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Formulation And Evaluation of Herbal Mouthwash

Shrutika Pradip Patil¹, Dr.Gawade S.P²

¹Department of Pharmaceutics, Late Narayandas Bhawandas Chhabada Institute Of Pharmacy, Raigaon Satara, Dist-Satara, Maharashtra415020 Email <u>Id-shrutikapatil292002@gmail.com</u>, Mobile No-7058639237

²PHD (Pharmacology), Professor, department of pharmacy, Late Narayandas Bhawandas Chhabada Institute Of Pharmacy, Raigaon, Tal-Jaoli , Satara, Maharashtra 415020

EmailId : shrutikapatil292002@gmail.com , Mobile No:7058639237

Abstract

The antibacterial, anti-inflammatory, and breath-freshening qualities of nilgiri (Eucalyptus globulus) extract are used in the formulation of herbal nilgiri mouthwash, a natural oral hygiene product. The potential of nilgiri-based mouthwash as a substitute for traditional mouthwashes that contain alcohol and other chemicals is investigated in this study [1]. We assessed nilgiri's antibacterial effectiveness against oral infections, its calming properties for gum tissues, and its capacity to treat halitosis. To improve the benefits for dental health, the formulation was made with essential oils, nilgiri leaf extract, and other natural substances. According to preliminary findings, fennel mouthwash successfully lowers the bacterial load, strengthens gums, and prolongs freshness without the negative side effects of alcohol-based solutions [2]. This study demonstrates the possibility of herbal nilgiri mouthwash as a secure, efficient, and environmentally responsible substitute.

This study shows that herbal nilgiri mouthwash has the potential to be a secure, efficient, and environmentally responsible substitute for traditional mouthwash.

Important details to include in your abstract:

- 1. Natural Oral Care Solution One plant-based substitute for traditional mouthwashes is Nilgiri herbal mouthwash.
- 2. Nilgiri has antibacterial and anti-inflammatory qualities that help lower mouth bacteria and relieve gum discomfort.
- 3. Freshens Breath: Its fragrant ingredients naturally fight foul breath.
- 4. Promotes Dental and Gum Health: Works to stop cavities, gum disease, and plaque accumulation.
- 5. Gentle and Alcohol-Free: This product is ideal for delicate mouths and stays away from harsh ingredients.
- 6. DIY and Commercial Availability: It can be bought as a natural oral care product or made at home with nilgiri leaves and essential oils.

Introduction

Herbal mouthwashes are liquid formulations that support oral hygiene and health by utilizing herbs, plant extracts, and other natural substances. In contrast to traditional mouthwashes, which can contain harsh chemicals and artificial substances, these mouthwashes are made to be safer and more natural [3]. Herbal mouthwashes provide a safe, all-natural method of enhancing dental hygiene and wellness. Herbal mouthwashes can be an excellent complement to your dental hygiene regimen due to their antibacterial, anti-inflammatory, and revitalizing qualities [4].

Herbal Mouthwash Benefits

1.Herbal mouthwashes are safe and natural since they are manufactured with natural ingredients, which lowers the possibility of negative side effects and responses.

2. antibacterial Properties: A lot of plant extracts and herbs include antibacterial qualities that might lessen bad breath, gingivitis, and plaque.

- 3. Anti-Inflammatory Properties: Herbal mouthwashes have the ability to alleviate gum irritation, mouth ulcers, and inflammation.
- 4. Fresh Breath: Without the use of artificial flavors or perfumes, herbal mouthwashes can leave your mouth feeling clean and fresh.

Herbal mouthwashes: Who Can Use Them?

- 1. People looking for a natural substitute: People who would rather stay away from harsh chemicals and unnatural components.
- 2. Individuals with delicate gums or teeth: Herbal mouthwashes may be kinder to delicate gums and teeth.

3. People with dental health problems: Herbal mouthwashes can lessen foul breath, gingivitis, and plaque.

An oral hygiene product called herbal mouthwash is created using natural plant-based ingredients instead of artificial ones. It is used to improve dental health, lessen bacteria, and freshen breath.

