



Formulation And Evaluation Of Herbal Mouthwash

Mr.Aniket Mahesh Ramdasi¹, Dr.Swati S. Rawat², Dr.Sunil S.Jaybhaye³, Mr.Avinash D.Hatkar⁴,
Ms.Sakshi O.Jaju⁵

¹Student of Bachelor of pharmacy,Institute of Pharmacy,Badnapur,Dist.Jalna

² Faculty of Pharmaceutical science,Institute of Pharmacy,Badnapur,Dist.Jalna

³ Faculty of Pharmaceutical science,Institute of Pharmacy,Badnapur,Dist.Jalna

⁴ Faculty of Pharmaceutical science,Institute of Pharmacy,Badnapur,Dist.Jalna

⁵ Faculty of Pharmaceutical science,Institute of Pharmacy,Badnapur,Dist.Jalna

1. ABSTRACT

Herbal mouthwash are in excessive demand, because they act on oral pathogens and relieve the pain instantly and are also less side-effective. there are many chemical based mouthwashes are available in the market, but long term use may cause dry mouth, irritation & staining on the teeth as the major side effects. Medicinal plants play important role in curing diseases due to their antimicrobial and antifungal activity against human pathogen through decades. Herbal product help to control dental plaque, inhibit growth of bacteria, freshen breath, cleanse tooth. Herbal mouthwashes can be used as an adjunct to various oral hygiene practices like tooth brushing, flossing. They have effective anti-inflammatory, anti-plaque properties and hence can be used in supportive periodontal therapy.

2. **Key Words** : Oral Diseases,Breath fresh,Mouth Wash, Herbal,bay leaf Antimicrobial

3. INTRODUCTION

3.1 Historical Background

The importance of mouth and teeth cleanliness has been recognized from the earliest days of civilization to the 21st century.

- As far as we have come in creating dental solutions that are effectively treat and prevent various types of oral diseases, the mouthwash rinses our ancestor used to maintain a healthy smile were just as widely used as some of the around today.
- The first known references to mouth rinsing are in Ayurveda and Chinese medicine around 2700 BC. Mouthwash is a chemotherapeutic agent used as effective home care system by the patient to oral hygiene.^[4,5]
- In the Greek and Roman periods, mouth rinsing following mechanical cleansing became common among the upper classes and Hippocrates recommended a mixture of salt, alum and vinegar^[6]
- Ancient Egyptians are known to be responsible for the first artistic drawing that emphasize the importance of beauty and hygiene. An unclean body was thought to be impure. Pedanius Dioscorides, A Greek physician and surgeon (40-90) whose writings served as a medical textbook, suggested for treatment of bad breath a mouthwash mixture of the following^[7,8]

- Greek physician Pedanius Dioscorides, formulated a mouthwash mixture of decoct extracted from the olive tree leaves, milk, wine and oil, pomegranate peelings, nutgalls and vinegar, this was how ancient mouth washes were prepared using traditional methods and herbs.^[10]
- The Romans included a secret ingredient in their mouthwash: human urine. They imported urine from Portuguese people because they thought it had more strength.
- It is observed that in 18th century urine served as a key active ingredient due to the presence of ammonia that rendered the oral cavity free from oral pathogens especially sulphur producing organisms.

3.2 Define

▪ Mouthwash

Mouthwash is a liquid preparation which is most often used for its deodorant, refreshing and antiseptic properties or for control of plaque and freshens bad breath, reduces plaque and gingivitis as well as fight tooth decay, reduces the risk of cavities and gum disease.^[12]

▪ Herbal Mouthwash

Herbal mouthwashes are mouthwashes which are prepared from natural plant extracts. The natural extract present in the herbal mouthwashes are obtained from various plant leaves, fruits, seeds and various tree oils.^[11]

▪ Why should we prefer Herbal Mouthwash?

Herbal mouthwashes are high in demand, because they act on oral pathogens and relieve the pain instantly and are also less side-effect. Chemical mouthwashes have hydrogen peroxide and chlorhexidine as an immediate whitener, sterilizer and pain reliever of teeth, but they tend to produce discoloration of teeth and may produce side effect, meanwhile they are cost effective.^[13,14]

3.3 Types of Mouthwash

1. Fluoride mouthwash

The Mouthwash have salts that help prevent teeth from cavities and other dental problems. When using this kind of mouthwash, caution should be taken because consuming chemicals is bad for your overall health.

2. Antiseptic Mouthwash

The most popular type of mouthwash is antiseptic. People with mouth infections typically use this alcohol-containing mouthwash to prevent bacterial development. Also it frequently aids those who have bad breath. To avoid mouth infections and bacteria that cause bad breath, it is frequently used in conjunction with good brushing and flossing.

3. Cosmetic Mouthwashes:

These mouthwashes just work to hide or refresh foul breath; they don't contribute to your entire dental care regimen.^[15]

3.4 Need of Herbal mouthwash

Because herbal mouthwash has fewer adverse effects than chemical mouthwash, the latter is less popular.

