



Formulation And Evaluation Of Barleria Prionitis For Herbal Mouthwash On Mouthulcer Treatment

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ABSTRACT

A tiny, prickly plant in the Acanthaceae family, Barleria prionitis goes by several colloquial names, but is most commonly known as "porcupine flower." This is a native plant to parts of Africa and South Asia. Ayurvedic and other traditional systems recognize the flower, root, stem, leaf. Its important source of secondary metabolites, which include tannin, saponin, flavonoids, alkaloids, glycosides, and phenolic compounds, has been demonstrated by recent pharmacognostical screening to have effective anti-microbial, anti-inflammatory, hepatoprotective, and gastroprotective properties. This can be viewed as an overview of the present state of Barleria prionitis development.

Dental health is just as vital as general wellness. People may have more oral health issues these days, such as gingivitis, periodontal disease, sore throats, plaque, mouthulcer and more. Numerous formulations are available to support the maintenance of optimal oral health. It is advised to use mouthwash to reduce bacteria, pain, bad breath, and plaque. Because herbal mouthwash has fewer adverse effects, is non-irritating, less poisonous, and doesn't contain alcohol, it is recommended over chemical mouthwash. Because herbal mouthwash is manufactured from extracts of crude medications, it has less or no side effects when compared to synthetic mouthwash. Several plant extracts are used to make herbal mouthwashes. The following herbs—which are helpful in dentistry—are mentioned in this article: clove, peppermint, tulsi, neem and honey.

The current study aims to create and assess a herbal mouthwash and assess its efficacy in combating the oral cavity's microbial load. The plant materials were gathered and their water-soluble components removed. The prepared mouthwash's physicochemical characteristics and antibacterial efficacy were further assessed. The mouthwash that is currently available has good antibacterial properties. The stability study's findings support the efficacy of the preparation. Currently available mouthwash is a liquid formulation that often includes both antibacterial and antiseptic ingredients. These solutions have the potential to decrease microbial growth in the oral cavity like mouthulcers or sores.

KEYWORDS: Barleria Prionitis, Mouthwash, Mouthulcer, Sores, Antibacterial, Formulation, Natural, Crude drugs, Oral hygiene.

Introduction:

Renowned perennial *Barleria prionitis* is also referred to as Vajradanti or porcupine flower. It is a shrub that grows throughout most of India, bearing yellow flowers and two flat seeds covered in matted hair. In traditional medicine, a variety of plant parts, including leaves, roots, aerial parts, flowers, and stems, are used. Traditionally, plant components are used to produce a variety of infusions that are used to treat various ailments. Because of its amazing odontalgic function, it is widely used to cure toothaches and bleeding gums. The plant has undergone successful screening from a pharmacological perspective for its antibacterial, antifungal, antiviral, anti-inflammatory, antifertility, antioxidant, hepatoprotective, enzyme inhibitory, anticancer, and anticataract properties. The plant contains substances that have been identified, including phytosterols, terpenes, glycosides, tannins, saponins, and phenolic acids. The plant includes typical secondary metabolites like lupeol, β -sitosterol, vanillic acid, and syringic acid as well as some unique chemicals like acetylbarlerine, balarenone, barlenoside, and barlerine. Data on the morphology, pharmacology, ethnomedicine, and phytochemistry of the plant *B. prionitis* are presented in this paper[4]. Medicinal herbs have been crucial to the evolution of human civilization, including various

religions and rituals. They are also significant sources of unidentified chemicals that may have medicinal benefits. The aerial portions of *Barleria prionitis* are used in Indian medicine to treat bacterial illnesses, anemia, and toothaches. The goal of this work is to investigate the effectiveness of non-polar chemicals that were properties. activity and contrasted with polar chemicals separated from the same plant that were found to be more effective[2].



Fig.1. Leaves of Barleria Prionitis L.



Fig.2. Flower of Barleria Prionitis L.

SCIENTIFIC CLASSIFICATION OF BARLERIA PRIONITIS

Kingdom	Plantae
Sub kingdom	Tracheobionta
Division	Magnoliophyta
Class	Magnoliopsida
Subclass	Asteridae
Order	Scrophulariales(lamiales)
Family	Acanthaceae
Genus	Barleria
Species	B. Prionitis
Binomial Name	Barleria Prionitis L.

