



THE RESEARCH STUDY ON MARIGOLD FOR MOUTH ULCER AT PRESENCE OF CLOVE OIL AND ALOEVERA

¹ Pradnya B. Patil, ² Satyajeet S. Patil, ³ Sambhram S. Sankhagond, ⁴ Aishwarya P. Bhosle

¹Student, ²Student, ³Student, ⁴Professor

Ashokrao Mane College Of Pharmacy, Pethvadgaon

ABSTRACT:

The objective of the study was to formulate and evaluate the mouth ulcer gel containing extract petals of marigold (*Tagetes erecta*), clove and *Psidium guajava* L to treat mouth ulcer. Marigold (*Tagetes erecta*) is a vibrant flowering plant for treating mouth ulcer. *Tagetes* species belonging to family Asteraceae are the most common plant kingdom which is used in different areas like cosmetic preparation, medicine. Quercetin a flavonoid found in marigold exhibits anti-inflammatory and antioxidant properties. It may help reduce inflammation and promote healing in mouth ulcer. Clove oil containing eugenol, a compound with powerful antimicrobial effects. Applying clove oil to mouth ulcer may help to fight bacteria and prevent infection, promoting faster health.

KEY WORDS:

Antiulcer Gel, marigold, clove, aloe vera

INTRODUCTION:

Mouth ulcer:

Mouth ulcers are small sores that develop in mouth or at the base of gum. Mouth ulcer also known as canker sores. A break or breach in mucous membrane, that lines within the mouth is also recognized as a mouth ulcer. It generally arises as a yellow or white colour depression in mouth. Mouth ulcers are usually generated by a number of causes, such as biting the inner layer of cheeks, food allergies, hormonal changes, vitamin deficiency, medicinal allergy, bacterial infection.



Causes of mouth ulcer:

- Accidental biting of inside of cheek and tongue.
- Allergic reaction to certain bacteria.
- Pathogens (bacteria, viruses and fungi) can inflame the lining of mouth, resulting in swelling, redness and ulcer formation.
- Lack of sleep.
- Due to vitamin deficiencies.
- Using hard and abrasive toothpaste.
- Eating a high acidic foods.
- Hormonal changes
- Stress.

• Types of mouth ulcer :

★ Canker Sore (Aphthous Ulcer):

- Appearance: Small, round or oval pitted lesions.
- Location: Soft parts of the mouth (tongue, lips, soft palate, cheeks).
- Size:
 - ◆ Minor aphthous stomatitis: Less than 1 centimeter in diameter.
 - ◆ Major aphthous stomatitis: Over 1 centimeter in diameter (may cause scarring).
 - ◆ Herpetiform aphthous stomatitis: Pinhead-sized ulcers that can merge to form larger ulcers.
- Cause: Often occurs without a known cause.

★ Oral Lichen Planus:

- Appearance: Painful white ulcers with fine white lines on the tongue, gums, or inner cheeks.
- Characteristics: Chronic inflammation due to an autoimmune disease.
- Triggers: May worsen with anxiety or stress.

★ Behcet's Ulcer:

- Appearance: Painful canker sore with reddish borders.
- Location: Mucous membranes of the mouth.
- Associated Condition: Behcet's disease (an autoimmune disorder).

Gels :

The gel is a semisolid dosage form consisting dispersion of small and large molecules. Topical gels are used for the skin application or local action on mucosal surface.

Advantages of pharmaceutical gel :

1. Gels bypass the first pass metabolism.
2. When oral administration is unsuitable, gels can serve as an alternative route of medication delivery.
3. Gels provide localized action with minimum side effects.
4. Gels are biodegradable and compatible with biological system.
5. They are well tolerated by patients and have good adherence to the application site.
6. Gels are easy to formulate.
7. Gels avoid enzymatic activity and drug interaction with food and drinks.

Marigold:

Marigold consist of petals and pollens of *Tagetes erecta*, belonging to family-Asteraceae. Marigold is a vibrant plant known for its medicinal properties. Quercetin, is a flavonoid found in marigold, exhibits anti inflammatory and antioxidant properties. It helps to reduce inflammation and promote healing of mouth ulcer. Tannins are polyphenolic compounds present in marigold. They have astringent properties and can help soothe irritated mucous membrane in the mouth.

Clove :

Clove contains eugenol, a compound with powerful antimicrobial effects. Applying clove oil to mouth ulcer may help combat bacteria and prevent infection, promoting faster health. Inflammation is a common feature of mouth ulcer, clove oil has anti inflammatory properties can soothe irritated tissues and reduce swelling and discomfort associated with these sores.

Aloe vera :

Aloe contains Barbaloin, beta barbaloin. It acts as anti inflammatory, anti aging property. It also heals the wounds and soothes irritated skin.

Anti-inflammatory Effects: Aloe Vera contains compounds like saponins that reduce inflammation. This is particularly useful for mouth ulcer.

Promotion of Healing: Aloe vera accelerates the healing processes.

OBJECTIVE OF WORK:

Herbal mouth ulcer gels have gained attention due to their potential benefits and fewer side effects compared to synthetic gels.