Phytochemicals from herbal plants, which are natural compounds, have inherent antibacterial properties. Given the state of the economy, herbal plants are widely accessible. Sulfates and triclosan, which can have severe effects on the oral mucosa, are added to chemical mouthwash. These unpleasant side effects can be prevented using herbal mouthwash.

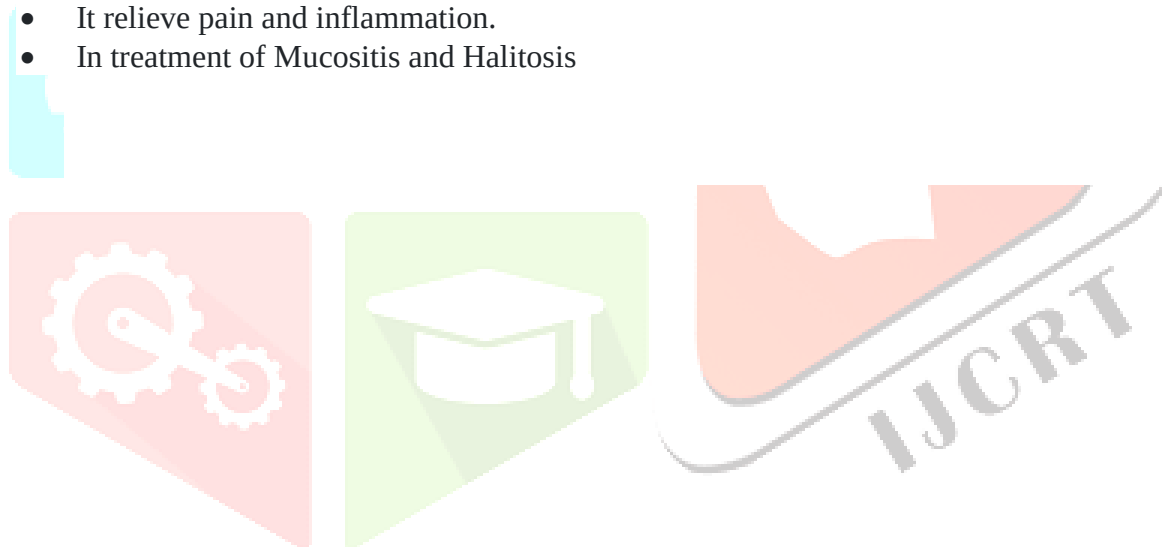
Natural herbal mouthwash does not have these issues, however high alcohol content mouthwash decreases salivation, which leads to dry mouth and gum disease. Oral sensitivity is brought on by overbrushing and medical problems.^[16,17]

3.5 Advantages of Herbal Mouthwash

- The use of herbal mouthwash has grown advantage over chemical mouthwashes due to their non-irritant and non-staining properties and it does not contain alcohol.
- They have very minimal or no side effect and they are less harmful.
- All herbal mouthwashes do not contain alcohol and/or sugar.
- Herbal mouthwashes is gentle for even the most sensitive mouth.
- Herbal mouthwashes has naturally antibacterial property.
- It contain no harsh additives.
- Herbal mouthwash doesn't cause dry mouth.
- It is highly in demand.
- It keeps your mouth healthy.

3.6 Use of Herbal mouthwash

- The use of mouthwashes requires a correct diagnosis of the oral condition and through knowledge of the product to achieve an effective treatment.
- Use of herbal mouthwash is to improve oral hygiene. ^[18]
- It help to control dental plaque.
- It can be use in gum diseases.
- Used for killing germs in oral cavity.
- It freshen breath and covers bad breath.
- Using a mouthwash for gum disease prevention is very important.
- It is use to clean septic sockets.
- It relieve pain and inflammation.
- In treatment of Mucositis and Halitosis



4. AIM & OBJECTIVES

4.1 Aim :- Formulation and Evaluation of Herbal Mouthwash.

4.2 Objectives

- a) Use of herbal mouthwash is to improve oral hygiene.
- b) It help to control dental plaque.
- c) It can be use in gum diseases.
- d) Used for killing germs in oral cavity
- e) To determine the antimicrobial activity.
- f) To evaluate mouthwash for its consistency.
- g) To develop formulation of herbal mouthwash
- h) To determine if commercially available mouthwashes are capable of performing the advertised elimination of common oral bacteria.

4.3 Herbal product as mouthwash

A. Bay Leaf

- **Scientific Name:** *Laurus nobilis*
- **Family:** Lauraceae
- **Order:** Laurales
- **Genus:** *Laurus*
- **Species:** *Laurus n*
- **Biological Source:**

The most common source is the bay laurel (*Laurus nobilis*). Other types include California bay laurel, Indian bay leaf, West Indian bay laurel, and Mexican bay laurel.^[19]

- **Discription :-**

Bay leaf refers to the aromatic leaf commonly used as a culinary herb and medicinal plant, most often sourced from the bay laurel tree, scientifically known as *Laurus nobilis*. Native to the Mediterranean region, bay leaves are elliptical, pointed, and glossy green when fresh, but they are typically used in their dried form, which has a more concentrated aroma and flavor. When crushed or cooked, bay leaves release a distinct, mildly bitter, spicy scent that enhances the flavor of soups, stews, meats, and sauces.⁽²⁰⁾