PHYSICAL DESCRIPTION:

The entire plant is around 1.5 meters tall, and its fruits are ovoid and capsular, consisting of two fairly large, flat fruits that are covered in matted hair and have a sharp-pointed beak. The flowers are similarly broad and tubular, packed in bunches tightly together at the top of the herb, and primarily yellowish or whitish, about 3–4 cm in length. Its little leaves have 5–20 mm long, pale-colored spines that are 3–10 cm in length and 1.5–4 cm in width. Its stems are spherical, glabrous, rigid, and cylindrical, with a grey or light tan tint [5,6]. This plant is classified as a eukaryote in the kingdom Plantae according to the taxonomy hierarchy. Additional information includes the following: tracheobionta, magnoliophyta, magnoliop-sida, asteridae, scrophulariales, acanthaceae, Barleria, and pri-onitis, in that sequence; sub-kingdom, division, class, subclass, order, family, genus, and species [5,6].

BARLERIA PRIONITIS PHYTOCHEMISTRY AND BIOLOGICAL ACTIVITY:

Iridoids : Iridoids are chemical molecules that are biosynthesized from isoprene and are monoterpenes. They are also recognized as precursors in the biosynthesis of alkaloids. Iridoids with various bioactivities, such as antihepatotoxic, choleric, hypoglycemic, cardiovascular, anti-inflammatory, antimutagenic, anticancer, antiviral, and analgesic properties, can be extracted and purified[7,8,9,10].

Phenolic Compounds (Acids/Glycosides/Lignans/Neolignans : Natural substances called phenolic acids are found in many different parts of the plant kingdom. Their biological actions encompass a wide range, including antibacterial, antioxidant, hepatoprotective, anti-inflammatory, and anticancer effects[10,11,12,13,14].

Flavonoids: Flavonoids are a class of polyphenolic chemicals found in the leaves, flowers, and pollen of several plants[15]. The main types of flavonoids that have been shown to exhibit a wide range of biological and medicinal properties are flavones, flavanones, flavonols, isoflavones, and anthocyanins[16].

Terpenoids: The most common and structurally varied class of chemical molecules generated from five-carbon isoprene units are called terpenoids[17]. Terpenoids, such as hemiterpenoids (C₅), monoterpenoids (C₁₀), sesquiterpenoids (C₁₅), diterpenoids (C₂₀), sesterterpenoids (C₂₅), and triterpenoids (C₃₀), are categorized according to the quantity of isoprene units they contain[17,18].

Phytosterols: Because of their nutritional and therapeutic benefits, phytosterols are an important family of lipids that are mostly found in plants and fungus and are vital to human health. Additionally, phytosterols serve as precursors for the synthesis of vital bioactive substances such phytoecdysteroids, brassinosteroids, steroidal glycoalkaloids, and steroidal saponins[19]. They fall within the 24-methyl and 24-ethylsterol categories[20].

Phenylethanoid Glycosides : The bulk of the aqueous-soluble chemicals known as phenylethanoid glycosides have been discovered from medicinal plants[21,22]. Phenylethanoid glycosides have a single glucopyranoside unit connected to the phenethyl alcohol in their overall structure. This chemical is being studied in multiple families of asterids with one extra chemotaxonomic marker because to its chemotaxonomic importance, especially when it co-occurs with iridoids[23].

MOUTHWASH:

Mouthwash is a medicinal liquid that is held in the mouth and swished by the perioral muscle to get rid of oral infections. It is an aqueous solution that is most frequently used for controlling plaque. The perioral muscle in the mouth holds mouthwash, an aqueous solution typically used to clear plaque, in place while the oral infection is being eliminated. Herbal medicine takes a proactive stance. This natural herb's key advantage is that there haven't been any reported adverse effects associated with its use to yet. Apart from Neither sugar nor alcohol are present in any herbal mouthwash. These things are problematic because they are a food source for the bacteria that cause halitosis and bad breath, which produces the byproducts that cause halitosis. So, using herbal mouthwash to stay away from potentially harmful substances is a good place to start[24]. In dental practise, plaque-induced gingivitis, a relatively prevalent periodontal disease, is frequently observed. Plaque accumulation can be avoided and managed by employing several methods that improve standards for oral cleanliness. Some examples of this include the mechanical removal of dental plaque with dental brushes, dental floss, teeth cleaning sticks, oral irrigators, and/or professional scaling and polishing. In certain situations, mechanical measures alone might not be adequate to control plaque formation. In such cases, it is highly recommended to use antibacterial mouthwashes in addition to mechanical oral hygiene practices. Numerous well-known herbal remedies have helped with management. In dentistry, mouthwashes are frequently recommended for the treatment and prevention of many oral health issues[25,26].

