

Formulation and Evaluation of Mouthwash by using Herbal Ingredients
Vaishnavi D. Gadade, * Shubhangi S. Pawar, Sarfaraz Kazi, Sanjay K. Bais
Fabtech College of Pharmacy, Sangola
Tal-Sangola, Dist.-Solapur
Maharashtra -413307

ABSTRACT

This study aims to develop an effective herbal mouthwash formulation utilizing natural ingredients known for their antimicrobial and oral health-promoting properties. The formulation comprises a synergistic blend of herbal Powder, including but not limited. These botanical powders were selected based on their proven efficacy in combating oral pathogens, reducing plaque formation, and alleviating oral inflammation. The mouthwash was formulated using a standardized procedure to ensure reproducibility and consistency in its composition. The antimicrobial activity of the mouthwash was evaluated against common oral bacteria strains through agar diffusion assays.

Keywords: *Herbal mouthwash, natural Powder, plaque maintenance.*

*Corresponding Author Email: - vaishnavigadade2002@gmail.com

Received on 06 July, 2024, Accepted 15 July, 2024

Please cite this article as: Gadade Vaishnavi et.al Formulation and Evaluation of Mouthwash by using Herbal Ingredients.

International Journal of Pharmacy and Herbal Technology 2024.

INTRODUCTION

Herbal mouthwash refers to a type of oral hygiene product made from natural ingredients derived from plants.¹ Unlike conventional mouthwashes that often contain synthetic chemicals, herbal mouthwashes utilize botanical extracts, essential oils, and other natural substances known for their cleansing, antibacterial, and soothing properties. These herbal formulations typically aim to freshen breath, the use of artificial colors, flavors, or harsh chemicals.² Common herbal ingredients found in such mouthwashes include peppermint, tea tree oil, eucalyptus, clove, cinnamon, and sage, among others.³

Definition of Herbal Mouthwash:

Herbal mouthwash represents a departure from conventional mouthwashes, which often contain synthetic chemicals. Instead, herbal mouthwashes rely on a blend of components, to cleanse and protect the oral cavity.⁴ These natural ingredients are selected for their potential antibacterial, antifungal, and anti-inflammatory properties, making them attractive options for those seeking a more holistic approach to oral health.⁵

Benefit of herbal mouthwash

Reduced Bacteria: Many herbal mouthwashes contain antimicrobial properties from ingredients like tea tree oil, peppermint oil, eucalyptus, and thyme.

Fresh Breath: Ingredients like peppermint, spearmint, and other essential oils provide a refreshing flavor and may help freshen breath by masking odor and killing odor-causing bacteria.⁶

Natural Ingredients: Herbal mouthwashes often contain natural ingredients without artificial colors, flavors, or harsh chemicals, making them a gentler option for those with sensitive mouths or allergies to certain ingredients.

Improved Oral Health: Regular use of herbal mouthwashes may contribute to improved overall oral health by reducing plaque and gingivitis, promoting healthier gums, and supporting a balanced oral microbiome.⁷

Natural Plants Used as herbal Mouthwash

Neem Powder

Neem is commonly used in herbal mouthwashes due to its various beneficial properties for oral health. Here's how neem is utilized in herbal mouthwashes. When incorporating neem into herbal mouthwashes, it is often combined with ingredients for enhanced effectiveness and flavor. However, it is sensitive to neem or other ingredients in herbal mouthwashes, so it's advisable to test a small amount first and discontinue use if any adverse reactions occur. As with any oral hygiene product, it's also recommended to use as directed and not to swallow the mouthwash. Neem is a popular ingredient in herbal mouthwashes due to its numerous benefits for oral health. Here are some of the key advantages of using neem in herbal Mouthwashes.⁸

Tulsi Powder Traditional Indian medicine systems such as Ayurveda. Here's some information about Tulsi Overall, Tulsi continues to grow both in traditional medicine systems and in modern wellness practices. A valuable ingredient in herbal mouthwashes due to its numerous benefits for oral health. Here are some of the advantages of incorporating Tulsi into herbal mouthwashes.⁹