- **Active constituents:**

Bay leaves contain a variety of bioactive compounds that contribute to their aromatic, medicinal, and therapeutic properties. One of the primary constituents is cineole (also known as eucalyptol), which is responsible for the leaf's characteristic camphor-like aroma and possesses notable antiseptic and anti-inflammatory effects. Eugenol, another major compound, provides analgesic, antimicrobial, and antioxidant properties, similar to its role in clove oil. Linalool, found in smaller amounts, contributes a floral scent and has calming, sedative, and anti-anxiety effects. Other constituents include sabinene, myrcene, pinene, and various flavonoids and tannins, which support the leaf's role in promoting digestive health, reducing inflammation, and protecting against oxidative stress. These active ingredients make bay leaf not only a culinary staple but also a valuable plant in traditional and alternative medicine.

- **Use of Bay Leaf in Mouthwash**

Bay leaf has been traditionally incorporated into natural mouthwash formulations due to its antimicrobial, anti-inflammatory, and astringent properties. The presence of active constituents like eugenol, cineole, and linalool helps in inhibiting the growth of oral bacteria, including those responsible for bad breath (halitosis), plaque formation, and gum infections. Bay leaf also possesses astringent qualities, which can help tighten gum tissue and reduce inflammation in cases

of gingivitis. In natural or DIY mouthwashes, bay leaves are typically boiled in water to extract their beneficial compounds, and the cooled infusion is used as a rinse. When combined with other herbs like clove, mint, or cinnamon, bay leaf enhances the overall effectiveness of the mouthwash, promoting oral hygiene and providing a refreshing flavor. Its natural origin makes it a popular alternative to chemical-based mouthwashes, especially for those looking for gentle and holistic oral care solutions.(21)

- **Pharmacological Actions**

1. Antibacterial
2. Hepatoprotective
3. Antifungal
4. Carminative
5. Antioxidant
6. Anti-inflammatory

- **Therapeutic Use**

1. Support digestive health
2. Maintaining oral hygiene
3. Respiratory benefits
4. Manage diabetes
5. Skin irritations
6. reducing stress
7. relieve coughs



Fig.1 Bay leaf

B. Clove oil

- **Scientific Name:** *Syzygium aromaticum*.
- **Family:** Myrtaceae
- **Order:** Myrtales
- **Genus:** *Syzygium*
- **Species:** L.M.Perry
- **Biological Source:** Dried flower buds of the plant *Syzygium aromaticum*.
- **Discription:**

Clove oil is a volatile essential oil extracted from the flower buds, leaves, or stems of the clove tree (*Syzygium aromaticum*), a species native to the Maluku Islands (the Spice Islands) in Indonesia. It is known for its strong aroma, spicy flavor, and medicinal properties.

The main active compound in clove oil is eugenol (up to 85–90%), which gives the oil its distinct aroma and therapeutic effects.

- **Active constituents:**

Clove oil contains several bioactive compounds, with eugenol being the most prominent, making up about 70–90% of the oil. Eugenol is a phenolic compound responsible for clove oil's strong aroma and its well-known analgesic, anti-inflammatory, antiseptic, and antimicrobial properties. Another important component is eugenyl acetate, an ester form of eugenol, which contributes to the oil's pleasant fragrance and offers mild calming effects. Beta-caryophyllene, a sesquiterpene present in smaller amounts, exhibits anti-inflammatory and analgesic activity and is also notable for its interaction with the body's endocannabinoid system. Other constituents, found in trace amounts, include **vanillin**, which gives a slightly sweet, vanilla-like scent, as well as **methyl salicylate**, **humulene**, and sometimes **cinnamaldehyde**, especially in oil extracted from the stems..

- **Pharmacological Actions**

1. Strong analgesic
2. Anti-inflammatory
3. Antimicrobial
4. Carminative
5. Spasmolytic



Fig.2 Clove oil

C. Peppermint Oil

- **Scientific Name :-** *Mentha piperita*
- **Family :-** Lamiaceae
- **Genus :-** *Mentha*
- **Order :-** Lamiales
- **Species :-** *Mentha Piperita*
- **Biological Source :-** Leaves of the plant *Mentha piperata*, a aromatic hern belongs to family Lamiacea.
- **Discription**

Peppermint oil is a highly aromatic essential oil extracted primarily from the leaves of the peppermint plant, scientifically known as *Mentha piperita*. This hybrid herb, a cross between watermint and spearmint, is native to Europe and widely cultivated around the world for its refreshing scent and medicinal properties. Peppermint oil is a clear to pale yellow-green liquid with a strong, fresh, and minty aroma, characterized by a cooling sensation when applied to the skin or mucous membranes. The oil is typically obtained through steam distillation of the fresh or partly dried leaves and flowering tops of the plant. Peppermint oil is widely used in pharmaceuticals, cosmetics, food flavoring, and aromatherapy due to its antispasmodic, analgesic, antimicrobial, and cooling effects.