HISTORY:

- From the dawn of civilization to the 21st century, people have understood the significance of keeping their mouth and teeth clean.
- In terms of dental remedies that effectively treat and prevent different kinds of oral disorders, our ancestors' mouthwash rinses for keeping a clean smile were just as popular as some of those available today.
- About 2700 BC, mouthwashing was first mentioned in Ayurvedic and Chinese medicine. Mouthwash is a chemotherapy drug that patients can use as an efficient at-home dental hygiene method.
- Hippocrates advised using a solution of salt, alum, and vinegar for mouthwashing after mechanical cleansing, which became popular among the aristocratic classes during the Greek and Roman eras.
- It is believed that the first creative depictions emphasizing the value of cleanliness and beauty were created by the ancient Egyptians. It was believed that an unclean body was impure. One Greek doctor and surgeon, Pedanius Dioscorides (40–90), whose works functioned as a medical textbook, recommended a mouthwash concoction of the following ingredients to remedy foul breath.
- Using traditional procedures and herbs, ancient mouth washes were made.
- The Greek physician Pedanius Dioscorides created a mouthwash mixture of decoction, which was produced from olive tree leaves, milk, wine, and oil, pomegranate peelings, nutgalls, and vinegar.
- The Romans included human pee as a hidden ingredient to their mouthwash. Because they believed Portuguese urine to be stronger, they imported it.
- Urine is known to have been an important active component in the 18th century because ammonia kept the mouth cavity free of oral infections, particularly those that produced sulfur.
- Mouthwashes, often produced from plants like *Coptis trifolia*, were utilized by Native North American and Mesamerican tribes before European settlers arrived in the Americas.
- German inventor Richard Seifert created the mouthwash brand Odol in 1892. Karl August Lingner (1861–1916), the company's founder, manufactured it in Dresden.

When Did Mouthwash Get Its Start?

The invention of mouthwash dates back to the late 1800s. Oral care products as we know them today were first introduced to the market when toothpaste was invented in the 1800s. Mouthwash was first commercially mass-produced in the late 1800s. In order to stabilize the formulation, the majority of mouthwash brands from the past included alcohol. However, modern alternatives, including cetylpyridinium chloride (CPC), provide germ-killing properties without the need for alcohol stabilization. Although CPC is an ingredient in many health care products, each product's ability to eradicate the bacteria that cause plaque and gingivitis varies.

Who made mouthwash popular?

In 1879, Dr. Lawrence created Listerine, a mouthwash used to disinfect cuts and maintain clean lips. After Listerine was acquired by Lambert Pharmaceutical Co. in 1895, dentists began to use it [32].

TYPES OF MOUTHWASH:

Mouthwash comes in a variety of forms, each serving a specific purpose. Mouthwashes with fluoride assist make teeth stronger; those with antiseptics cover up bad breath and fight tooth decay; and herbal mouthwashes that don't include alcohol [33,34].

1. Fluoride
2. Cosmetic
3. Antiseptic
4. Natural (Herbal)
5. Total care

Herbal Mouthwash:

Mouthwashes containing natural plant extracts are known as herbal mouthwashes. The herbal mouthwashes' natural extract comes from a variety of plant leaves, fruits, seeds, and tree oils.

In addition to other oral hygiene practices like brushing and flossing, herbal mouthwashes can be utilized. Given their well-established anti-inflammatory and anti-plaque properties, they can be employed in supportive periodontal therapy. There is no alcohol, artificial coloring, flavoring, or preservatives. Therefore Herbal mouthwashes could be considered an alternative to chemical mouthwashes for maintaining dental hygiene due to the additional benefits they provide. Using mouthwashes requires a thorough understanding of the product and a detailed diagnosis of the oral condition. The decision needs to include factors such as the patient's ability to maintain good oral hygiene, disease risk, mouthwash effectiveness and safety, and oral health. Mucositis, periodontal diseases, and halitosis Vincent's angina; gum disease; xerostomia; cleaning infected sockets , to reduce pain;to manage plaque; To efficiently administer fluoride to prevent tooth cavities , Diminish inflammation, among other things[35,36].