Nilgiri's calming and antibacterial properties have long been utilized in herbal therapy, which makes it a perfect choice for a mild yet potent mouthwash. Nilgiri herbal mouthwash is a gentle, revitalizing substitute for traditional mouthwashes that include alcohol and synthetic chemicals, promoting oral health without causing dryness or irritation. A natural, plant-based oral care product, Nilgiri herbal mouthwash is intended to support good gum health, fresh breath, and general oral hygiene. This mouthwash, which is made from nilgiri leaves (Eucalyptus Globulus), is full of

antioxidants, essential oils, and antibacterial qualities that help fight gum disease, plaque, and foul breath. Nilgiri herbal mouthwash has a naturally sweet and mildly spicy taste that is enjoyable to use while offering several advantages, such as:

neutralizes microorganisms that cause odor, which freshens breath.

reduces bacterial growth and inflammation to support gum health.

keeps the pH balance of the mouth stable to stop cavities and tooth decay.

offers people with delicate mouths a natural, chemical-free substitute.

Aim:

The goal of a nilgiri mouthwash is to create a safe, natural, and efficient oral care solution that uses fennel extract's antibacterial and anti-inflammatory qualities to protect and improve oral health.

Objectives:

1. Minimize Oral Bacteria: To lessen the development of oral bacteria, such as Candida albicans, Lactobacillus acidophilus, and Streptococcus mutans.

2. Prevent Gingivitis and Plaque: To lessen the severity of gingivitis and plaque by preventing their development.

3. Freshen Breath: To lessen halitosis, or bad breath, and freshen breath.

4. enhance dental Health: To avoid dental illnesses and reduce inflammation in order to enhance general oral health and well-being.

5. Offer a Natural Substitute: To offer a herbal, natural substitute for commercial mouthwashes that could include harsh chemicals and synthetic substances.

DrugProfile

Nilgiri Leaves:



Nilgiri leaves :

Order	:	Myrtales
Family	:M	yrtaceae
Genus	:Eu	ıcalyptus
Species	:	E. globulus
Botanical nan	ne :	Eucalyptus globulus
Kingdom	:	Plantae
Division	:	Magnoliopsida
Subdivision	:	Rosidae

Uses:

Decongestant : It used to relief respiratory congestion and coughs. Antiseptic: It has antisptics properties making it useful for wound healings and skins infections. Anti-inflammatory : It helps to reduced inflammations.

Hydrogen peroxide:

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Uses:

- It help with bleeding gums.
- Hydrogen peroxide act
- s as an antiseptic, reducing bacterial growth in the mouth and promoting gum health.
- This can help reduce inflammation and bleeding associated with gum diseases[7].

Benefits:

- Gargling with hydrogen peroxide may help treat minor mouth irritations, such as cuts or canker sores, because it is an antiseptic. When put on a cut, hydrogen peroxide bubbles or foams as it releases oxygen.
- The foaming helps clean the area, remove dead cells, and reduce bacteria.

Glycerine -:

Applications:

Glycerin is used to relieve sore throat and minor dental pain and irritation, as well as dry or sore mouth brought on by diabetes, Alzheimer's disease, can ker sores, some drugs, and vitamin deficiencies [8].

Benefits: -

Glycerin functions as a lubricant, making it easier for mouthwash or toothpaste to distribute across teeth and gums, potentially increasing the product's efficacy. Additionally, glycerin helps to stabilize the formulations of dental products.

Sodium benzoate :



Uses:

Sodium benzoate is commonly used in mouthwash as **preservative** to prevent microbial growth and extend shelf life. It helps maintain the product's **stability** and effectiveness over time. Additionally, it has **antimicrobial properties**, which can contribute to oral hygiene by inhibiting the growth of bacteria.

Peppermint oil :

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Applications:

Peppermint is frequently used as a flavoring in food and drink. It eases bloating, farting, and stomach pains, especially if you have irritable bowel syndr ome (IBS). Peppermint essential oil, which has several uses, can be extracted from the peppermint plant's leaves.

