result of these restrictions.

Because of its natural nature, biocompatibility, and few adverse effects, herbal formulations have attracted a lot of interest. Medicinal herbs with established antibacterial, anti-inflammatory, antioxidant, and anti-plaque qualities include neem (Azadirachta indica), tulsi (Ocimum sanctum), peppermint (Mentha piperita), and licorice (Glycyrrhiza glabra). Flavonoids, tannins, alkaloids, and essential oils are some of the phytoconstituents that are important in preventing oral pathogen proliferation and preserving oral health.

Herbal mouthwashes offer several advantages over conventional formulations, such as reduced toxicity, affordability, eco-friendliness, and improved patient compliance.

Thus, the goal of this study is to create and assess an herbal mouthwash using specific extracts from medicinal plants that have been shown to have therapeutic and antibacterial qualities. In order to maintain oral hygiene, lower microbial load, stop plaque development, and enhance general oral health, the proposed formulation seeks to offer a safe, efficient, and natural substitute for traditional mouthwashes.

2. Advantages of Herbal Mouthwash:

- Natural and safe – made from plant extracts, fewer side effects
- Improves oral hygiene by reducing bacteria and plaque formation
- Antimicrobial activity against oral pathogens
- Anti-inflammatory effect – reduces gum swelling and irritation
- Prevents bad breath (halitosis) and gives fresh breath
- No or minimal side effects compared to chemical mouthwashes
- Alcohol-free option available, suitable for sensitive users
- Safe for children and elderly people
- Cost-effective and easily available ingredients
- Eco-friendly and biodegradable formulation
- Supports normal oral microflora balance
- Reduces risk of antibiotic resistance
- Helps in preventing dental caries and gingivitis

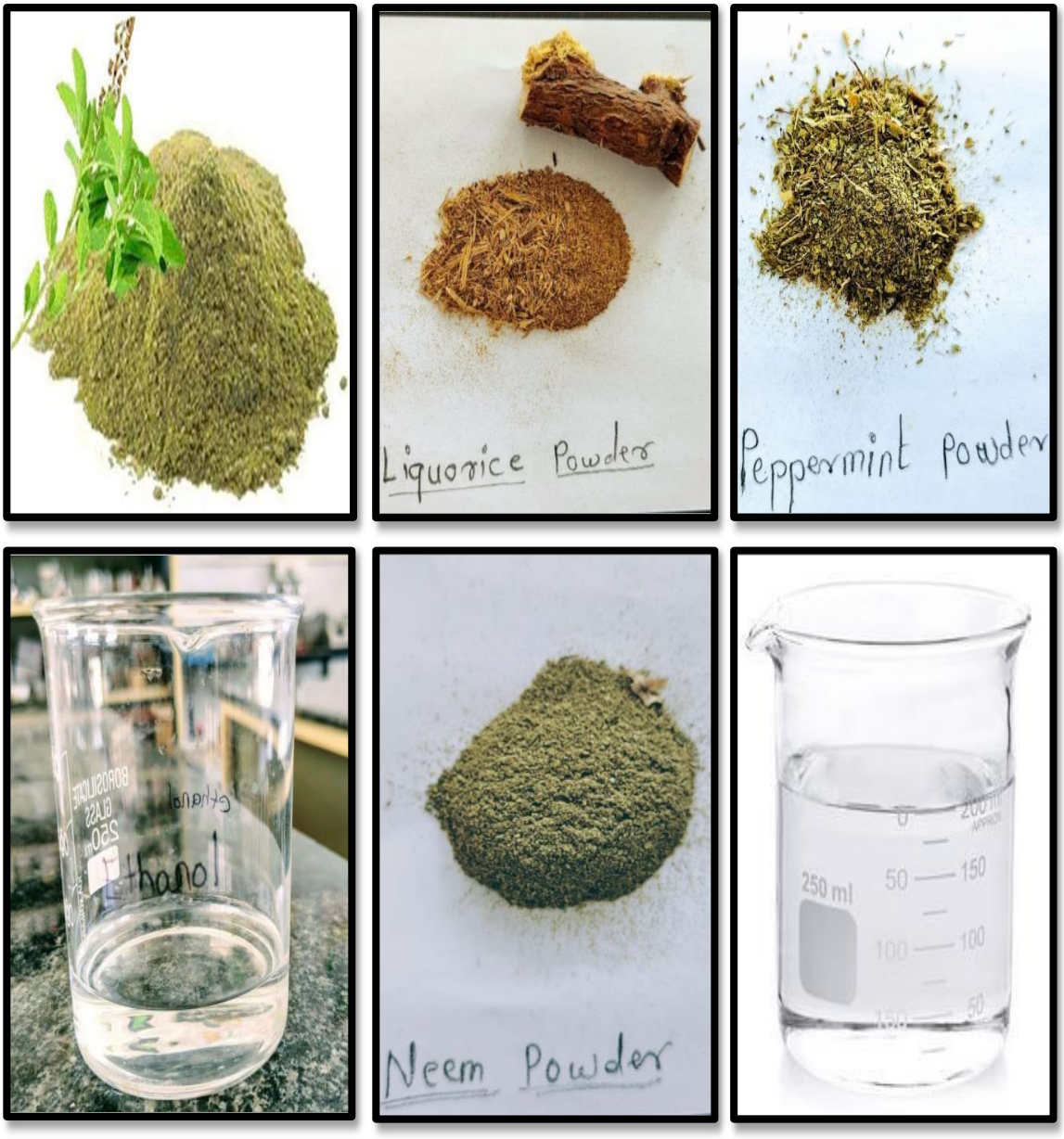
- Can be used for long-term oral care without toxicity.