Why is herbal mouthwash preferable?

Herbal mouthwashes are quite popular since they have less adverse effects, act on oral infections, and provide quick pain relief. Chemical mouthwashes contain hydrogen peroxide and chlorhexidine, which act as instant teeth whiteners, sterilizers, and pain relievers. However, they tend to discolor teeth and may have unfavorable side effects, while being reasonably priced.

Advantages:

- Herbal mouthwashes are non-irritating, non-staining, and alcohol-free, their use has become more popular than that of chemical mouthwashes.
- They are less dangerous and have very few, if any, negative effects.
- Not all herbal mouthwashes contain sugar or alcohol.
- Mouthwashes with herbs are mild enough for even the most delicate teeth.
- Mouthwashes made of herbs possess inherent antimicrobial properties.
- It doesn't have any harsh additives.
- Dry mouth is not caused by herbal mouthwash.
- There's a lot of demand for it.
- It maintains your oral health.
- Easy to use.

USES:

- Mouthwash is necessary for many disorders in the oral cavity. These range from breath fresheners to treating potentially fatal secondary infections, like oral mucositis in patients receiving bone marrow transplant treatments.
- Using herbal mouthwash helps to promote better oral hygiene.
- Applied to eliminate bacteria in the mouth.
- Septic sockets are cleaned with it.
- For the management of halitosis and mucositis.

HERBAL INGREDIENTS USED IN MOUTHWASH:

SR.NO.	Drug Name	FIGURE	USE
1.	Barleria Prionitis L.(katekoranti)	 Fig.(Whole plant)	Oral disease (Mostly Mouthulcer)
2.	Ocimum Sanctum (Tulsi)	 Fig.(leaves)	Antibacterial, Antifungal.
3.	Azadirachta indica (Neem)	 Fig.(leaves)	Antibacterial, Anti-inflammatory.
4.	Mentha piperita oil (menthol,pudina)		Antibacterial

5.	Curcuma longa (Turmeric)		Preservative, Anti-inflammatory
6.	Distilled Water		Volume Makeup

MOUTHULCER:

The loss or erosion of the mucous membrane, the mouth's fragile lining tissue, results in a mouth ulcer. An injury, such biting your cheek inadvertently, is the most frequent cause.

Anywhere inside your mouth can develop a sore called a mouth ulcer. You may have one or many of these sores, which are often red, yellow, or white in color.

Gums are susceptible to developing mouth ulcers.
tongue.

Palate: roof of the mouth.

cheeks inside.

inner lips.



Fig.Mouth ulcer

TYPES:

- Canker sores.
- Gingivostomatitis.
- Herpes simplex (fever blister).
- Leukoplakia.
- Oral thrush.

1.Canker sores:

These are the most prevalent kind of oral ulcers. Acidic meals, stress, and mild traumas like biting your cheek are among the causes. Typically, canker sores are yellow or white with red rims.

2. Leukoplakia:

White or gray patches inside your mouth are a symptom of this illness. It arises from overabundance of cell division. It can be brought on by long-term irritation from things like chewing tobacco or smoking. However, occasionally it occurs for no apparent reason. Lesions from leukoplakia are typically not malignant.

3. Oral thrush:

Inside your mouth, a yeast overgrowth known as *Candida albicans* is the source of this fungal infection. It frequently occurs during antibiotic therapy or when your immune system isn't functioning at its peak. Red, creamy white mouth sores and patches are a symptom of oral thrush.

4. Oral lichen planus:

White, lace-like lesions inside your mouth and itchy rashes are possible symptoms of this illness.

Causes:

- Biting of tongue or inner cheek.
- Deficiency of vitamins D and B12.
- Viral infection.
- Digestion Problem.
- Hormonal Changes.
- Sleep Deprivation.
- Food allergy.
- Emotional imbalance, Causing stress and anxiety.

