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HERBAL LOZENGES FOR APHTHOUS ULCERS

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ABSTRACT

Herbal lozenges have gained traction because it is a natural remedy for curing aphthous ulcersdue to their potency of therapeutic activity and fewer side effects as compared to synthetic medications. The purpose of this study is to formulate and evaluate herbal lozenges for treating aphthous ulcers using selected medicinal herbs that are known for their anti- inflammatory, antibacterial, and wound-healing properties. The formulation of herbal lozenges involves the isolation of herbal extracts, excipients, and flavoring agents to improve the stability, taste, and therapeutic efficiency of the lozenges. The herbal lozenges were prepared by using two methods i.e. by heat and congealing method and by using gelatin as a base. The lozenges were evaluated on the basis of their thickness, diameter, hardness, friability, weight variation, disintegration time, stability, antimicrobial activity and in-vitro dissolution. Further the evaluation includes sensory analysis i.e. taste, aroma and overall acceptability of herbal lozenges. Overall the formulation and evaluation of herbal lozengesfor aphthous ulcers showed promising results in terms of their physical characteristics, drug release profile and sensory attributes.

KEYWORDS: Herbal lozenges, aphthous ulcers, anti-inflammatory, antibacterial, enhancement, therapeutic efficiency, Clove buds, Turmeric, Ginger, Honey.

INTRODUCTION

Herbal medicines also known as herbalism or phytotherapy, is the practice of using plants or plant extracts for medicinal purposes. In the continuous pursuit of better efficacy, many herbalremedies have been used for centuries and continue to be a popular alternative to

conventional medicines. This study reviews the development of an herbal combination lozenge based on the biological activity essential for rapid healing of aphthous ulcers. Aphthous Ulcers, commonly known as canker sores, are painful, shallow, round or oval-shaped lesions that form on the mucous membrane of the mouth including the inner cheek, gums, tongue and lips. These often cause pain and discomfort to the patients and alter their choice of food as well. This study focuses on various herbal remedies for the treatment of aphthous ulcers.

Causes of aphthous ulcers

The exact cause of aphthous ulcers is not completely understood, but various factors can contribute to their development:

1. The mouth may get injured or traumatized due to accidental biting.
2. Certain foods that can trigger or exacerbate ulcers, such as citrus fruits, spicy foods and nuts.
3. Nutritional deficiencies, particularly deficiencies in vitamin B12, iron, or folic acid.
4. Hormonal changes, as some women experience aphthous ulcers during their menstrual cycle.
5. Weakened immune system, which can make individuals more susceptible to developing ulcers.