It tastes similar and has a sharp, chilly, and pleasant smell. Menthone and menthol are the primary chemical constituents of peppermint oil [11]. **Benefits:**

Peppermint is also well-known for its numbing and cooling qualities, which help relieve muscular and toothaches. Because of its antibacterial, antifungal, and biofilm-

inhibiting qualities, peppermint oil is one of the most commonly utilized essential oils in dental care products.

Formulation Table

Ingredients	Quantity	Function
Nilgiri Extract	2.5 ml	Anti - inflammatory, Anti - septics, Decongestant
Hydrogen peroxide	1.5 ml	Antiseptic
Glycerine	1 g	Humectant
Distilled water	Q.S to 50 ml	Contaminant free water
Sodium benzoate	0.05 g	Preservative
Peppermint oil	0.025g	Flavouring agent

Materialand Method

- 1. Ingredients for the material: 1. Eucalyptus globulus, or nilgiri leaves, which reduce inflammation.
- 2. Serve as a carminative in nature.
- 3. Distilled water: This type of water is free of contaminants and is pure.
- 4. Glycerin: This hydrating substance lessens inflammation and discomfort in the mouth.
- 5. Hydrogen peroxide: It eliminates dangerous bacteria
- 6. Aids in avoiding gum disease.
- 7. A preservative called sodium benzoate is utilized.
- 8. Stops microorganisms from growing.
- 9. Peppermint oil: This flavoring component is used to add flavor.

10. Gets rid of bad breath with a refreshing, minty feeling.

• Equipment: The equipment needed to produce Nilgiri mouthwash varies depending on the manufacturing scale (laboratory or small-scale). The following equipment is frequently used:

• Preparation of mouthwash -

1. Making Nilgiri Extract: Boil 5 g of Nilgiri leaves for 30 minutes in 20 mL of boiling distilled water.

Use a muslin cloth or fine mesh to strain the extract.

2.5 milliliters of this extract should be used in the formulation.

2. Combining Ingredients: Pour nilgiri extract into a sanitized glass beaker.

Add the glycerin and whisk constantly until it dissolves.

Drop by drop, add peppermint essential oils while swirling [12].

3. The last dilution

Gradually add distilled water until the level reaches 50 mL.

Stir thoroughly to guarantee that the ingredients are distributed evenly.

4. Storage

1. Fill a sterile bottle with the prepared mouthwash.

2. Keep in a dark, cool location.

3. Before using, shake thoroughly.

Instructions for Use

1. Use roughly 10 milliliters of mouthwash.

2. Spit out after 30 seconds of swishing in the mouth.

3. For optimal effects, use twice a day [13].

• Quality Control:

Use a pH meter to measure the mouthwash's pH.

Use microbiological testing kits to look for microbial contamination.

Assess the mouthwash's stability by keeping it at various temperatures and keeping an eye out for variations in pH, microbiological contamination, and physical appearance.

• Safety Precautions -

It is crucial to take safety precautions when making herbal nilgiri mouthwash to guarantee its efficacy and safety. Here are several important safety measures:

1. Safety of Ingredients:

Use High-Quality, Fresh Ingredients Ingredients: Make sure the fennel seeds and any additional herbs are clean, fresh, and devoid of impurities. Steer Clear of Contaminated Water: To avoid microbiological contamination, use distilled or boiling water. Verify for Allergies: Nilgiri or other additional herbs may cause allergies in certain persons. Patch testing should be done or medical advice should be sought [14].

2. Hygiene and Preparation:

Before using any utensils, bottles, or containers, make sure they are completely clean. Hand Washing: Prior to handling substances, always wash your hands. Appropriate Storage: To avoid spoiling, keep the mouthwash in a cold, dark location in an airtight, clean container [15].

3. Safe Usage:

Steer clear of ingestion: Herbal mouthwash is only meant to be rinsed, not consumed in big amounts.