Symptoms:

- unpleasant oral sores on the inside of the mouth, such as the tongue, insides of the cheeks or lips, that can be yellow, white, or red, with redness surrounding the lesions .
- discomfort that gets worse when you talk, eat, or drink .

Advantages of Herbal mouthwash on mouthulcer :

- Prevent dry mouth.
- Pain Relief.
- Reduce swelling on sores.
- Relief within 2-4 Days.

LITERATURE REVIEW:

1. **Priyanka Namdeo (2021)** : Worked on the creation and assessment of a herbal mouthwash with antibacterial properties to determine how efficient it was against the oral microbial burden. The prepared mouthwash is assessed further for its antibacterial activity and physicochemical characteristics. They work by attacking oral bacteria and pathogens, which rapidly relieves pain and has no further negative consequences.
2. **Shadab Dehshahri(2017)**:The manufacture and assessment of a herbal mouthwash with *Quercus brantii* oak husk and *Zataria multiflora*. The combination of the antibacterial qualities of the tannins in *Quercus brantii* (Jaft)'s Persian oak husk and the antibacterial activity of the essential oil in *Zataria multiflora* leaves appears to be more effective.
3. **Shivani B. Shambharkar(2021)**:Developed and assessed a herbal mouthwash and tested its antibacterial efficacy against oral infections. We employed the streak-plate method. To ascertain the degree of susceptibility, the mouthwash's zones of inhibition against the bacterial isolates were examined.
4. **Nazmeen Shaikh(2020)**:worked on the mouthwash's herbal formulation. Chlorhexidine exhibited increased levels of antibacterial activity against the chosen bacterial species in this investigation. But the herbal mouthwash also worked well in the in vitro approach with these bacterial species.
5. **Yenny Lisbet Siahaan(2021)**: In order to prevent dental plaque in students in III A and III B classes at the private Madrasah Ibtidaiyah Annur Medan, North Sumatera, I worked on the formulation of a herbal mouthwash using bangun-bangun leaves (*Coleus amboinicus* Lour.). I found that an 80% bangun-bangun leaves solution is the best treatment, with an OHI-S value of 0.76 (good criteria).
6. **Smriti Ojha (2018)**: developed and assessed a herbal mouthwash with antibacterial properties to treat oral health issues. We tested the antibacterial activity of *Streptococcus mutans* isolates in vitro. The minimal inhibitory concentration (MIC) and zone of inhibition were found using the Agar well diffusion technique. Zone of inhibition data further supported the findings that this herbal mouthwash was a highly effective plaque inhibitor.
7. **Raj M Pitambare(2020)**: worked on a herbal mouthwash that has natural ingredients and produces the best results when compared to a mouthwash that contains chemicals. utilization of natural components to minimize negative consequences. There were less adverse consequences. Evidence of safety and efficacy should underpin the use of herbs in dentistry. If the active ingredients are refined and the right dosage is established for appropriate administration, the antibacterial properties might be strengthened.
8. **Saket A. Deshmukh(2019)**: worked on the creation, assessment, and comparison of herbal and chlorhexidine mouthwash formulations with respect to their antimicrobial efficacy. The aqueous extract of liquorice, neem leaves, and guava was found to be extremely active against *Staphylococcus aureus*, *Escherichia coli*, and *Bacillus subtilis*, according to antimicrobial sensitivity testing.
9. **Abhishek D. Purohit(2022)**: The main work is to prepare and evaluate a herbal mouthwash and check its effectiveness against microorganisms of oral cavity.
10. **Vishakha Karanjule(2022)**:The aim of present work is to formulate and evaluate antibacterial mouthwash and evaluate its effectiveness against microbes present in oral cavity.
11. **Shivani Suresh Uttarwar(2022)**: This review is an attempt to outline such natural substances can be used as a effective mouthwashes. The present study aimed to formulate polyherbal mouthwash that have antibacterial properties.
12. **Samruddhi M.Jagdale(2023)**: Worked on to gum diseases. Used to eliminate bacteria in the mouth.Preparation of herbal mouthwash.

13. Shafi Ahmad(2018): Formulation and Evaluation of Antibacterial herbal mouthwash against oral disorders[37].

14. Foud hussein al-bayaty(2010): Effect Of Mouth Wash Extracted From *Salvadora Persica*(Miswak) On Dental Plaque Formation: A Clinical Trial[38].