- **Active constituents**

Peppermint oil contains several important bioactive compounds responsible for its characteristic aroma and therapeutic properties. The primary active constituent is menthol, which makes up about 30-55% of the oil and is well known for its cooling, analgesic, and antispasmodic effects. Another major component is menthone (10-35%), which contributes to the oil's minty aroma and has mild sedative and muscle-relaxing properties. Other significant constituents include 1,8-cineole (eucalyptol), which has antimicrobial and decongestant effects, and limonene, known for its antioxidant activity. Additional minor components such as menthyl acetate, pulegone, and various flavonoids and tannins also contribute to peppermint oil's overall therapeutic profile.

- **Pharmacological Actions**

1. Antispasmodic
2. Decongestant
3. Mild local anesthetic
4. Analgesic
5. Antimicrobial



Fig.3 Peppermint oil

D. Aloe vera

- **Scientific Name :-** Aloe Vera L.
- **Family :-** Asphodelaceae
- **Order :-** Asparagales
- **Genus :-** Aloe
- **Species :-** Aloe vera L.
- **Biological Source:-** Dried Juice or Gel obtained from the leaves of Aloe vera.
- **Discription**

Aloe vera is a succulent plant species belonging to the genus Aloe, scientifically known as Aloe barbadensis Miller. Native to the Arabian Peninsula, it is now widely cultivated around the world for its medicinal, cosmetic, and therapeutic properties. The plant has thick, fleshy, lance-shaped green leaves that grow in a rosette pattern. These leaves contain a clear, gel-like substance rich in vitamins, minerals, enzymes, and amino acids, as well as a yellow latex found just beneath the leaf skin. Aloe vera gel is prized for its soothing, moisturizing, and healing effects, especially on the skin. It is commonly used to treat burns, wounds, and various skin conditions due to its anti-inflammatory, antimicrobial, and antioxidant properties.

- **Active constituents**

Aloe vera contains a rich array of bioactive compounds responsible for its therapeutic effects. The gel inside the leaves is composed primarily of water (about 99%), along with a variety of polysaccharides such as acemannan, which plays a key role in stimulating the immune system and promoting wound healing. It also contains vitamins including A, C, E (antioxidants), and several B vitamins like B12 and folic acid. The plant's minerals include calcium, magnesium, zinc, and potassium, essential for cell function and repair. Aloe vera also contains enzymes like amylase and lipase, which aid in digestion, and anthraquinones such as aloin and emodin, which have laxative and antimicrobial properties. Other important constituents include amino acids, saponins (which have cleansing and antiseptic effects), and salicylic acid, contributing to its anti-inflammatory action. This complex mixture of active constituents makes aloe vera a versatile plant used in skincare, digestive health, and wound management.

- **Pharmacological Actions**

1. Wound healing
2. Anti-inflammatory
3. Laxative
4. Immunomodulatory
5. Antioxidant
6. Antimicrobial.



Fig.4 Aloe vera

E. Honey

- **Scientific Name :-** Arthropoda
- **Family :-** Apidae
- **Order :-** Hymenoptera
- **Genus :-** Apis
- **Species :-** Apis Mellifera
- **Biological Source :-** Honey is produced by both honey bees and stingless bees.
- **Discription**

Honey is a natural, sweet, viscous substance produced by honeybees (*Apis mellifera*) from the nectar of flowers. It is composed primarily of sugars such as fructose and glucose, along with water, enzymes, minerals, vitamins, and amino acids. Honey's color ranges from nearly colorless to dark brown depending on the floral source, and its flavor varies accordingly. It has been used since ancient times not only as a natural sweetener but also for its medicinal properties, particularly in wound healing, cough suppression, and digestive health. Its natural antimicrobial and antioxidant properties contribute to its therapeutic value.

- **Active constituents**

Honey contains a complex mixture of bioactive components. The main constituents are carbohydrates, mainly fructose (about 38%) and glucose (about 31%), which provide energy. It also contains enzymes like glucose oxidase, which produces hydrogen peroxide, contributing to honey's antimicrobial effects. Other active constituents include organic acids (such as gluconic acid), amino acids, vitamins (B complex and vitamin C), minerals (calcium, iron, magnesium, potassium, zinc), and phenolic compounds (flavonoids and polyphenols), which provide potent antioxidant activity. Trace amounts of bee-derived peptides like defensins add to its antimicrobial properties.