3. Formulation Ingredients for Herbal Mouthwash:

Table No. 1 Formulation Ingredients for Herbal Mouthwash:

Sr. No.	Ingredient	Quantity in %
1.	Neem Powder	2 gm
2.	Liquorice extract	3 ml
3.	Peppermint Powder	1 gm
4.	Ethanol	2 ml
5.	Tulsi Powder	10 gm
6.	Distilled water	q. s up to 100 ml

Ingredients for Herbal Mouthwash:



4. Formulated Sample of Herbal Mouthwash:

Fig. No. 1 Sample of Herbal Mouthwash.

5. Method of Preparation of Herbal Mouthwash:

Weigh Herbal Powders (Neem + Tulsi + Peppermint)

↓

Mix Powders in Conical Flask

↓

Add Ethanol (70%)

↓

Maceration (24–48 hours) with occasional shaking

↓

Filtration (Filter Paper)

↓

Collect Clear Herbal Extract

↓

Add Liquorice Extract

↓

Make up volume with Distilled Water (q.s. to 100 mL)

↓

Mix Properly

↓

Transfer to Amber Bottle

↓

Herbal Mouthwash Ready

6. Physical Evaluation Parameter and Results of Herbal Mouthwash:

Table No. 2 Physical Evaluation Parameter of Herbal Mouthwash:

Sr. No	Parameter	Observation
1.	Color	Sky in Color
2.	Oduors	Fragrant
3.	Appearance	Soft
4.	Texture	Smooth
5.	Irritation	No Irritation
6.	Solubility	Soluble in water
7.	Spread ability	Uniform
8.	Stability	Stable at Room Temp.
9.	Consistency	Semisolid
10.	Homogenecity	Good
11.	Smoothness	Smooth

7. CONCLUSION:

In this study, a herbal mouthwash including neem (Azadirachta indica), tulsi (Ocimum sanctum), peppermint (Mentha piperita), and Liquorice (Glycyrrhiza glabra), all of which have strong antibacterial and medicinal qualities, was successfully created and assessed. The formulation demonstrated desirable organoleptic properties, acceptable pH, and outstanding stability, guaranteeing patient compliance and safety.

The antimicrobial tests demonstrated its efficacy in reducing plaque and upholding oral hygiene by confirming substantial activity against oral pathogens including Streptococcus mutans. Its therapeutic value is increased by the presence of phytoconstituents such flavonoids, tannins, and essential oils, which prevent mouth infections and suppress microbial growth.

With promising uses in dental care and preventative dentistry, the formulated herbal mouthwash is an all-around safe, efficient, affordable, and environmentally friendly substitute for traditional mouthwashes.

8. Conflict of Interests:

- The authors affirm that the work presented in this paper was not influenced by any known competing financial interests or personal relationships.

9. Acknowledgment:

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