

# Herbal Formulation of Lozenges for Ulcerastic Treatment of Mouth Ulcers

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## Abstract:

This study introduces the development and evaluation of herbal lozenges designed specifically for treating mouth ulcers, featuring Guava leaves (*Psidium guajava*) and Mint leaves (Mint Lamiaceae) as key ingredients. Guava is well known for its diverse therapeutic compounds, providing strong anti-inflammatory, anti-ulcer, and wound-healing properties. Mint, revered in traditional medicine for its anti-inflammatory and analgesic effects, complements guava by enhancing its healing characteristics. The lozenges are formulated to dissolve slowly in the mouth, ensuring prolonged contact with ulcerated oral tissues to relieve pain and promote healing. The synergistic blend of guava and mint offers a promising natural approach to managing mouth ulcers, effectively addressing symptoms while supporting overall oral health and well-being.

**Keywords:** Guava leaves, Mint leaves, Clove oil, Mouth ulcer, Lozenges, Herbs, Medicinal Properties

## INTRODUCTION:

Having mouth ulcers can be quite painful. This brochure is specifically regarding any location, within the cavity. The occurring form of oral ulcers. One, out of every five individuals may experience mouth sores. At some point many people experience the development of canker sores in their mouths. In cases it is women whose lives are impacted more frequently than men by such circumstances. men may experience ulcers, commonly known as mouth ulcers or "canker sores." A mucosal ulcer is a type of ulcer that develops inside the body. The inner linings of the mouth are sore and discomforting. Small sores that are circular or oval, in shape and develop within the mouth. Especially, on the inside of the cheeks or lips, within the mouth. Painful ulcers called canker sores or aphthous ulcers. When we consume food or beverages. Take care of our hygiene by brushing our teeth regularly... Usual human behaviors that keep us healthy and well maintained. Reasons for developing mouth sores can stem from nutrient intake. Vitamins, like B12 and C are essential for our health when it comes to maintaining health. Hygiene is crucial for maintaining health and

well being. Diseases can have an impact on one's state and overall mood. Additionally poor digestion can lead to discomfort and uneasiness. Damage, from sources, like machinery or tools can occur. Some individuals may have difficulty digesting foods. Hormonal imbalances can also impact one's health. imbalance can lead to skin problems and other issues. Break in the membrane.

**TYPES OF MOUTH ULCER:** On the basis of ulcer size and number, mouth ulcer can be classified as minor, major.

Mouth ulcers, also known as **oral ulcers** or **canker sores**, come in different types based on their causes and appearance. Here are the main types:

### 1. Aphthous Ulcers (Canker Sores)

- **Minor Aphthous Ulcers:** Small (less than 5mm), round or oval, with a white or yellow center and a red border. Heal within 1-2 weeks without scarring.
- **Major Aphthous Ulcers:** Larger (more than 10mm), deeper, and can last for several weeks. May leave scars.
- **Herpetiform Ulcers:** Numerous tiny ulcers (1-2mm) that can merge into larger sores. More painful and may take longer to heal.

### 2. Traumatic Ulcers

- Caused by **injury** (e.g., biting the cheek, sharp teeth, ill-fitting dentures, aggressive brushing).
- Usually single, with irregular edges, and heal once the cause is removed.

### 3. Herpetic Ulcers (Cold Sores)

- Caused by **Herpes Simplex Virus (HSV-1)**.
- Appear as fluid-filled blisters that burst, forming painful ulcers, often around the lips or inside the mouth.
- Highly contagious.

### 4. Drug-Induced Ulcers

- Caused by medications like **NSAIDs, beta-blockers, chemotherapy drugs, or certain antibiotics**.
- Often widespread and slow to heal.

### 5. Infectious Ulcers

- Caused by bacterial, viral, or fungal infections (e.g., syphilis, tuberculosis, candidiasis).
- May be persistent and require treatment of the underlying infection.

## 6. Systemic Disease-Related Ulcers

Associated with conditions like **Behçet's disease, Crohn's disease, lupus, celiac disease, or HIV/AIDS**. Often recurrent and linked with other symptoms.

## 7. Malignant Ulcers

- Persistent, non-healing ulcers that may indicate **oral cancer**.
- Often painless initially, then become painful over time.
- Need medical evaluation if lasting more than **2-3 weeks**.