- **Pharmacological Actions**

1. Antimicrobial
2. Anti-inflammatory
3. Natural antioxidant
4. Nutritional
5. Energy-boosting effects



Fig.5 Honey

5. LITERATURE REVIEW

1. Bálint Bencze et.al (2023), have study Development of a novel, entirely herbal-based mouthwash effective against common oral bacteria The developed product might be a useful tool to impede the transmission and spread of SARS-CoV-2 in interpersonal contact and aerosol-generating conditions. Our mouthwash can help reduce the oral bacterial flora and has an antioxidant activity that facilitates wound healing and prevents adverse effects of smoke in the oral cavity.^[23]
2. Banani Ray Chowdhury et.al (2013), have study Development of Alcohol-free Herbal Mouthwash Having Anticancer Property. the extracts of peppermint oil, clove oil, betel leaf extract, ajwain, ginger, basil, etc., in sterilized conditions having antibacterial, anti-cancer, anti-fungal activity.
3. M Jesinth Jebacani et.al (2023), have study Assessing the effectiveness of a herbal mouthwash against oral pathogens: In vitro analysis, liquid herbal mouthwash is highly effective in aiding individuals in eliminating bad breath and other oral health concerns
4. Muhammad Abdurrahman et.al (2022), have study The Effectiveness of Ethanol Extract of Neem Leaf (*Azadirachta indica*) Mouthwash Against the Growth of *Streptococcus* the ethanolic extract of neem leaf mouthwash was effective against the growth of *Streptococcus* sp.^[24]
5. M. Radhakrishna Pillai et.al (2023), have study Efficacy of a herbal mouthwash for management of periodontitis and radiation-induced mucositis. the herbal mouthwash group noticed a significant reduction in the severity of radiation-induced mucositis and analgesic requirements. The intensity of pain, dryness of mouth, oral hygiene, and need for the use of antibiotic and antifungal during radiotherapy was not significant among the groups.
6. Smriti Ojha et.al (2018), have study Formulation and Evaluation of Antibacterial Herbal Mouthwash Against Oral Disorders. The natural herbs used in present formulation have been medicinally proven to prevent the problem of oral hygiene and bad breath^[25]
7. Samiksha Tidke et.al (2022), have study The Effectiveness of Herbal Versus Non-Herbal Mouthwash for Periodontal Health. Herbal and non-herbal mouthwash, implying equal efficacy of both, i.e., Triphala, aloe vera, tea tree, and polyherbal groups like *Zingiber officinale*, *Rosmarinus officinalis*, and *Calendula officinalis*, and chlorhexidine.
8. Priyanka Namdeo et.al (2021), have study preparation and evaluation of herbal antibacterial mouthwash against oral pathogens Herbal Mouthwash preparations have potent action and minimal side effects when compared with that of the other marketed mouthwashes, hence there is need for increased usage of herbal preparations to avoid the adverse effects.
9. Odumosu Patricia et.al (2019), have study Quality assessment and antibacterial properties of a commercial clove sample and copper sulphate as ingredients of an herbal mouth wash. The quality assessments of the clove sample present the potential utility of the herbal material as an ingredient of the antibacterial mouthwash and the provision of additional antibacterial properties by copper sulphate. The eugenol content can be used as a marker for quality assurance of the herbal product.^[26]
10. Praveenkumar V. Vijapur et.al (2022), have study Formulation & Evaluation Of Herbal Mouthwash Containing Natural Ingredients For Anti-Microbial Activity. The quality assessments of the clove sample present the potential utility of the herbal material as an ingredient of the antibacterial mouthwash and the provision of additional antibacterial properties by copper sulphate.^[27]

6. MATERIAL AND METHODS

6.1 Requirements:

- Active Ingredients :- Clove Oil, Peppermint Oil, Aloe vera
- Chemicals – Citric Acid
- Apparatus – Beaker, Test Tube, Measuring Cylinder, Pipette, Water Bath, Tripod Stand, Stirrer, Mortar & Pestle.

6.2 Formulation:

Sr.No	Ingredients	Quantity	Uses
01	Bay Leaf Extract	05 ml	Antibacterial
02	Aloe vera	10 ml	Anti-inflammatory
03	Citric Acid	0.2 g	PH Adjuster
04	Clove Oil	0.5 ml	Analgesics
05	Pippermint Oil	0.5 ml	Freshes Breath
06	Honey	5 ml	Sweetner
07	Distilled Water	Upto 30ml	Vehicle

Tabel.1 Formulation of herbal mouth wash

Procedure of Mouthwash

Step 1: Preparation of Bay Leaf Extract (Aqueous Decoction Method)

1. Crush 10 g of dried bay leaves to increase surface area.
2. Place the leaves in a beaker or stainless-steel saucepan.
3. Add 70 mL of distilled water.
4. Boil gently for 15–20 minutes, allowing the water to reduce and extract the active compounds.
5. Cool the extract and filter it using muslin cloth or filter paper.