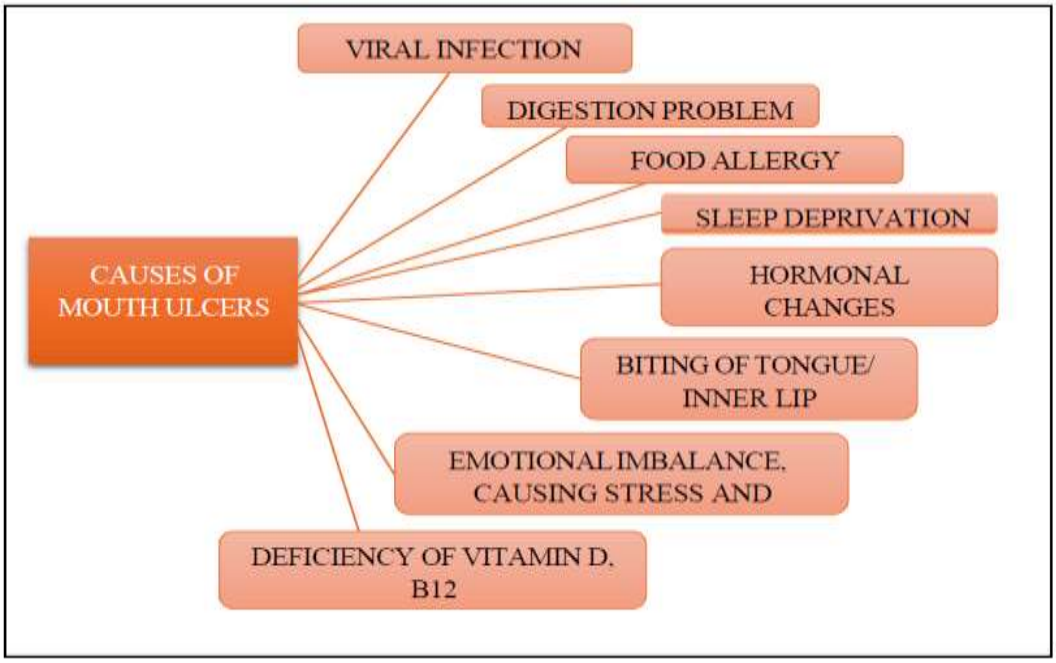

Fig. 1: Causes of aphthous ulcers.

Traditional approaches to treat aphthous ulcers

It focuses on alleviating the symptoms and promoting healing. These commonly include Over- the-counter (OTC) pain relievers, topical anesthetics, mouth rinsers, etc. However, herbal medicines i.e. herbal lozenges offers an alternative approach to managing aphthous ulcers, utilizing the healing properties of certain plants such as turmeric, clove buds, guava leaves, liquorice, Tulsi, ginger and mint to address the underlying causes and provide relief. Lozenges are solid preparations which are composed of one or more medicaments, usually flavoured and are intended to dissolve or disintegrate slowly in the oral cavity. Different types of lozenges and their methods of preparation along with ingredients used for preparation are discussed in this study. Drug candidates which can be incorporated in lozenges include antiseptics, local anesthetic, antibiotics, anti-allergic, anti-inflammatory, and analgesic, anti-ulcerative, astringent. The requirements for picking out the flavoring substances have been stated, and the tests for ensuring the quality of the lozenges have been examined.

Herbal remedies for aphthous ulcers

Numerous plant-based remedies have been used in traditional herbal medicine to treat aphthous ulcers.

Example

1. **Turmeric:** The powder obtained from the rhizomes of turmeric has anti-inflammatory properties, and helps in reducing pain and inflammation.
2. **Clove buds:** The powder obtained from buds has antibacterial properties.
3. **Honey:** It has antimicrobial properties.
4. **Liquorice:** It possesses anti-inflammatory properties.
5. **Tulsi:** It possesses antibacterial and anti-inflammatory properties.
6. **Ginger:** It has anti-bacterial properties.
7. **Mint:** It reduces inflammation and gives cooling effect.

Formulation and Evaluation of herbal lozenges for aphthous ulcers

As herbal medicines gains popularity, formulating and evaluating herbal lozenges specifically designed for treating aphthous ulcers becomes crucial. The formulation involves carefully selecting the appropriate herbs and determining their proportions. It is essential to consider the synergistic effects of different plants and their compatibility when combined. Additionally, the lozenge's physical and organoleptic properties, such as taste, texture and color, must be taken into account to ensure patient compliance. Evaluation of herbal lozenges

includes various aspects, such as assessing their stability, release of active compounds and patient satisfaction. Testing the bioavailability of the herbal compound, determining their antimicrobial efficacy, hardness test, friability test, disintegration time test and analyzing their safety profile are also vital in ensuring the effectiveness and safety of these herbal lozenges. In conclusion, herbal medicines offer a natural and alternative approach to managing aphthous ulcers. By harnessing the healing properties of different plants, herbal lozenges can provide targeted relief and potentially address the underlying causes of their painful ulcers. The formulation and evaluation of such herbal lozenges contribute to the advancements of treatment options for individuals suffering from aphthous ulcers.

Method

1. Herbal Ingredient Selection and Preparation

Effective herbal lozenges for aphthous ulcers typically contain medicinal herbs that are known for their anti-inflammatory, antimicrobial, and soothing properties. The selection of these herbs should be based on scientific evidence and traditional knowledge. Some commonly used herbs in the formulation of herbal lozenges for aphthous ulcers include liquorice root, turmeric, clove buds, guava leaves, Tulsi, pigeon pea leaves, and mint. After selecting the appropriate herbs, they need to be prepared and processed before being incorporated into the lozenge formulation. This involves steps such as drying, grinding, and extraction to obtain the active compounds from the herbs. The extraction process can be carried out using solvents such as water, alcohol, or a mixture of both, depending on the solubility of the active constituents.