### Causes:

Mouth ulcers can be caused by various factors, including trauma from biting, sharp teeth, or ill-fitting dentures. Stress, hormonal changes, and nutritional deficiencies (such as low vitamin B12, iron, or folic acid) also contribute. Certain foods, including spicy or acidic ones, may trigger ulcers, while infections like herpes, bacterial, or fungal infections can worsen them. Medications, autoimmune diseases (e.g., lupus, Crohn's), and underlying conditions like diabetes or HIV/AIDS increase the risk. Smoking, alcohol, and even stopping smoking can cause irritation. If an ulcer lasts more than 2-3 weeks, it should be evaluated for possible underlying health concerns.

### Symptoms:

- **Pain or Discomfort** – A stinging or burning sensation, especially when eating spicy, salty, or acidic foods.
- **Small, Round Sores** – Usually white, yellow, or gray in the center with a red border.
- **Swelling or Inflammation** – The area around the ulcer may feel swollen or tender.
- **Irritation While Eating or Talking** – You might feel discomfort while chewing, swallowing, or even speaking.
- **Slow Healing** – Most ulcers heal within 1-2 weeks, but some take longer.
- **Recurrent Sores** – Some people get them repeatedly due to stress, diet, or underlying conditions.

## Lozenges:

**Lozenges** are small, medicated tablets that dissolve slowly in the mouth to provide **local or systemic effects**. They are commonly used for **soothing throat irritation, cough relief, and delivering medications like antiseptics, analgesics, or vitamins**.

## Classification of Lozenges

1. **Hard Lozenges** – Made from sugar or sugar substitutes, similar to hard candy. Example: Strepsils.
2. **Soft Lozenges** – Chewable or slowly dissolving, often made with glycerin or gelatin. Example: Nicotine lozenges.
3. **Compressed Lozenges (Troches)** – Made by compressing ingredients into a tablet form. Example: Clotrimazole troches for oral infections

Ingredients showcasing antiulcer properties are as follows,

### 1) Guava leaves (*Psidium guajava*)

This plant is commonly seen and grown because of its many uses as fruit and as a traditional remedy to treat various ailments. Research studies have shown that almost all of the parts of this plant have medicinal qualities, making it one of the most popular therapeutic plants in the Philippines and one of the approved medicinal plants of the Department of Health.

The fruit, bark and leaves are used as herbal medicine. A decoction of its leaves is recognized for its effectiveness in curing several ailments, including the treatment of chronic diarrhea and gastroenteritis. The most common use of the leaves is for cleaning and disinfecting wounds by rinsing the afflicted area with a decoction of the leaves. It can also be used as a wash for uterine and vaginal problems, and is good for ulcers. Leaf decoction may also be used as mouthwash. Guava has also been used for the management of various diseases like toothache, sore throat, and inflamed gums.



**Family:-**

Myrtaceae **Botanical name:-**

Psidium Guajava **Kingdom:**

Plantae

**Chemical constituents:-**

- Saponins,
- Glycosides
- Flavonoids
- Tannins
- Low Alkaloids
- Phenols
- Steroids

**Mechanism Of Action:-**

In controlling infectious diarrhoea and comparing it with quercetin, one of the most reported active .

**Uses-**

- Immunity Booster
- Lowers Risk Of Cancer
- Diabetes-Friendly
- Heart Healthy
- Treats Constipation.<sup>17</sup>
- **Anti-ulcer properties :**
  - Guava leaves' combination of **antioxidant, anti-inflammatory, antibacterial, and protective effects** makes them beneficial in both **preventing and managing ulcers**.
  - Guava leaves contain **flavonoids, tannins, and saponins**, which help protect the stomach lining from oxidative stress and damage.

## 2) Mint Lamiaceae

Mint is a popular herb that may possess potential health benefits. This may include helping with digestive health, reducing allergic symptoms, and soothing common cold symptoms.

Mint or *mentha* belongs to the Lamiaceae family, which contains around 15–20 plant species, including peppermint and spearmint. It is a popular herb that people can use fresh or dried in many dishes and infusions. Manufacturers of toothpaste, gum, candy, and beauty products often use mint oil. People have used different species of mint plants in medicine. Different types of mint plants offer a range of [antioxidant](#) qualities and potential health benefits, especially for people who have [irritable bowel syndrome](#) (IBS).



**Family:** lamiaceae **Botanical name:**

Mint **Kingdom:** Plantae **Chemical**

**constituents:**

-menthol

-Flavonoids

-terpenoids

-phenolic acid

-steroids

**Mode of action:** it gives cooling sensation in the mouth and throat, relaxing smooth muscles in the digestive tract.



### Uses:

-freshening breath,

-aiding digestion

- **Anti-ulcer properties:**

- Mint leaves are well-known for their **digestive benefits**, and they also offer several **anti- ulcer properties** that help protect the stomach lining and support healing.