Fig.6 Crush the Bay Leaves in mortar

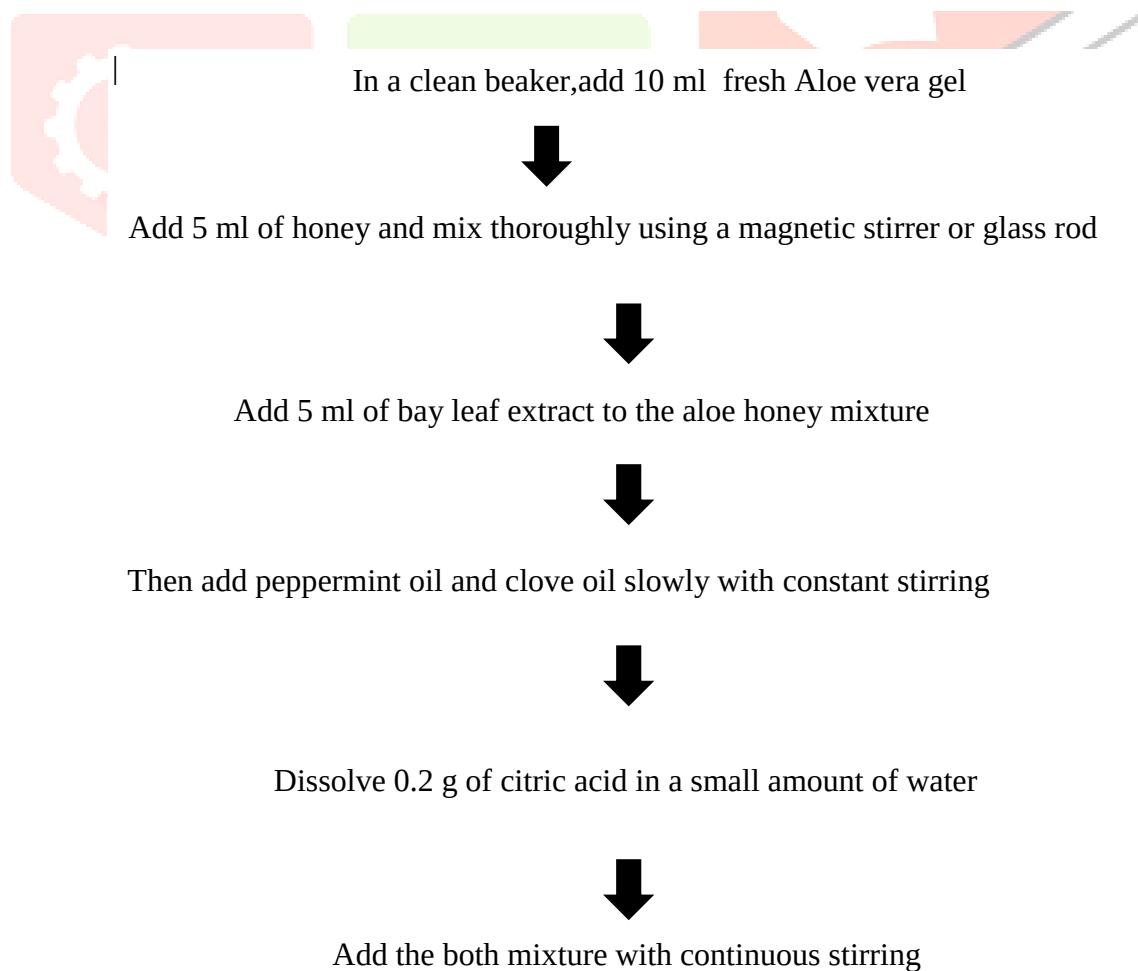


Fig.7 Boil the crushed Bay Leaves



Fig.8 Filterate the solution

Step 2: Formulation of Mouthwash





Filter the final solution and transfer into amber- coloured bottle



Store in a cool,dry place



Fig.9 Filtered Bay Leaf Extract



Fig.10 Add Essential Oils



Fig.11 Batch A,B,C Formulation of Herbal Mouthwash



Fig 12. .D,E,F Formulation of Herbal Mouthwash



Fig.13 Final Batch Product of Herbal Mouthwash



Fig.14 Final Transparent Product

7. EVALUATION TEST OF MOUTHWASH

7.1 Physical Evolution

Mouthwash was evaluated for Morphological parameters.

1. Colour :- Light Brown
2. Odour :- Pleasant or minty smell
3. Taste :- Mild Sweet, spicy taste
4. Clarity :- Slightly Translucent

7.2 pH

The pH meter was calibrated with the help of standard buffer solutions weight 1 ml of mouthwash and 50 ml of distilled water and its pH was measured with the help of digital pH meter^[28]

- PH :- 6.2 (Compitable with oral cavity PH)

7.3 Viscosity

Viscosity of the mouthwash was determined with the help of digital viscometer at 100 rpm with the spindle

- Viscosity :- Low and flow easily <100 cp

7.4 Foam Test

Shake 10 ml of mouthwash vigorously and observe foam.

- Foam Test :- Moderate Stable & good surfactant content.

7.5 Stability Studies

Store at room temperture and observe at interval (0,7,15,30 days)

- Stability :- Slight change in PH formulation at 40⁰c

7.6 Taste

Clove oil contains a chemical called eugenol, which acts as an anesthetic and antibacterial agent. Clove oil is anti inflammatory and antifungal.

- Taste :- Mild sweety, spicy taste.

7.7 Detection of foregin particles

Foregian particles were detected with the help of white C black background instrument.

There is no any foregian particle in mouthwash.

7.8 Visual Inspection

It as an inspection of assest made using only naked eye.The brown solytion is detected in visual inspection^[29]

8. RESULT AND DISSCUSSION

Physical parameters such as Color, Odour, Taste and Consistency were examined by visual examination. The pH of prepared Herbal Mouthwash was measured by using digital pH meter. The pH of formulation was found to be 6.2. Formulation and Stability study of mouthwash was done

Physical and color stability analysis ,three different formulation were prepared. Each formulation was then split in half and incubated at two different temperatures: in the refrigerator at12oC and at room temperature at around25oC.