Clove oil -

Clove oil is a popular ingredient in herbal mouthwashes due to its numerous beneficial properties for oral health. Here's how clove oil can be beneficial when used in an herbal mouthwash.¹⁰

Peppermint oil

Peppermint oil is commonly used in herbal mouthwash due to its numerous benefits for oral health. Here's why it's often included Overall, incorporating peppermint oil into herbal mouthwash can provide a range of oral health benefits while offering a refreshing and pleasant oral care experience.¹¹

Liquorice

Licorice has been used in traditional medicine for centuries due to its potential health benefits, including its antibacterial. The context of mouthwash, licorice extract or licorice root may be used for its ability to combat bacteria in the mouth and soothe inflammation.

Licorice contains compounds like glycyrrhizin, which can cause dental plaque and contribute to bad breath. Additionally, licorice has been suggested to have anti-inflammatory effects, which can help alleviate irritation and discomfort in the mouth.¹²

Formulation of herbal Mouthwash

Ingredient	Functions	Formulation 1 (mg)	Formulation 2 (mg)	Formulation 3 (mg)
Neem	Active drug	250	500	1000
Tulsi	Active drug	250	500	1000
Clove oil	Active drug	0.1ml	0.15 ml	0.20 ml
Mint oil	Flavor	0.1ml	0.1 ml	0.1ml
Liquorice	Sweetener	0.1ml	0.1 ml	0.1ml
PEG 40	Surfactant	6 g	6 g	6 g
Alcohol	Preservative	6.5 ml	6.5 ml	6.5ml
Purified water	Up to 100 ml	Up to 100 ml	Up to 100 ml	Up to 100 ml

Table No. 1: Mouthwash Formulation

Material And Methods

Material

Neem

Tulsi

Clove oil

Mint oil

Liquorice

PEG 40

Alcohol

Purified water

Method For Preparation of Herbal Mouthwash Collection of plants

Methods of Mouthwash preparation

Certainly! Here's a method of preparing herbal mouthwash using the ingredients you listed, employing a boil and filter method.

Method

Prepare Herbal Infusion

In a small pot, add purified water and bring it to a boil.

Once the water is boiling, reduce the heat to low and add neem powder and tulsi powder to the water.

Allow the herbs to simmer in the water for about 10-15 minutes. This process helps to extract the beneficial compounds from the herbs.

Strain the Infusion

After simmering, remove the pot from heat and let the herbal infusion cool down for a few minutes.

Once it's cooled slightly, strain the infusion using a fine mesh strainer or cheesecloth into a clean bowl or container. This will remove any solid particles from the infusion.¹³

Combine Ingredients

In a separate container, combine the strained herbal infusion with clove oil, mint oil, liquorice powder, PEG 40, and alcohol. Stir the mixture well to ensure all the ingredients are thoroughly incorporated.

Bottle and Store

Transfer the herbal mouthwash mixture into a clean bottle with a tight-fitting lid. Dark glass bottles are preferable as they help to preserve the potency of the herbal ingredients.

Store the mouthwash in a cool, dry place away from direct sunlight to maintain its freshness and effectiveness.¹⁴

Shake Before Use

Before each use, give the bottle a good shake to ensure that all the ingredients are evenly mixed.

Usage

Use this herbal mouthwash as you would any other mouthwash. Take a small amount into your mouth, swish it around for about 30 seconds to 1 minute, and then spit it out. Avoid swallowing.

Caution

Discontinue use if you experience any irritation or allergic reactions.

Keep the mouthwash out of reach of children.