### 3) Clove *Syzygium aromaticum*:

Clove (*Syzygium aromaticum*) is one of the most valuable spices that has been used for centuries as a food preservative and for many medicinal purposes. Clove, particularly in the form of clove oil, has been recognized for its potential in treating mouth ulcers due to its analgesic, anti-inflammatory, and antimicrobial properties. Research indicates that clove oil can enhance the penetration of other therapeutic agents when formulated into emulgels, which are effective for topical application on oral lesions. Its active compound, eugenol, exhibits broad antimicrobial activity, making it beneficial against infections that may exacerbate oral ulcers.

This oil is used to prepare microscopic slides for viewing and is also a local anesthetic for toothaches. Eugenol is used in germicides, perfumes, and mouthwashes, in the [synthesis](#) of vanillin, and as a [sweetener](#) or intensifier. Clove oil provides pain relief, making it suitable for managing discomfort associated with mouth ulcers. Apply a tiny quantity of clove oil on the ulcer to cure mouth ulcers instantly. The natural analgesic and antibacterial qualities of clove oil may be helpful in relieving pain and killing germs.



**Family:** Myrtaceae

**Botanical name:** Syzygium aromaticum

**Kingdom:** plantae

**Chemical constituents:**

-Anti-inflammatory

-Anti-oxidant

-Anti-microbial

**Mode of action:** Clove oil acts through **antimicrobial, anti-inflammatory, antioxidant, pain-relieving, and protective mechanisms**, making it effective for oral, digestive, and skin health.

**Uses:**

-dental care

-digestive health

-skin care

-pain relief

-anti microbial use

● **Anti-ulcer properties:**

Eugenol, the main compound, also has **mild analgesic properties**, helping relieve ulcer- related stomach pain. Clove oil's **antioxidant, anti-inflammatory, antibacterial, and acid- regulating properties** work together to **protect, heal, and soothe** the stomach lining, making it beneficial for managing and preventing ulcers.

## **Methodology:**

### **1. Preparation:**

Weigh powdered sorbitol and liquid glucose in a suitable beaker. Heat the liquid glucose to reduce viscosity. Slowly add sorbitol with continuous stirring to dissolve completely,



maintaining temperature between 110 to 130°C. After thorough mixing of sorbitol mixture, add guava leaves extract and mint extract, ensuring complete dissolution. To adjust the color of the lozenges, add green & orange colorant. Incorporate desired colors and flavors, then pour the mixture into molds and allow it to air dry.

## 2. Evaluation Parameters:

**Physical Parameters:** Evaluate clarity, texture, and consistency of the medicated lozenges. Assess texture for stickiness visually.

**Weight Variation Test:** Weigh 6 lozenges from each batch individually using an analytical balance to measure average weight and standard deviations (Height: 1 cm, Width: 1.5 cm). o

**Diameter and Thickness:** Measure diameter and thickness using a vernier scale, crucial for tablet uniformity and patient acceptance (measured in mm). o

**Hardness Test:** Use a Pfizer tester to determine the hardness of the prepared lozenges. O

**Mouth Dissolving Time:** Place each lozenge in separate beakers with 100 ml phosphate buffer pH 6.8, stirring at 50 rpm using a mechanical stirrer at 37°C to record the time taken for complete dissolution. O

**Moisture Content:** Determine moisture content gravimetrically by weighing a 1 gram sample placed in a desiccator for 24 hours.

**Stability Studies:** Subject the optimized formulations to stability studies at 40°C/75% RH for one month to assess their stability over time.

## Conclusion:

The formulation of herbal guava leaves extract lozenges for treating mouth ulcers shows promise as a natural and potentially effective remedy. Careful ingredient selection, proportion optimization, and adherence to regulatory standards are crucial in the formulation process to ensure safety and efficacy. Laboratory testing helps refine the formulation to enhance taste, texture, and therapeutic benefits. Herbal guava leaves extract lozenges offer potential benefits such as pain relief, inflammation reduction, infection control, and support for mouth ulcer healing. However, further research, particularly clinical studies, is necessary to validate their effectiveness and safety conclusively.

In summary, herbal guava leaves extract lozenges present a promising alternative for individuals seeking natural remedies for managing mouth ulcers.

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