15.J Nasreen Banu(2016): Preparation of antibacterial herbal mouthwash against oral pathogens[39].

16. Shweta S. Patil(2020): Design, development and evaluation of herbal mouthwash for antibacterial potency against oral bacteria[40].

17. Anirudh B. Acharya(2014): Evaluation of holy basil mouthwash as an adjunctive plaque control agent in a four day plaque regrowth model.

18. Juman Nafea(2020): Formulation of Antibacterial Mouthwash from Local Herbs: A Mini Review.

AIM AND OBJECTIVE:

AIM : To prepare Herbal Mouthwash for Mouth Ulcer.

OBJECTIVE:

- 1.The main objective of formulation of herbal mouthwash is to relief from mouth ulcer.
- 2.Prevention control and reduction of oral infection.
- 3.To reduce side effects by promoting herbal use.

NEED:

1. Compared to artificial herbal solutions, mouthwash reduces oral pathogens and has fewer adverse effects.
2. Because herbal mouthwashes provide quick pain relief, they are in high demand.
3. Various infections like mouthulcer can be avoided with the use of herbal mouthwash.
4. Mouthwashes made with herbs are good for oral prophylaxis.

PLAN OF WORK:

- Literature review.
- Selection of drug.:
Barleria prionitis L. main ingredient in herbal mouthwash for mouthulcer.
- Formulation Development.
- Formulation Of Evaluation

1. Measurement of PH .
2. Physical evaluation..
Colour and Odour
- 3..Phase separation
- 4.Homogeneity
- 5.Test for Microbialgrowth

These are evaluation test for mouthwash formulation.

- Preparation and submission of thesis.

MATERIALS AND METHODS:

2.1:Materials

Table 2.1.1: List of Materials(Ingredients)

Sr.No.	Materials
1.	Barleria Prionitis L.(main ingredient)
2.	Tulsi (Ocimum sanctum)
3.	Neem (Azadirachta indica)
4.	Menthol oil (Mentha piperita oil)
5.	Turmeric (Curcuma longa)
6.	Distilled Water

Table 2.1.2: List of Equipments

Sr.No.	Equipments
1.	Measuring cylinder
2.	Beaker
3.	Filter Paper
4.	Volumetric flask
5.	Funnel
6.	Water bath
7.	Burner
8.	PH meter/paper

Table 2.1.3: Formula**Formula for Preparation of Herbal Mouthwash :**

Sr.No.	Ingredients	Formula
1.	Barleria prionitis L. powder	10gm
2.	Tulsi Extract	2.1gm
3.	Neem Extract	5.0ml
4.	Menthol oil	2.1ml
5.	Turmeric Powder	2.2gm
6.	Distilled Water	q.s
7.	Total volume	60ml

2.2: Method

Take a Beaker



Add Powders of plant extract in separate beakers and add some amount of water in it .



For Cold Maceration store it at room temperature for 24 hrs and Filter it with filter paper and pour it in volumetric flask.



Shake it.



Add 2ml menthol oil with help of measuring cylinder and shake well.



Make volume upto 100ml with Distilled water



Check the ph (4.1-6.9)



Shake well and store it in well closed container.

DRUGS AND PROFILE:**1. Barleria Prionitis L.:**

Kingdom :	Plantae
Sub kingdom :	Tracheobionta
Division :	Magnoliophyta
Class :	Magnoliophyta
Subclass :	Asteridae
Order :	Acanthaceae
Genus :	Barleria
Species:	B. Prionitis
Binomial Name:	Barleria Prionitis L.
Common names:	Vajradanti' (Sanskrit), Kantajati (Bengali).
Parts used :	whole plant.

Chemical constituents : From the aerial parts of Barleria prionitis, one new phenylethanoid glycoside, barlerinoside along with six known iridoid glycosides, shanzhiside methyl ester , 6- O-trans-p-coumaroyl-8-O-acetylshanzhiside methyl ester , barlerin , acetylbarlerin , 7- methoxydideroside , and lupulinoside. p-hydroxybenzoic acid (leaves).