2. Excipient Selection and Compatibility

In addition to the herbal ingredients, lozenge formulations require the use of various excipients to provide stability, enhance taste, and facilitate the manufacturing process. Key excipients commonly used in herbal lozenges include binding agents, fillers, lubricants, flavoring agents, and sweeteners. The compatibility between the active herbal ingredients and the chosen excipients is crucial to ensure the stability and efficacy of the lozenge formulation. Compatibility studies are often conducted to assess any potential chemical interactions, such as degradation or loss of potency, between the active ingredients and the excipients. These studies help in selecting suitable excipients and optimizing the overall formulation.

3. Processing techniques

The formulation of herbal lozenges involves a series of processing steps to ensure the proper incorporation of ingredients and the achievement of desired product properties. These processing techniques may vary depending on the specific formulation, but some common steps include:

a. Weighing and Sieving of ingredients: Precise measurements of the active ingredients, excipients, and other additives are crucial for obtaining consistent and reliable lozenge formulations. Sieving is often performed to ensure uniformity and eliminate any coarse particles.
b. Mixing and Granulation: Proper mixing of the ingredients is essential to obtain a homogeneous blend. Granulation, if required, is performed to improve the flow properties of the formulation and enhance tablet formation.
c. Compression: The prepared granules are fed into a tablet compression machine, which compresses them into lozenge-shaped tablets. The compression force applied should be optimized to obtain tablets with appropriate hardness and disintegration properties.
d. Drying and Packaging: After compression, the tablets are subjected to drying to remove any moisture that may affect their stability. Once dried, the tablets are packaged in suitable containers to protect them from moisture, light, and other external factors.

Characterization

To ensure the safety, efficacy, and consistency of herbal lozenges, rigorous quality control measures should be implemented throughout the formulation process. These measures include:

- Physicochemical characterization: Various tests are carried out to assess the physical and chemical properties of the lozenge formulation, including tablet weight, thickness, hardness, disintegration time, and dissolution rate.
- Stability testing: Stability studies are conducted under controlled conditions to determine the shelf-life and storage requirements of the herbal lozenges. This helps to identify any changes or degradation of the active ingredients over time.
- Microbiological testing: Herbal lozenges should be free from microbial contaminants. Microbiological tests are performed to ensure that the product meets the required standards for microbial load.
- Standardization: It is essential to establish standardized procedures for manufacturing herbal lozenges to ensure consistency in product quality. This includes setting specifications for batch-to-batch variations and implementing appropriate quality

assurance protocols.

The methods studied in this review for formulating herbal lozenges are given below

1. Heat and Congealing Method
2. By using gelatin as a base

1. Heat and Congealing method

The necessary amount of sugar should be dissolved in water to create sugar syrup.

A smaller amount of dextrose should be dissolved in water and heated at 100°C until a clear, transparent viscous solution is achieved.

This solution should be added to the sugar syrup with heat up to 150°C until a golden yellow color is obtained.

Let the solution stand for 5 minutes, then add all the herbal extracts and polymers to it and pour it into a molding pan to create appropriate-sized lozenges.

Finally, pack the lozenges with aluminum foil and keep them in a desiccator to protect them from moisture.

2. Formulation of lozenges by using gelatin as a base

To make lozenges, start by taking gelatin and dissolving it in a 10% aqueous solution.

Next, heat up a required amount of water and add sugar to it until it becomes a clear and thick solution at 100°C.

Let it to stand for 5 minutes.

Then, add all the herbal extracts and mix it well until it becomes a smooth and consistent mixture.

Lastly, pour the mixture into a molding pan to create lozenges of the desired size.

DISCUSSION

The review provided a comprehensive summary of the formulation techniques for herbal lozenges used in the treatment of aphthous ulcers. It included different types of herbal extracts and excipients, their role in enhancing stability and bioavailability of the active ingredients. It also included the evaluation methods used to access the effectiveness of herbal lozenges.

CONCLUSION

The review summarizes the formulation techniques and evaluation methods used to access the effectiveness of herbal lozenges in treating aphthous ulcers.

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