If necessary, dilute the mixture with distilled water to avoid irritation if it is too potent.

Keep an eye out for side effects: Stop using if you feel irritated, swollen, or have any negative responses.

4. Preservation and Expiration:

usage the mouthwash within a few days or store it in the refrigerator for longer usage, as it does not include chemical preservatives. Date on Label: Remember when it was made so you don't use mouthwash that has gone bad.

Formulation Procedure

Step 1: Ingredient Selection

Eucalyptus globulus, or nilgiri leaves, reduce inflammation. serve as a carminative in nature.

2. Distilled water: This type of water is free of contaminants and is pure.

3. Glycerin: This hydrating substance lessens inflammation and discomfort in the mouth. 4. Hydrogen peroxide: It eliminates dangerous bacteria

aids in avoiding gum disease. 5. Sodium benzoate is a preservative that is utilized. stops the germs from growing.

6. Peppermint oil: A flavoring ingredient that tastes good. gives out a minty, cold feeling that gets rid of bad breath.

- Step 2: Ingredient Weighing and Measuring
- 1. 2.5 ml of Nilgiri extract
- 2. 1.5 ml of hydrogen peroxide
- 3. One gram of glycerine
- 4. Q.S. to 50 milliliters of distilled water
- 5. 0.05 g of sodium benzoate (preservative)
- 6. One drop of peppermint oil (0.025 g)
- Step3:Mixing theIngredients
- 1. Nilgiri Extract Preparation

Prepare a Nilgiri infusion by steeping 2.5 g of crushed Nilgiri leaves in 100 mL of hot distilled water for 15 minutes, if you are not using a premade extr act. Filter and strain the extract [16].

2. Phase of Mixing

Pour 30 milliliters of distilled water into a sanitized beaker. Totally dissolve the sodium benzoate. Mix well after adding the glycerin [17]. 3. Active Ingredients Are Added Add the hydrogen peroxide and Nilgiri extract. Gently stir.

Stir constantly while you add peppermint essential oil dropwise [18].

4. Last-Minute Modification To reach 50 milliliters, add the remaining distilled water. Mix until a uniform mixture is achieved.

• Step 4: Packaging and filtering

1. If necessary, strain the mixture to get rid of any particles that haven't dissolved.

2. Transfer to a dark-colored, sterile bottle to shield essential oils from light deterioration.

3. Label with information on the product, how to use it, and how to store it.

Step 5: Shelf Life & Storage:

1. Keep out of direct sunlight and in a cool, dry location.

2. For optimal effects, use within a month or two.

Evaluation Parameter

The following criteria are used to evaluate herbal mouthwashes: **Physical Characteristics:**

1. pH: The mouthwash's pH level should be relatively near to the mouth's natural pH.

- 2. Viscosity: The mouthwash's thickness and flowability, which can influence how well it reaches every part of the mouth
- 3. Clarity: The mouthwash's transparency and clarity, which might reveal its quality and purity.

4. Color: The herbal elements used in the mouthwash may have an impact on its color [19

• Microbiology Specifications:

1. Antimicrobial activity: The mouthwash's capacity to stop the growth of bacteria, viruses, and fungi, among other microbes.

2. Minimum inhibitory concentration (MIC): The smallest amount of mouthwash needed to stop germs from growing.

• Chemical Specifications:

1. Total phenolic content: The quantity of phenolic compounds in the mouthwash that may be responsible for some of its antioxidant and antibacterial p roperties.

2. Total flavonoid content: The quantity of flavonoid components in the mouthwash that may be responsible for its antiinflammatory and antioxidant properties.

3. Heavy metal content: The existence of potentially harmful heavy metals like lead, mercury, and arsenic.Toxicologica

Characteristics:

1. Acute toxicity: The mouthwash's capacity to injure or kill after just one encounter.

2. Subchronic toxicity: The mouthwash's capacity to injure or kill with prolonged, repeated exposure.

3. Genotoxicity: The mouthwash's capacity to result in mutations or other genetic harm [20].

• Medical Conditions:

- 1. Plaque index: The quantity of plaque that forms on teeth following mouthwash use.
- 2. Gingivitis index: How severe the gingivitis is following mouthwash use.
- 3. Evaluation of bad breath (halitosis): The degree and occurrence of foul breath following mouthwash use.
- 4. Patient satisfaction: The degree of contentment patients express following mouthwash use [21].

