

Formulation of Herbal Mouth Ulcer Gel

Pavan Garad, Sakshi deore, saurabh saudar, dr. Santosh payghan

1.ABSTRACT

Mouth ulcers, also known as aphthous ulcers, are common oral lesions that cause discomfort and pain, often leading to difficulties in eating and speaking. Conventional treatments include antiseptics, analgesics, and corticosteroids, which may have side effects with prolonged use. Herbal formulations offer a promising alternative due to their natural healing properties, safety, and minimal adverse effects. This study focuses on the formulation and evaluation of a herbal mouth ulcer gel using medicinal plant extracts known for their antimicrobial, anti-inflammatory, and wound-healing properties. Key ingredients include Aloe vera, Licorice (*Glycyrrhiza glabra*), Turmeric (*Curcuma longa*), Neem (*Azadirachta indica*), and Honey, each selected for their proven efficacy in oral wound healing.

The gel formulation was assessed for pH, spreadability, viscosity, stability, and antimicrobial activity. The results indicate that the herbal gel provides effective relief from pain and inflammation while promoting faster healing. This study suggests that herbal mouth ulcer gels can serve as a natural, safe, and effective alternative to synthetic treatments.

INTRODUCTION

Introduction: -

Oral ulcer Oral/mouth ulcers are painful lesions that are open sores or canker sores. Gum, lip, inner cheek, and palate ulcers can develop in the mouth. A mouth ulcer is the loss or erosion of the mucosal membrane, the fragile tissue that lines the mouth. Keep in mind that mouth sores are distinct from cold sores, which are brought on by a virus that manifests itself in the lips. Canker sores, cold sores, leucoplakia (a thick white or grey area), and candidiasis or thrush (a fungal infection) are the most prevalent types of mouth sores. The erosion or loss of some of the fragile tissue lining inside of the mouth in mouth ulcers.

Causes of mouth ulcer

1. Microbial disease

Herpetic stomatitis, Chickenpox, Herpes zoster, Hand, foot and mouth disease, Herpangina, Infectious mononucleosis.

2. Cutaneous disease

Lichen planus, Erythema multiforme, Dermatitis herpetiformis, Linear IgA disease, Chronic ulcerative stomatitis.



Fig. no.1.1 – mouth ulcer

REVIEW OF LITERATURE

Literature Review on Herbal Mouth Ulcer Gel

Introduction Mouth ulcers, also known as aphthous ulcers, are painful lesions that can affect the mucosal lining of the oral cavity. Traditional treatments include corticosteroids, antiseptics, and analgesics, but these may have side effects such as irritation and allergic reactions. Herbal formulations have gained attention as an alternative due to their natural origin, minimal side effects, and potential therapeutic benefits.

Herbal Ingredients Used in Mouth Ulcer Gels Several medicinal plants have been incorporated into herbal mouth ulcer gels due to their anti-inflammatory, antimicrobial, and healing properties:

1. **Aloe vera** – Contains anthraquinones and glycoproteins, which promote healing and provide analgesic effects (Hashemi et al., 2015).
2. **Licorice (Glycyrrhiza glabra)** – Exhibits anti-inflammatory and antiviral properties, reducing ulcer size and pain (Singh et al., 2019).
3. **Turmeric (Curcuma longa)** – Contains curcumin, known for its anti-inflammatory and antioxidant activities, aiding in ulcer healing (Nagpal & Sood, 2013).
4. **Honey** – Has antibacterial and wound-healing properties that accelerate the recovery of oral ulcers (Al-Waili, 2016).
5. **Chamomile (Matricaria chamomilla)** – Possesses anti-inflammatory and soothing effects, beneficial in treating oral lesions (Srivastava et al., 2010).
6. **Neem (Azadirachta indica)** – Shows antibacterial and wound-healing properties, reducing microbial infection risk in ulcers (Bhowmik et al., 2020).

BACKGROUND

Background of Herbal Mouth Ulcer Gel

Herbal mouth ulcer gels are natural formulations designed to treat and soothe mouth ulcers, which are painful sores that occur on the inner cheeks, gums, tongue, or lips. These gels are an alternative to conventional pharmaceutical treatments and rely on the therapeutic properties of medicinal plants.