- ◆ **Prevalence of Mouth ulcer:** Investigating herbal gels aims to find effective treatments for managing mouth ulcers.
- ◆ **Herbal Medicine Acceptance:** They are culturally accepted, compatible with the human body, and often have fewer adverse effects.
- ◆ **Safety and Compatibility:** People are increasingly aware of side effects and prefer natural ingredients. Herbal gels offer a safer alternative.
- ◆ **Potential Benefits:** Herbal gels may reduce pain, irritation, and discomfort associated with mouth ulcers. They offer an alternative to synthetic gels, emphasizing safety and efficacy.

MATERIALS AND METHODS:

The fresh plant materials of marigold was collected from local market and some other chemicals like carbopol 934 and methyl paraben are obtained from laboratories of Ashokrao mane college of pharmacy, Peth vadagaon.

Marigold:



Kingdom: Plantae

Division: Maganoliophyta

Class: Magnolipsida dicotyledons

Order: Asterales

Family: Asteraceae

Genus: Tagetes

Species: Tagetea erecta

Aloe vera:

Biological source: aloe is the dried juice collected by incision, from the bases of the leaves of various species of aloe. Aloe vera linn or aloe barbadensis.

Taxonomical classification:

Kingdom: Plantae

Division: Spermatophyte

Class: Monocots

Order: Asparagales

Genus: Aloe

Species: Aloe barbadensis

Clove :

Biological source : clove consist of dried flower buds of *Eugenia caryophyllata* belonging to family – Mirtaceae.

Taxonomical classification:

Kingdom: Plantae

Division: Magnolophyta

Class: Magnoliopsida

Order: Myrtaceae

Genus: Syzygium

Species: Aromaticum

PREPARATION OF EXTRACT:

Extraction of marigold:

Collection of Marigold Flowers:

Gather fresh marigold flowers. These flowers contain bioactive compounds that contribute to the gel's therapeutic properties.

Preparation of Coarse Powder:

Take approximately 100 grams of dried marigold flowers. Coarsely grind the flowers into a fine powder.

Extraction Using Cold Maceration:

Mix the coarse marigold powder with 500 ml of distilled water. Allow the mixture to macerate (soak) at room temperature for 24 hours. This process allows the water to extract the beneficial compounds from the marigold.

Filtration:

After maceration, filter the mixture to separate the liquid extract from the solid residue. The filtered liquid contains the active components of marigold.

Evaporation:

Use a rotary evaporator at a controlled temperature (around 60°C) to evaporate the liquid extract. Continue the evaporation process until the extract becomes a concentrated, semi-solid substance.

Extraction of clove:

Steam distillation:

The extraction process of clove oil involves obtaining the aromatic essential oil from clove buds. Clove (*Syzygium aromaticum*) is a spice widely used in various cuisines and has medicinal properties. Let's explore how clove oil is extracted:

Steam Distillation: This is the most common technique used to extract clove oil.

1. Process:

- Dried clove buds are placed in a distillation apparatus.
- Steam is passed through the buds, causing the volatile compounds to vaporize.
- The vapor is then condensed back into liquid form, resulting in clove essential oil.

Extraction process of aloe vera :

The extraction process of aloe vera typically involves cutting the leaves, draining the aloe latex, and then extracting the clear gel-like substance from the various medical and cosmetic use.

List of equipments :

Sr no	Equipments	Make and models
1	Magnetic stirrer	Remi 1 MLH Dolphin, India
2	Digital weighing balance	Citizen
3	Ph meter	Lab India
4	Viscometer	Brookfield DIII L V

Formulation table:

Ingredients	Quantity	Role of ingredients
Marigold extract	1.2gm	Antifungal, anti-inflammatory
Clove oil	1ml	Anti-inflammatory, analgesic
Aloe Vera	1.5gm	Anti bacterial
Methyl paraben	0.01ml	Preservative
Propyl paraben	0.01ml	Preservative
Triethanolamine(1.2%)	qs	For adjust pH
Carbopol 934	1.5gm	Gelling agent
Distilled water	10ml	Vehicle

• **PREPARATION OF MOUTH ULCER GEL :**

Dispersed carbopol 934 in distilled water



5 ml of water + methyl and propyl paraben



Heated on water bath



After cooling add propylene glycol



Marigold flower extract, clove oil and aloe vera extract mix in above mixture



Volume make up to 20 ml with distilled water



Mixed all ingredient and cinnamon flavor add into carbopol 934 properly
Continuous stirring triethanolamine add drop wise (adjust pH 6.8 to 7)

Result and discussion :

Sr.no.	PARAMETERS	OBSERVATION
1	Colour	Yellow
2	Consistency	Good
3	Odour	Characteristic
4	pH	5.67
5	Homogeneity	Homogeneous
6	Viscosity(cps)	2983
7	Spreadability	24.03
8	Extrudability	70%

Antifungal activity:

From the antifungal activity, it was found that the gel showing good effect on fungal growth.



Fig. Antifungal activity

CONCLUSION:

The gel formulation is more preferred among the other topical semisolid preparations, since it has long resistance time on the skin, high viscosity, moisturizing effect on flaky skin. Gels are non greasy formulation and it has good adherence property to the site of application.

The project work helped to getting better understanding about herbal drugs their extraction process, isolation and use.

The present study, it was demonstrated that the herbal gel formulation possess significant, therapeutically effective, suitable vehicle for drug delivery. Development of new herbal gel formulation is suitable for mouth ulcer treatment. From above experimental data it is clear that the gel formulation with herbal ingredients such as marigold, clove oil aloe Vera has good characteristics, viscosity and also anti microbial activity which is necessary for management of mouth ulcers.

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