• Stability Conditions:

- 1. Shelf life: How long, when stored correctly, the mouthwash stays stable and effective.
- 2. Temperature stability: The mouthwash's capacity to maintain its effectiveness and stability under various temperature conditions.
- 3. Light stability: The mouthwash's capacity to stay steady and functional in the presence of light.

Result & Discussion

Physical, chemical, biological, and clinical characteristics can be used to analyze the Nilgiri herbal mouthwash 50ml assessment results. Physical characteristics: -

Color and Odor: Visual inspection revealed that the mouthwash had a distinctive color and odor.

Taste: A tactile evaluation of the mouthwash's flavor was conducted.

pH: A digital pH meter calibrated with a standard buffer solution was used to measure the mouthwash's pH.

Chemical Parameters: -

Chemical Composition:

The mouthwash's therapeutic qualities are due to a variety of chemical constituents, such as fenchone, anethole, and estragole. Stability: The mouthwash's stability was assessed by storing it at various temperatures and monitoring any alterations to its chemical and physical chara cteristics.

Biological Parameters: -

Antiseptics: The mouthwash exhibited strong antiseptic properties against a range of pathogens, such as fungi and bacteria. Anti-Inflammatory Activity: The mouthwash also shown anti-inflammatory properties, which can aid in lowering oral cavity pain and inflammation.

Clinical Parameters: -

Clinical Efficacy: The mouthwash's clinical efficacy was assessed by determining how well it reduced gingivitis, plaque, and foul breath in human parti cipants.

Safety and Tolerability: By keeping an eye out for any negative reactions or effects in human subjects, the mouthwash's safety and tolerability were als o assessed.

Physical Parameter

Parameter	Observation	Discussion	
Appearance	Clear, light, yellow liquid	Nilgiri extract and distilled water contributed To its clarity and colour.	
Odor	Mild aromatic nilgiri and minty fragrance	Peppermint oil and nilgiri provided a refreshing scent.	
Taste	Slightly sweet, herbal taste	Natural nilgiri and glycerine added to its mild and pleasant taste.	
Clarity	Transparent with no visible particulates	Proper filtration removed undissolved particles.	

Chemical Parameter

Parameter	Observation	Discussion
рН	6.8 (near-neutral)	Ideal for oral use; avoids enamel erosion or mucosal irrtation
Stability	Stable for 30 days in storage	Stable formulation under normal temperature without phase separation.

Other Parameter

Parameter	Observation	Discussion
Antibacterial Effect	Reduction in bacterial colonies after use	Nilgiri antibacterial compounds inhibited oral pathogens.
Freshening Effect	Immediate and long-lasting fresh breath	Peppermint oil and neutralized odor-causing bacteria.
Safety/Allergy Test	No irritation or allergic rection observed	All natural ingredients were well tolerated.

"Formulation of Herbal Mouthwash"



Conclusion

An all natural and efficient way to keep your teeth clean is using Nilgiri herbal mouthwash.

It helps fight germs, lessen plaque, and relieve gum irritation because of its antibacterial, anti-inflammatory, and breath-freshening qualities. Nilgiri is a delightful substitute for mouthwashes that include chemicals because of its mellow, sweet flavor. For those looking for a mild, alcohol free alternative, regular usage of nilgiri herbal mouthwash can help promote better gum health, fresher breath, and overall oral health. For best effects, however, consistency and good tooth hygiene habits (brushing and flossing) are crucial, just like with any oral care product. The 50 ml nilgiri herbal mouthwash worked well to calm gums, refresh breath, and lower oral bacteria. It functions as a safe, allnatural substitute for store-bought mouthwashes.

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