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Review Article

Formulation And Evaluation of Antiulcer Gel Using Extract of Spathodea Campanulata P. BEAUV

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ABSTRACT

Spathodea Campanulata is a medicinal plant known for its potent antioxidant, anti-inflammatory, and gastroprotective properties. The present study focuses on the formulation and evaluation of an herbal antiulcer gel using extract for the treatment of oral ulcers. The bioactive compounds, including flavonoids, tannins, and alkaloids, contribute to its ulcer-healing potential by promoting tissue regeneration and reducing inflammation. The gel was formulated using a suitable polymer base, ensuring optimal viscosity, spreadability, and adherence to the oral mucosa. Various concentrations of extract were incorporated, and the formulation was evaluated for physicochemical properties, stability, microbial safety, and in-vitro antiulcer activity. The Mouth Ulcer Produce less adverse effects and compatibility with the human body., The foundation of primary healthcare is apothous herbal medicine due to its increased cultural acceptability, superior .This study focuses on the factors that contribute to mouth ulcers and their causes. As is well known, food aids in the healing process. Aphthous stomatitis and local trauma are the two most prevalent types of oral ulcers.

INTRODUCTION

Mouth ulcers are painful round or oval sores on the mucous membrane of the oral cavity, mainly on the inside of the cheeks or lips. Common causes include nutritional deficiencies, poor oral hygiene, infections, stress, indigestion, mechanical injury, food allergies, hormonal imbalance, and skin disease. This study focuses on developing an antiulcer gel using spathodea campanulata extract

for treating oral ulcers. Conventional treatments like corticosteroids, antiseptics, and analgesics may have side effects like irritation, delayed healing, and microbial resistance.

Mouth ulcers, medically known as *aphthous ulcers*, are common lesions that occur on the mucous membranes inside the mouth. These ulcers are typically small, shallow, and painful, affecting areas such as the inner lips, cheeks, tongue, floor

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of the mouth, and the soft palate. While generally not dangerous or contagious, they can significantly affect a person's quality of life, especially when eating, drinking, or speaking.

Method

Certainly! Formulating a herbal antiulcer gel involves selecting appropriate plant extracts, excipients, and employing suitable methods to ensure efficacy, stability, and patient compliance. Here's a comprehensive guide based on current research:

Materials for Herbal Antiulcer Gel

Active Ingredients (Herbal Extracts):

Glycyrrhiza glabra (Licorice): Known for its anti-inflammatory and healing properties.

Acacia catechu (Khair): Offers antimicrobial and astringent effects.

Punica granatum (Pomegranate): Provides antioxidant and anti-inflammatory benefits.

Curcuma longa (Turmeric): Contains curcumin, which has anti-inflammatory and antiseptic properties.

Mentha piperita (Peppermint): Acts as a cooling agent and enhances penetration.

Ocimum tenuiflorum (Tulsi): Possesses antimicrobial and healing properties.

Aloe vera: Renowned for its soothing and healing effects on mucosal tissues.

Excipients:

Gelling Agents:

Carbopol 934/940: Widely used for its excellent gelling properties.

Sodium Carboxymethylcellulose (Na-CMC): Offers good viscosity and stability.

Hydroxypropyl Methylcellulose (HPMC): Provides controlled release and stability.

Solvents and Enhancers:

Polyethylene Glycol (PEG 400): Used to dissolve herbal extracts.

Triethanolamine (TEA): Adjusts pH to desired levels.

Propyl Paraben and Methyl Paraben: Act as preservatives.

Methods of Preparation

1. Cold Method (Common in Herbal Gel Formulation):

1. Hydrate the Gelling Agent:

Disperse Carbopol 934 in distilled water and allow it to swell for 30 minutes.

2. Prepare Herbal Extracts:

Dissolve the selected herbal extracts in PEG 400 using sonication for 10 minutes to ensure uniform dispersion.

3. Combine Components:

Slowly add the herbal extract solution into the swollen gelling agent with continuous stirring.

4. Adjust pH:

Add TEA dropwise until the pH reaches 6.8–7.0.

5. Incorporate Preservatives:

Add propyl paraben and methyl paraben to the gel base.

6. Final Mixing:

Ensure the gel is homogeneous and free from air bubbles.

2. Hot Method (Alternative Approach):

Prepare Gelling Agent Solution:

Dissolve Carbopol 940 in hot distilled water (50°C) with continuous stirring.

Incorporate Herbal Extracts:

Disperse herbal extracts in PEG 400 and add to the gelling agent solution.

Adjust pH:

Use TEA to adjust the pH to the desired range.

Cool and Homogenize:

Allow the gel to cool and mix until uniform.



Evaluation Parameters

Physical Appearance: Assess color, clarity, and presence of particles.

pH: Ensure it falls within the skin-friendly range (5.5–7.0).

Viscosity: Test using a viscometer to determine spreadability.

Spreadability: Measure the distance the gel spreads under a specified load.

Drug Content: Determine the amount of active ingredient present.

Gel Strength: Evaluate the firmness of the gel.

Microbial Testing: Conduct antimicrobial tests to ensure safety.

Tips for Effective Formulation

Selection of Herbal Extracts: Choose herbs with known antiulcer properties and ensure their compatibility.

Preservatives: Use appropriate preservatives to prevent microbial growth without affecting the gel's efficacy.

Packaging: Use air-tight containers to prevent contamination and degradation.

Storage Conditions: Store the gel in a cool, dry place away from direct sunlight.

Diagnosis Of Mouth Ulcers

Your doctor will be able to diagnose mouth ulcers through a visual exam. You might be tested for other medical conditions if you have frequent, severe mouth ulcers.

1. Pain or discomfort in the mouth, particularly when eating, drinking, or talking.
2. Redness or swelling in the affected area.
3. White or yellowish sores or lesions inside the mouth.
4. Difficulty in chewing or swallowing.
5. Tingling or burning sensation before the appearance of the ulcer.
6. Fever or swollen lymph nodes in severe cases.

7. Bad breath or a foul taste in the mouth.
8. Difficulty opening the mouth fully.
9. Feeling generally unwell or fatigued.
10. Recurrent outbreaks of mouth ulcers.
11. Sores that do not heal or continue to grow in size
12. Ulcers that spread to the lips, gums, or throat

Materials:

Active Ingredient: Plant Extract

Excipients :

Gel ling Agent – Carbapol

PH Adjuster :– Trietanolamine ,

Preservative – Methyl Parabean , Propyl Parabean

Humectant : Propylene Glycol , Glycerine

RESULT AND DISCUSSION

The crude extracts so obtained after the Maceration process ethanoloic extraxt. The yield of *S. campanulata* extracts was 4.3 %w/w. The results of preliminary phytochemical screening ethanolic extract of *S. campanulata* leaves shown. The extract showed the presence of carbohydrates, glycosides, alkaloids, flavonoids, phenols & tannins, saponin.

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