

A Review on Polyherbal Mouth Dissolving Film for the Treatment of Mouth Ulcer

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Abstract: Mouth ulcers are among the most common inflammatory lesions affecting the oral cavity and may cause pain, irritation, burning sensation, and difficulty in eating and speaking. Conventional therapies such as corticosteroids and antiseptic preparations often produce side effects and poor patient acceptability. Polyherbal mouth dissolving films (MDFs) have emerged as innovative oral drug delivery systems due to their rapid drug release, convenience, and enhanced patient compliance. This review highlights the formulation, mechanism, herbal ingredients, preparation methods, evaluation parameters, and therapeutic benefits of polyherbal mouth dissolving films prepared using guava leaf extract, pomegranate peel extract, aloe vera, okra mucilage, and HPMC.

Keywords: Mouth ulcers.

I. INTRODUCTION

Mouth ulcers, also known as aphthous ulcers or canker sores, are painful lesions occurring inside the oral cavity. They commonly affect the tongue, lips, gums, cheeks, and floor of the mouth. These lesions are usually associated with stress, nutritional deficiencies, microbial infections, hormonal imbalance, trauma, allergy, and reduced immunity. Although mouth ulcers are generally self-limiting, severe cases may interfere with eating speaking, and swallowing, thereby reducing the quality of life.

Conventional treatment includes antiseptic mouthwashes, corticosteroids, antibiotics, analgesics, and topical gels. However, long-term use of synthetic drugs may cause irritation, dryness, unpleasant taste, and recurrence of ulcers. Therefore, researchers are focusing on herbal drug delivery systems because they are safer, economical, biocompatible, and associated with minimal adverse effects.

Mouth dissolving films are thin polymeric strips that dissolve rapidly in saliva and release active ingredients directly at the site of action. The use of herbal extracts in mouth dissolving films provides combined antimicrobial, antioxidant, anti-inflammatory, and wound healing activities for effective management of mouth ulcers.

II. MOUTH DISSOLVING FILMS

Mouth dissolving films (MDFs) are innovative oral dosage forms prepared using hydrophilic polymers. These films rapidly hydrate, swell, and dissolve in saliva without the need for water. MDFs provide rapid onset of action and direct local drug delivery.

Advantages of MDFs:

- Rapid drug release and faster action
- Better patient compliance
- Easy administration without water
- Suitable for pediatric and geriatric patients



- Reduced risk of choking
- Improved bioavailability
- Convenient and portable dosage form

III. MECHANISM OF ACTION

After placement on the oral mucosa, the mouth dissolving film adheres to the ulcer surface due to mucoadhesive polymers such as HPMC and okra mucilage. Saliva penetrates the film matrix causing hydration and swelling. The polymer gradually dissolves and releases herbal constituents into the ulcer region

The released phytoconstituents provide local therapeutic action including:

- Antimicrobial activity against oral pathogens
- Anti-inflammatory action to reduce swelling and irritation
- Antioxidant activity to prevent tissue damage
- Wound healing effect for rapid epithelial regeneration

The moist oral mucosa and rich blood supply facilitate rapid absorption and faster healing

IV. HERBAL INGREDIENTS

4.1 Guava Leaf (*Psidium guajava*)

Guava leaves contain flavonoids, tannins, alkaloids, saponins, and quercetin. These phytochemicals possess antimicrobial, anti-inflammatory, antioxidant, and anti-ulcer properties. Guava leaf extract helps reduce inflammation and microbial growth while promoting healing of oral ulcers.



Guava Leaf

4.2 Pomegranate Peel (*Punica granatum*)

Pomegranate peel is rich in tannins, flavonoids, polyphenols, and ellagic acid. It shows strong antioxidant and antimicrobial activity. The extract helps reduce oxidative stress, irritation, and infection at the ulcer site, thereby promoting faster wound healing



Pomegranate Peel



4.3 Aloe Vera

Aloe vera provides soothing, anti-inflammatory, and wound healing effects. It helps reduce pain, burning sensation, and irritation while promoting tissue repair

4.4 Okra Mucilage

Okra mucilage is a natural biodegradable polymer with excellent film-forming and mucoadhesive properties. It improves flexibility, mechanical strength, and drug release characteristics of the film.

V. FORMULATION COMPONENTS

| Ingredient | Role |
|--------------------------|----------------------------|
| Guava leaf extract | Anti-ulcer agent |
| Pomegranate peel extract | Antioxidant |
| Aloe vera | Soothing and healing agent |
| Okra mucilage | Film former |
| HPMC | Polymer |
| Glycerin | Plasticizer |
| Citric acid | pH adjuster |
| Stevia | Sweetener |
| Peppermint oil | Flavoring agent |
| Distilled water | Solvent |

VI. EVALUATION PARAMETERS

The prepared films are evaluated for various physicochemical and mechanical properties.

Physical Evaluation:

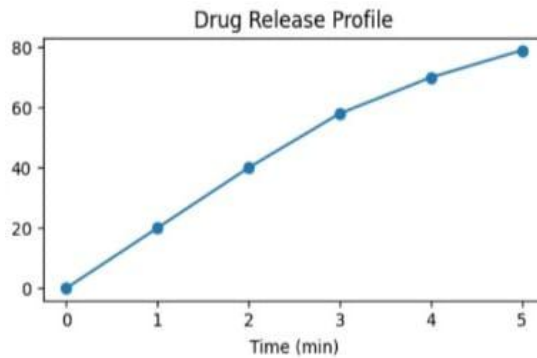
- Colour and appearance
- Thickness and weight variation
- Surface pH
- Folding endurance
- Moisture content

Functional Evaluation:

- Disintegration time
- Dissolution study
- Drug content uniformity
- Percentage drug release

The reported formulation showed rapid disintegration within 30 seconds and approximately 79% drug release within 5 minutes, indicating effective performance





VII. FUTURE PROSPECTS

Polyherbal mouth dissolving films have significant future potential in oral healthcare due to their rapid action, improved patient compliance, and natural therapeutic approach. Further clinical studies, stability studies, and advanced polymer combinations may improve their commercial applicability and therapeutic effectiveness.

VIII. CONCLUSION

Polyherbal mouth dissolving films are promising oral drug delivery systems for treatment of mouth ulcers. The antioxidant, administration, enhanced anti-inflammatory, patient and wound compliance, healing and effective activities. I local MDFs action. provide Therefore, rapid c drug' polyherbal release, combination of guava leaf extract, pomegranate peel extract, aloe vera, and okra mucilage provides antimicrobial, easy MDFS can be considered safe, economical, and effective alternatives to conventional therapies.

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