Two different temperature 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. Expectantly, the color of the mouthwash should be maintained throughout the experimental phase to ensure that the mouthwash formulations were acceptable.

Mouthwash formulations that were stored in refrigerator (12OC) rendered a light brown color throughout the experiment, whereas those kept at room temperature (25oC) maintained at dark brown color. The formulations stored at 25oC did not experience changes in color, unlike the formulations stored at 12oC where there is color shift from dark brown to light brown. The change in color might be attributed to the oxidation of the mouthwash ingredients. Although the herbs that were used in mouthwash ingredients have natural anti- oxidants, the low storage temperature might have disable their antioxidant machinery leading to a change in coloration thus lower temperature storage might affect the color stability of the mouth wash formulation. phase separation in the mouth wash was not observed^[30]

A simple technique of maceration is performed and three formulations of Herbal mouthwash were prepared in present study. Herbal mouthwash was formulated, evaluated and studied. Herbal mouthwash was prepared by using different quantities of bay leaf extract, aloe vera extract, Clove oil extract, peppermint oil extract,

Three different formulations F1, F2, F3 of Herbal Mouthwash were prepared and Subjected to evaluation studies. The herbal mouthwash was formulated and evaluated for parameters such as Color, Odor, Taste, pH, Zone of inhibition and was found to be satisfied with all the required characterization.

9. CONCLUSION

An attempt has been made to outline some of the commonly available herbs and plants, which are readily available and can be used as effective mouthwashes by all. If people can use and promote such cost effective measures of maintaining the oral health which are also devoid of any untoward side effects, it may help in overcoming some common dental problems. Herbs which are powerful healing agents, must be used appropriately. The use of herb in dentistry should be based on evidence of effectiveness and safety. They will improve the immunity and help in healing of oral infections. Furthermore, the best mouthwash formulation was observed to be more stable when maintained at 25 °C

Herbal mouthwashes offer a natural and often gentler alternative to traditional chemical-based oral care products. They leverage the power of plant-derived compounds to promote oral health by combating bacteria, reducing inflammation, and freshening breath. Key benefits of herbal mouthwashes include: Antimicrobial properties: Many herbs possess antimicrobial properties that help eliminate harmful bacteria in the oral cavity, reducing the risk of infections like gingivitis and periodontitis.

Anti-inflammatory effects: Some herbal ingredients can soothe inflamed gums and reduce oral discomfort. Natural breath freshening: Herbal mouthwashes can help mask bad breath by neutralizing odor-causing bacteria. Reduced side effects: Unlike chemical mouthwashes, herbal formulations are generally milder and less likely to cause side effects like staining or oral irritation.

In conclusion, herbal mouthwashes can be a valuable addition to a comprehensive oral hygiene routine. By selecting a high-quality product and using it consistently, individuals can experience improved oral health and a fresher, healthier smile.



10. SUMMARY

In Study of market product this physicochemical parameters of marketed mouth wash were study. the active ingredient of market preparation is determined in this their role and their pharmacological activities is studied. Literature review of various documents, reference book, review paper was studied for these more knowledge about the formulation and evaluation of mouth wash. Selection of ingredients various herbal ingredients are selected on the basis of data gain by literature study. the herbal ingredients are selected on the basis of their pharmacological activities, role, category in mouth wash.

Formulation of mouth wash the formula is taken from a literature survey, all the standard operating procedures are followed during the formulation. The equipment used during formulation are calibrated. Evaluation all the evaluation parameters required for mouthwash are performed. They are as follows organoleptic property, pH, viscosity, foaming index, appearance and irritance.