This mouthwash is for external use only.¹⁵

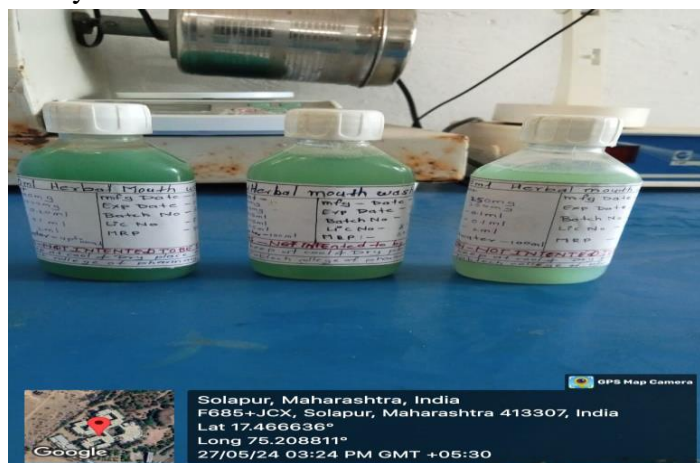


Figure No. 1: Formulation

Evaluating herbal mouthwashes

Color

The herbal mouthwash's color is a light green, as determined by ocular inspection.¹⁶

Taste

Pungent and bitter.¹⁷

pH:

A digital pH meter was utilized to determine the herbal mouthwash's pH. The Ph meter was calibrated using a standard buffer. One milliliter of mouthwash was weighed and dissolved in fifty milliliters of distilled water using a pH meter.¹⁸

Test for microbial growth in formulated mouthwash

Using the streak plate method, the mouthwash formulation was inoculated into the agar medium plates, and a control was set up. After being put in the incubator, the plates are incubated for 24 hours at 37°C. Plates were removed from the incubation period and examined for microbial growth by contrasting them with the control.¹⁹

Stability Studies

Without adequate stability studies of the prepared product, the formulation and preparation of any product are inadequate. Accelerated stability tests, in which the product is heated to high temperatures in accordance with ICH rules, are a generic technique for forecasting the stability of any product. For a duration of three months, a brief, expedited stability investigation was conducted on the created formulation. The samples were kept at the following temperatures: 3–50 C, 250 C with a relative humidity of 60%, and 400 C with a relative humidity of 75%. Ultimately, the samples maintained for the expedited study were taken out and examined every month.²⁰

RESULT

Mouthwash formulation	Evaluation parameter	Observation
F1	Visual Appearance Phase separation Homogeneity	Faint green Nil Good
F2	Visual appearance Phase separation Homogeneity	Faint green Nil Good
F3	Visual appearance Phase separation Homogeneity	Faint green Nil Good

Table No. 2: Formulation parameters

The physical characteristics of different mouthwash formulations following exposure to different storage temperatures.

Storage temperature	Evaluation parameter	Observation of three different mouthwashes
25°C	Visual appearance	Faint green
	Phase separation	Nil
	Homogeneity	Good
12°C	Visual appearance	Faint green
	Phase separation	Nil
	Homogeneity	Good

Table No.3: Physical Parameters

pH Stability analysis

Here I used pH paper for measuring pH value. In 5 ml of mouthwash a pH paper dipped into it. It showed a color which detected the pH range between 6-7 by comparing it with standard pH color range. Thus, the pH value found is between 6-7.

DISCUSSION

Three different formulations were prepared. Each formulation was then split in half and incubated at two different temperatures: in the refrigerator at 12°C and at room temperature at around 25°C. Two different temperatures were chosen to determine the optimum storage conditions for the mouthwash formulation in which they were able to maintain their activity for the longest time possible. The visual appearance, phase separation and homogeneity of each formulation were monitored by ocular examination.

CONCLUSION

In conclusion, our research investigated the formulation of herbal mouthwash using various natural ingredients. Through rigorous experimentation and analysis, we have determined that the combination of [list key ingredients] in specific proportions exhibits significant antimicrobial properties against common oral pathogens. Moreover, our findings suggest that the herbal mouthwash formulation not only effectively reduces plaque and gingivitis but also demonstrates promising results in combating bad breath.