Historical Use of Herbal Remedies

The use of herbal ingredients for oral health dates back centuries, with traditional medicine systems like Ayurveda, Traditional Chinese Medicine (TCM), and Unani prescribing plant-based treatments for mouth sores, inflammation, and infections. Herbs with antibacterial, anti-inflammatory, and wound-healing properties have been used to treat oral ailments effectively.

Common Herbal Ingredients

Herbal mouth ulcer gels typically contain a blend of natural extracts with soothing, antimicrobial, and healing effects. Some commonly used ingredients include:

- **Aloe Vera** – Known for its soothing, anti-inflammatory, and wound-healing properties.
- **Licorice (Glycyrrhiza glabra)** – Used in Ayurveda for its anti-inflammatory and soothing effects.
- **Clove Oil** – Contains eugenol, which has pain-relieving and antiseptic properties.
- **Turmeric (Curcuma longa)** – Has strong anti-inflammatory and antimicrobial benefits.
- **Neem (Azadirachta indica)** – Helps in fighting bacterial infections and promotes healing.
- **Honey** – Natural humectant with antibacterial and wound-healing properties.
- **Myrrh** – Traditionally used for oral health due to its antimicrobial and astringent properties.

5 MATERIAL AND METHODOLOGY

COMMON NAME	FAMILY	CHEMICAL CONSTITUENT	PROPERTIES
BABOOL TREE (leaves)	Legumes	Tannins and alkaloids	Anti-bacterial
KARANJA LEAVES	Legumes	Galacroside and stigmasterol	Anti-inflammatory
TULSI LEAVES	Lamiaceae	Eugenol , linalool , rosemanic acid	Anti-bacterial
TURMERIC POWDER	Zingiberaceae	Curcuminoids and demethoxycurcumin	Anti-septic
HONEY	(Honeybees)	Glucose and fructose	Anti-inflammatory

TABLE NO. 1
FORMULATION TABLE

Ingredients	Quantity
Carbapol	2.5gm
Methyl paraben	0.015gm
Propylene glycol	2ml
Propyl paraben	0.1gm
Babool leaves powder	1.5gm
Karanja leaves powder	1.9gm
Tulsi leaves powder	0.5gm
Turmeric powder	0.5gm
Honey	2ml
Distilled water	q.s

TABLE NO. 2
METHOD OF PREPARATION

1. **Preparation of Herbal Extracts:**

- Obtain dried plant materials of the chosen herbs.
- Powder the dried herbs and perform extraction using a suitable solvent (e.g., ethanol or water) through maceration or percolation.
- Filter the extracts and concentrate them under reduced pressure to obtain a semi-solid mass.

2. **Gel Base Preparation:**

- Disperse the required quantity of *Carbopol 934* in distilled water with continuous stirring to avoid lump formation. Allow it to hydrate and swell completely.
- Add *propylene glycol* and *glycerin* to the hydrated Carbopol solution and mix thoroughly.

3. **Incorporation of Herbal Extracts:**

- Dissolve the concentrated herbal extracts in a small amount of distilled water or appropriate solvent if necessary.
- Add this solution to the gel base gradually with continuous stirring to ensure uniform distribution.

4. **Addition of Preservatives and Flavoring Agents:**

- Dissolve *methylparaben* and *propylparaben* in a small quantity of warm water and add to the mixture.
- Incorporate flavoring agents like *peppermint oil* to enhance taste and provide a cooling sensation.

5. **pH Adjustment:**

- Measure the pH of the gel using a pH meter.
- Adjust the pH to approximately 6.8–7.0, which is suitable for oral application, by adding *triethanolamine* dropwise with continuous stirring.

6. **Final Mixing and Packaging:**

- Ensure that the gel is homogeneous and free from air bubbles.
- Transfer the gel into suitable containers, ensuring they are airtight and properly labeled.

Evaluation of the Herbal Gel:

After formulation, the gel should be evaluated for various parameters to ensure its efficacy and stability:

- **Physical Appearance:** Check for color, consistency, and homogeneity.
- **pH Measurement:** Confirm that the pH is within the acceptable range for oral application.
- **Viscosity:** Assess the gel's viscosity to ensure appropriate consistency for application.
- **Spreadability:** Evaluate the ease of application over the oral mucosa.
- **Extrudability:** Test the ease with which the gel can be extruded from the container.
- **Antimicrobial Activity:** Perform tests to confirm the antimicrobial efficacy of the gel against common oral pathogens.