REFERENCES

1. Sunayanamanipal, SajjidHussain, UmeshWadgave, prabhuDuraishwamy and K. Ravi, The mouthwash war chlorhexidine Herbal mouth Rinses: A meta- Analysis J clinDiagn Res. 2016 may;10(s) : ZC81-ZC83 .
2. Diego Francisco Cortes - Rojas, Claudia Regina fernandes de Souza, and wanderley Pereira Oliveria clove (*Syzygiumaromaticum*): a precio -les Spice Asian Pac J Trop Biomed 2014 Feb; 4(2)90-96.
3. RozaHaghgoo and faridAbbasi, evaluation of the use of a peppermint mouth rinse for halitosis byJintsocprev community pent. 2013 Jan-Jun ; 3(1) : 29-31
4. NilimaThorar, silpiBasak, Rakesh N. Bahadure and monaliRajurkar, Antimicrobial efficacy of fiveessential oils against oral pathogens: An in vitro study, Eur J Dent. 2013 Sep 7 (Suppl 1) 571-577.
5. Shivani B. Shambharkar, and Vinod m. Thakare, fomulation and evaluation of Herbalmouthwash, Article Recived on 28 may 2021.
6. Banani Ray chowdhury, Souptik Bhattacharya, Madhupama deb, ArnavGarai, Development ofAlcohol-free Herbal mouthwash Having Anticancer property, Department of BiotechnologyBengalInstitute of Technology, West Bengal university of Technology india
7. Matthews R W. Hotsalt water mouth baths, British Dental Journal. 2003, 195 (1); 3-3.
8. F.M Viera, M.C Macial, F.R Nascimento and V.P Rodrigues,Plant species used in dental disease:activity evaluation, Journal of ethanopharmacology. Vol. 155 (3), 1441-1449, 2014.
9. Kumar P. Ansari S.H.Ali J. Herbal remedies for the treatment of pridental disease: A patientreview. Recent pat drug deliver formula 2009;3:221-8.
10. Rao N.J. Subhas K.R, Kumar K.S. Role of phytotherapy in gingivitis, a review. J pharmacol2012;8:1-5. [
11. Clive E, Paul S. Minor illness or major disease?. The clinical pharmacist in the community (4thedition). Pharmaceuical press, 223.
12. Kulkesh Kumar Rathore, G. HanmanthRedkly. Rajwinder Singh Johar, PiyushKadelwal,Raghavendra M Shetty, VashundharaRathore, Antimicrobial Effect of Mouthwashes in Patients Undergoing Orthodontic Treatment, Ind. J Dent Oral Health, 2018; 2(1): 1-5. 2.
13. Renuka S. Muralidharan NP. Comparison in benefits of herbal mouthwashes withchlorhexidinemouthwash: A review. Asian J Pharm Clin Res, 2017; 10(2): 3-7. [
14. R.V.Geetha et.al, Evaluation of antimicrobial activity of herbal mouthwash on streptococcus.mutans-an in vitro study, International J. Pharm. Sci. Res. 2017; 45(1): 161-163.
15. Benjamin SN, Gathece LW, Wagaiyu EG. Knowledge, attitude and use of mouthwash among dental and medical students of the University of Nairobi. Int. J. Dent. Oral Health, 2016; 2(4): 01-6
16. AmitParashar, Mouthwashes and their use in different oral condition., Sch. J. Dent. Sci.2015;2(2): 186-191
17. Asadoorian Joanna. Cetylpyridinium Chloride Mouth Rinse on Gingivitis And Plaque. Journal ofDental Hygiene 2008.
18. Vijayaalakshmi LG, Geetha RV. Comparison of Herbal Mouth Wash with Conventional Mouth Wash in Use in Reducing Streptococcus Mutans-An Invitro Study. Journal of Pharmaceutical Sciences and Research. 2015 Jul 1;7(7):485.

19. Banu JN, Gayathri V. Preparation of Antibacterial Herbal Mouthwash against Oral Pathogens. *Int. J. Curr. Microbiol. App. Sci.* 2016;5(11):205-21.
 20. Kukreja BJ, Dodwad V. Herbal mouthwashes-a gift of nature. *Int J Pharma Bio Sci.* 2012 Apr;3(2):46-52.
 21. Cole, P; Rodu, B; Mathisen, A (2003). "Alcohol- containing mouthwash and oropharyngeal cancer: A review of the epidemiology". *Journal of the American Dental Association.* 134(8): 1079–87.
 22. Carretero Peláez, MA; Esparza Gómez, GC; Figuero Ruiz, E; Cerero Lapiedra, R, 2004. "Alcohol- containing mouthwashes and oral cancer. Critical analysis of literature". *Medicina oral.* 9(2): 120–3 116–20.
 23. Lachenmeier, Dirk W, 2008. "Safety evaluation of topical applications of ethanol on the skin and inside the oral cavity". *Journal of Occupational Medicine and Toxicology.* 3(1): 26.
 24. British National Formulary March 2014 "Mouthwashes, gargles, and dentifrices". MJ Group and the Royal Pharmaceutical Society of Great Britain 2014.
 25. Scully C 2013. *Oral and maxillofacial medicine: the basis of diagnosis and treatment* (3rd ed.). Edinburgh: Churchill Livingstone. pp. 39, 41. 20. Rosenberg, Mel (2002). "The Science of Bad Breath". *Scientific American.* 286(4): 72–9.
 26. J. a. banas, "virulence properties of streptococcus mutans," *frontiers in bioscience*, vol. 1, no. 9, pp. 1267–1277, 2004.
 27. .K. hojo, s. nagaoka, t. ohshima, and n. maeda, "bacterial interactions in dental biofilm development," *journal of dental research*, vol. 88, no. 11, pp. 982–990, 2009.
 28. H. katsura, r.-i. tsukiyama, a. suzuki, and m. kobayashi, "in vitro antimicrobial activities of bakuchiol against oral microor- ganisms," *antimicrobial agents and chemotherapy*, vol. 45, no. 11, pp. 3009–3013, 2001.
 29. . B. y. hwang, s. k. roberts, l. r. chadwick, c. d. wu, and a. d. kinghorn, "antimicrobial constituents from goldenseal (the rhizomes of *hydrastis canadensis*) against selected oral pathogens," *planta medica*, vol. 69, no. 7, pp. 623–627, 2003.
- A. d. atwa, r. y. abushahba, m. mostafa, and m. hashem, "effect of honey in preventing gingivitis and dental caries in patients undergoing orthodontic treatment," *the saudi dental journal*, vol. 26, no. 3, pp. 108–114,