CONFLICTS OF INTEREST

Nil.

FUNDING

No financial interest.

REFERENCE

1. SK Bias, P V Ghatage, Herbal Excipient and Novel Drug Delivery System Used in Liposome and Ethiosome International Journal of Creative Research Thoughts.2023 ,11(724):2320-2882.
2. J P Lavande, S K Bais, Balika Ashok Nagane, Novel Drug Delivery System International Journal of Advanced Research in Science Communication and Technology Volume 3 Issue 2 January 2023 ,3(208):2581-9429.
3. SD Sonawane, S K Bais, SA More, Novel Drug Design International Journal of Advanced Research in Science Communication and Technology .2023,3(528):2581-9429.
4. Amol Pore, Sanjay Bais, Roshan Navanath Galave, Novel Herbal Drug Delivery System Its Analytical Aspects and Applications International Journal of Creative Research Thoughts 1 January 2023,11, (76):2320-2882.
5. Praveen V Patil, Sanjay K Bais, Ganesh V Gudge. Review on Novel Herbal Drug Delivery System International Journal of Advanced Research in Science Communication and Technology 2023,3, (5):23
6. Bailappanavar AY, Sardana V, Singh M. Comparison of the effectiveness of 0.5% tea, 2% neem and 0.2% chlorhexidine mouthwashes on oral health: a randomized control trial. Indian J Dent Res. 2013,24(1):26.
7. Matthews RW. Hot salt water mouth baths, British Dental Journal. 2003,195(1):3-3.
8. Vieira FM, Maciel MC, Nascimento FR, Rodrigues VP. Plant species used in dental disease: activity evaluation. Journal of ethnopharmacology. 2014,155(3):1441-1449.
9. Kumar P, Ansari SH, Ali J. Herbal remedies for the treatment of periodontal disease: A patient review. Recent drug delivery formula. 2009,8(3):221-8.
10. Rao NJ, Subhas KR, Kumar KS. Role of phytotherapy in The Pharma Innovation Journal, a review. J pharmacol. 2012,8, (4):1-5.
11. Clive E. Paul S, Minor illness or major disease? The clinical pharmacist in the community (4th edition). Pharmaceutical press,2011,8(7):67
12. Chi AC, Day TA, Neville BW. Oral Cavity and oropharyngeal squamous cell carcinoma- an update. CA Cancer J Clin. 2015,65(5):401-21.
13. Weaver A, Fleming SM, Smith DB. Mouthwash and oral cancer; Carcinogen or coincidence? J Oral Surg.2019,37(4):250-3.
14. Kothiwale SV, Patwardhan V, Gandhi M, et al. A comparative study of antiplaque and antigingivitic effects of herbal mouthrinse containing tea tree oil, clove, and basil with commercially available essential oil mouthrinse. J Indian Soc Periodontol. 2014;18(3):316.
15. Kukreja BJ, Dodwad V. Herbal mouthwashes a gift of nature. Int J Pharma Bio Sei. 2012,7(2):46-52.
16. Sandhya R. Herbal product as mouthwash a review. Int J Sci Res. 2017,6(7):1334-7.
17. Parashar A. Mouthwashes and their use in different oral conditions. Sch J Dent Sci. 2015,2(28):186-9125.
18. Gamboa F, Estupinan M, Galindo A. Presence of Streptococcus mutans in saliva and its relationship with dental caries: Antimicrobial susceptibility of the isolates. Univ Sci, 2004,9:(6)23-27.
19. Clarke JK. On the bacterial factor in the etiology of dental caries. Brit J Exp Pathol, 1924,10(5):141-147.
20. Oztan MD, Kiyani M, Gerceker D. Antimicrobial effect, in vitro, of gutta-percha points containing root canal medications against yeasts and Enterococcus faecalis. Oral Surg Oral Med Oral Pathol Oral Radiol Endod.2022,6(4):66.