2.TULSI (OCIMUM SANCTUM) :

Kingdom :	Plantae
Division :	Magnoliophyta
Class:	Magnoliopsida
Order:	Lamiales
Family :	Labiatae
Genus:	Ocimum
Species :	O.Tenuiflorum

Scientific Name: ocimum sanctum

Biological source: Tulsi consist of the fresh & dried leaves of ocimum sanctum L. and Ocimum basilicum L. belonging to family Labiatae.

Parts used : Leaves, Seeds and Roots.

Chemical constituents: Oil Variables: 0.8% i. Methyl ether, nerol, and eugenol. ii. Terpinene-4-ol-decylaldehyde and caryophyllene III. Carvacrol IV with camphor. Ascorbic acid, carotene, calcium, phosphorus, essential oils, and insoluble oxalates. v. Terpenes, mucilage, fixed oil, and fatty acids are also

present.

3.NEEM (*Azadirachta indica*)

Common name : Neem

Botanical Name : *Azadirachta indica*

Kingdom: Plantae

Division: Magnoliophyta

Class: Magnoliophyta

Order: Sapindales

Genus : *Azadirachta*

Species: *A.indica*

Family: Meliaceae

Biological source :Neem consists of the fresh or dried leaves and seed oil of *Azadirachta indica* J. Juss (*Melia Indica* or *M. azadirachta* Linn.).

Chemical constituents: Nimbin, Nimbdin, Nimbinin. It prevents the germs from growing and from forming plaque. Neem leaves, twigs, and seeds have been used to combat bacterial infections and clean teeth. Because neem extract prevents the growth of bacteria and the creation of plaque, it is suitable for treating gingivitis and oral infections. For thousands of years, people in India and South Asia have used the leaves, twigs, and seeds of the neem plant to clean their teeth and prevent fungal and bacterial infections. Because neem extract prevents the growth of bacteria and the creation of plaque, it is suitable for treating gingivitis and oral infections.

4. *Mentha piperita*(menthol)

Kingdom: Plantae

Subkingdom:Tracheobionta

Superdivision:Spermatophyta

Division:Magnoliophyta

Class:Magnoliopsida

Subclass:Asteridae

Order:Lamiales

Family:Lamiaceae

Genus:*Mentha*

Species:*Arvensis*

Biological Source: The aromatic leaves of the *Mentha piperata* plant, which is a member of the Lamiaceae family.

Chemical constituents:Menthol, menthone, and cineole are the chemical components. Because of its potent, pure properties, peppermint is the mint that is most frequently utilized in mouthwash

on a commercial basis. A helpful treatment for gingivitis is mint. Peppermint adds aroma. The best oil to prevent cavities is peppermint. In addition to being analgesic, it possesses antiviral and antibacterial qualities.

5.Turmeric:

Kingdom : Plantae

Subkingdom: Tracheobionta

Superdivision: Spermatophyte

Division: Magnoliophyta

Class : Liliopsida

Subclass: Zingiberidae

Order: Zingiberales

Family: Zingiberaceae

Genus: Curcuma

Biological source: Curcuma longa is a rhizomatous herbaceous perennial plant that yields turmeric.

Chemical Constituents: Three to six percent of turmeric is made up of polyphenolic substances called curcuminoids, which are a combination of curcumin, demethoxycurcumin, and bisdemethoxycurcumin. Major components in charge of a variety of biological functions are curcuminoids.

EVALUATION PARAMETER OF MOUTHWASH:

1.Measurement of PH:

A digital pH meter was used to determine the mouthwash's pH after it was made using herbs. A standard buffer solution was used to calibrate the pH meter 1ml of mouthwash was weighed, diluted in 50ml of purified water, and its pH was determined.

2.Physical evaluation:

Physical parameter such as colour, odour, taste and consistency were examined by visual examination.

3.Test for Microbialgrowth:

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.

RESULT AND DISCUSSION:

1.pH Evaluation:

pH for the herbal mouthwash found to range between 5.1-7.2.

2.Physical Evaluation:

Colour	Brown
Odour	Pleasant
Appearance	Visual Appearance
Texture	Liquid
Homogeneity	Good
Phase Separation	No Separation

3.Antibacterial assay:

The mouthwash formulation was inoculated into the agar medium plates using the streak plate method, and a control was established. The plates are incubated for 24 hours at 37°C after being placed in the incubator. After the incubation period, plates were taken out and compared to the control to check for microbial growth.

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Complete Peer review

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