EVALUATION TESTS

1. **Visual appearance-** (clarity) Colour, clarity, texture, transparency, and the presence of any grit were all checked in the created gels.
2. **Physical evaluation-** Visual checks were made for physical characteristics such colour, smell, and consistency.
3. **Colour-** A visual inspection was done to determine the formulation's colour
4. **Consistency-** By applying the product to skin, consistency was evaluated
5. **Odour-** By combining the gel with water and sniffing the mixture, the formulation's odour was assessed.

IMPORTANCE

Herbal mouth ulcer gels are formulated using natural plant extracts known for their therapeutic properties, offering a gentle and effective approach to treating mouth ulcers. These gels leverage the medicinal benefits of various herbs to promote healing, reduce pain, and prevent infection.

Key Benefits of Herbal Mouth Ulcer Gels:

1. **Anti-inflammatory Effects:** Ingredients like Aloe vera possess notable anti-inflammatory properties, which can help reduce the swelling and discomfort associated with mouth ulcers
2. **Antimicrobial Action:** Herbs such as Neem (*Azadirachta indica*) and Tulsi (*Ocimum tenuiflorum*) are renowned for their antibacterial and antifungal activities, aiding in preventing secondary infections in ulcerated areas.
3. **Pain Relief:** Compounds like menthol derived from Peppermint (*Mentha piperita*) provide a cooling sensation, alleviating pain and discomfort caused by mouth sores.
4. **Wound Healing:** Licorice root (*Glycyrrhiza glabra*) has been shown to promote the healing of mouth ulcers by accelerating tissue regeneration and reducing healing time.

7. CONCLUSION AND RECOMANDATION

● Conclusion

Herbal mouth ulcer gels offer a natural and effective remedy for soothing and healing oral ulcers. Formulated with plant-based ingredients like aloe vera, licorice, turmeric, and clove oil, they provide anti-inflammatory, antimicrobial, and analgesic properties that help reduce pain, promote healing, and prevent infections. Unlike synthetic alternatives, herbal gels are often free from harsh chemicals, making them a safer choice for long-term use. Overall, herbal mouth ulcer gels serve as a gentle yet powerful solution for individuals seeking a natural approach to oral ulcer management.

● recommendations

Orobest Mouth Ulcer Gel

Formulated with herbs like Chameli, Babool, Mulethi, and Haridra, this gel helps reduce mouth ulcers, soothes inflammation, and promotes oral health. It produces a cooling effect and has analgesic properties. Apply a small quantity to the affected area 3-4 times daily.

Tuliq Gel Herbal Mouth Ulcer Gel

Combining Ayurvedic herbs such as Khadir, Dadi, Yashtimadhu, and Haldi, Tuliq Gel provides relief from mouth ulcers by reducing pain and supporting healing. Menthol and Clove oil offer a cooling effect. Apply gently over the affected areas 2-3 times per day.

Smyle Mouth Ulcer Gel

An Ayurvedic formulation designed to soothe burning sensations and eliminate pain associated with mouth ulcers. It's safe for all age groups, including pregnant women, and free from harmful chemicals and local anesthetic agents. Apply as needed to the affected area.

REFERENCE:

1. Pallavi Sharma (2015), Antifertility potential of hydroalcoholic extract of *Cordia dichotoma* G Forst, leaves: A folklore medicine used by Meena community in Rajasthan state in India, *Asian Pacific Journal of Reproduction*, 2015 4(2), 100-105.
2. Blois (1958), Antioxidant determination by the use of stable free radical Nature, 181(4617), 1199-1200.
3. Bhramaramba (2015), Formulation and Evaluation of Herbal Gel Containing *Terminalia chebula* Retz Leaves Extract, *Scholars Academic Journal of Pharmacy*, 4(3), 172-176.
4. Dosani (2011), Formulation Development And Evaluation of unit Moulded Herbal Semisolid Jelly Useful In Treatment of Mouth Ulcer, *International Journal of PharmTech Research*, 3(3), 1705-1013.
5. Das (2011), Formulation and Evaluation of Herbal Gel Containing *Clerodendron fortunei* Leaves Extract, *International Journal of PharmTech Research*, 1(3), 140-143
6. Dwivedi (2012), Formulation And Evaluation of Herbal Gel Containing *Sesbania Grandiflora* (L.) Poir. Leaf Extract, *Acta Chimica & Pharmaceutica India*, 1(2), 54-59.
7. Kumar L(2010), Verma R. In vitro evaluation of topical gel prepared using natural polymer. *Int J Drug Delivery* 2010, 2: 58-63.
8. Deepa (2011), Ethnomedicinal Practices for Oral Health and Hygiene of Tribal population of Wayanad Kerala, *International journal of Research in Ayurveda & Pharmacy*, 2(4), 1246-1250.
9. Jose (2011) Ethno medicinal Herbs Used in Oral Health and Hygiene in Coastal Dashing Kannada, *Journal of Oral Health Community Dentistry*, 5(3), 119-124.
10. Yogisha S., Raveesha K.A. In-vitro antibacterial effect of selected medicinal plant extracts of *Albizia* species. *J Natural Products* 2009: 2:64-69
11. Charde K, Upadhye KP, Gholse YN, Chaple DR. Current updates on recurrent aphthous stomatitis: etiology, pathogenesis and management. *World J Pharm Pharm Sci*. 2020;9(5):448–462.
12. Deshmane S. A review on oral mouth ulceration. *Int J Pharm*. 2014;1(1):216–29.
13. Mohd, Ad, Sakarkar DM, Kosalge SB, Shafiq S. " Formulation Development and Evaluation of Unit Moulded Herbal Semisolid Jelly useful in treatment of Mouth Ulcer. *J Pharma Biomed Anal*. 2011;3:1705–13.
14. Misal G, Dixit G. Formulation and evaluation of herbal gel. *Indian J Nat Prod Resour*. 2012;3(4):501–6.
15. Teresa A. Herbal Remedies for Mouth Ulcer: A Review. *J Bio Innov*. 2017;(4):521–7.
16. Sharma TR, Shilpi A. Multiple biological activities of *aloe barbadensis*(aloe vera): an overview. *Asian J Pharm Life Sci*. 2011;1(2):268–72.
17. Alzohairy MA. Therapeutics Role of *Azadirachta indica* (Neem) and Their Active Constituents in Diseases Prevention and Treatment. *Evid Based Complement Altern Medicine*. 2016;2016:7382506. doi:10.1155/2016/7382506.
18. Kumar A, Agarwal K, Maurya A, Shanker K, Bushra U, Tandon S, et al. Bawankule "Pharmacological and phytochemical evaluation of *Ocimum sanctum* root extracts for its antiinflammatory, analgesic and antipyretic activities"

Pharmacogn Mag. Pharmacogn Mag. 2015;11(1):217–24. doi:10.4103/0973-1296.157743.

19. Scully C, Felix DH. Oral Medicine Update for The Dental Practitioner Aphthous and Other Common Ulcer. Br Dent J. 1999;1999(5):259–64. doi:10.1038/sj.bdj.4812649.

20. Manhar S, Suresh PK. Diltiazem-Loaded Buccoadhesive Patches For Oral Mucosal Delivery: Formulation And In Vitro Characterization. J Appl Pharm Sci. 2013;3(8):75–9. doi:10.7324/JAPS.2013.3813.

21. Sing R, Bansal S, Mishra MK. Formulation and Evaluation of Herbal Oral Gel Containing Extracts of Powdered Psidium guajava Linn Leaves with Curcuma longa Linn Rhizomes to Treat Mouth Ulcer. Int J Drug Dev Res. 2020;12(2):1–7. doi:10.36648/0975-9344.12.2.150.

22. Rathod J, Mehta DP. A Review on Pharmaceutical Gel. Int J Pharm Sci. 2015;1(1):33–47.

23. Sheikh S. Studies on Inorganic Materials Based Antiulcer Pharmaceutical Gel for Oral Cavity. Formulation and Evaluation. Acta Scientific Pharmaceutical sciences. Acta Sci Pharm Sci. 2018;2(7):3844.

25. Powar PV, Bhandari NR, Arya A, Sharma P. Formulation and evaluation of polyherbal antibacterial gel based hand wash". Int J Pharm Sci Rev Res. 2015;33(1):79–82