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Formulation and Evaluation of Polyherbal Mouth Ulcer Cream

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Abstract: Oral ulcers, also known as mouth sores or canker sore can be quite painful and can affect our ability to eat and speak comfortably. Traditional medicine often utilizes a combination of different herbal remedies to address various health issues, and oral ulceration is no exception. These poly-herbal formulations typically consist of a combination of different medicinal plants, each chosen for its specific therapeutic properties. For generations, mouth ulcers have been treated using traditional herbal treatments to reduce pain and encourage recovery. These herbs may help to lessen discomfort and inflammation and encourage quicker healing of mouth ulcers because of their anti-inflammatory, antibacterial, and wound-healing qualities. Clinical research assessing these herbal medicines' efficacy has revealed encouraging outcomes in terms of lessening the severity and duration of mouth ulcers. Mouth ulcer creams can aid in mouth ulcer healing and discomfort treatment. They provide a barrier of defense over the ulcer, lessening food and drink irritation, and frequently include pain and inflammation-reducing chemicals. However, it's best to speak with a healthcare provider for additional assessment and treatment if your ulcers are severe or persistent.

Keywords: Mouth ulcer, Polyherbal cream, Anti-inflammatory, Antimicrobial, Gastric ulcer

I. INTRODUCTION

Traditional herbal medicines are naturally occurring plant-derived substances that have been used in local or regional healing therapy procedures with little or no industrial processing to cure illness. A polyherbal mouth ulcer cream is a type of herbal formulation made using multiple medicinal plants. It is applied directly to the mouth ulcers to help heal them faster, reduce pain, and prevent infection. This kind of cream is an alternative to chemical-based medicines and is generally considered safe, natural, and with fewer side effects. An oral ulcer is caused by the erosion or loss of the upper mucosal layer. It is one of the most frequently encountered pathological conditions of the oral cavity. These sores are generally painful and are found most frequently on the inside of the lips and cheeks. The etiology of oral ulcers is not yet clear and a variety of conditions are believed to play a role in their occurrence. A variety of viral, fungal, treponemal, autoimmune, nutritional deficiencies, hormonal changes, psychological stress, malignancy and other factors have been implicated in their causation. The nature, site, duration and frequency of oral ulcers are sometimes determined by the underlying systemic condition if any (e.g., inflammatory bowel disease, cyclic neutropenia).1,2 Trauma from a sharp tooth or an overhanging restoration, aggressive tooth brushing, smoking crack cocaine, cocaine use or local application of aspirin could also result in ulcer formation. Recurrent aphthous ulcers (RAUs) are the most common form of ulcers among the ulcerative conditions of the oral cavity. Recurrent aphthous stomatitis (RAS) is an acute and extremely painful condition involving no keratinized oral mucosa. To find safer alternatives, herbal remedies are being used by herbalists and indigenous healers in many countries for the treatment of ulcers. The rich heritage of our native herbal medicine is now getting global attention. Various herbs such as Azadirachta indica (neem), aloe vera gel, turmeric and liquorice have been used since time immemorial for the treatment of mouth ulcers. The research has shown that the basis of the pharmacological and healing properties of herbs is naturally present biologically active compounds such as flavonoids, tannins and gums.9 Clinical studies on the use of herbs have shown promising results in terms of reduction in size, discomfort, duration and recurrence of ulcers. Prolonged use of herbal medicaments is also considered safe and efficacious.10-13 although herbal medicines are

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widely used and numerous studies have been conducted in this regard, there is no consensus on the medicament of choice for the treatment of oral ulcers. This review is aimed at compiling a set of herbs with antiulcer properties and to help extend the application of principles of holistic healing in dentistry.

It is caused by various Etiological factor such as Chemical, Dental injury, Nutrition deficiency, Hormones, Genetically, Acidic food etc. Canker sores, another name for mouth ulcers, are tiny, excruciating lesions that can appear on the tongue, gums, inner cheeks, or roof of the mouth. Numerous things, such as trauma, stress, hormone fluctuations, particular meals, or underlying medical issues, can contribute to them. Mouth rinses and over-the-counter topical medications can aid in symptom relief and recovery. It is best to see a healthcare provider for additional assessment if mouth ulcers worsen or are accompanied by other symptoms. Mouth ulcers are small sores that form on your gums, lips, tongue, inner cheeks or roof of your mouth. Lots of different things can cause them, including minor injuries, hormonal changes and emotional stress. Many mouth ulcers go away on their own. Others may require treatment. Mouth ulcers (also known as canker sores) are small, painful lesions that develop in your mouth or at the base of your gums. They can make eating, drinking, and talking uncomfortable. A mouth ulcer is a sore that appears anywhere inside your mouth. These sores are usually red, yellow or white, and you might have one or several.

Types of mouth ulcers:

There are three main types of mouth ulcers. These include:

Herpetiform ulceration (HU)

Herpetiform ulcers are a subtype of aphthous ulcers and get their name because they resemble the sores associated with herpes. Unlike herpes, HU is not contagious. HU ulcers recur very quickly, and it may appear that the condition never gets better.

Minor ulcers This type can range in size from about 2 millimetres (mm) up to 8 mm across. These ulcers typically take up to 2 weeks to get better and will cause minor pain. Minor ulcer have a diameter of less than a centimetre and heal in one to two weeks.

Major ulcers

Bigger than minor ulcers, major ulcers are often irregular in shape, may be raised, and penetrate deeper into the tissue than minor ulcers. They can take several weeks to go away and are likely to leave scar tissue when they clear Major ulcer have a diameter of two to three centimetres, are deeper and take longer time to heal.

Common Causes:

- 1. Minor injury (e.g., biting your cheek, irritation from braces)
- 2. Stress or hormonal changes
- 3. Certain foods (e.g., citrus, spicy food)
- 4. Vitamin deficiencies (especially B12, folate, and iron)
- 5. Allergic response
- 6. Underlying conditions like celiac disease or Crohn's disease

Symptoms:

- Round or oval sore inside the mouth
- White, yellow, or grey center with a red edge
- Pain or discomfort, especially when eating or drinking



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Fig. No. 1 Mouth ulcer

Advantages of Polyherbal Cream:

- Natural and safe ٠
- Cost-effective
- Fewer side effects
- Multi-action (pain relief, healing, antimicrobial) •

Ingredient used in formulation:

Glycyrrhiza glabra

Liquorice is the common name of *Glycyrrhiza glabra*, a flowering plant of the bean family Fabaceae, from the root of which a sweet, aromatic flavouring is extracted.

Liquorice extracts have been used in herbalism and traditional medicine.^[8] Excessive consumption of liquorice (more than 2 mg/kg [0.91 mg/lb] per day of pure glycyrrhizinic acid, a key component of liquorice) can lead to undesirable consequences. Clinically, it is suspected that overindulgence in liquorice may manifest as unexplained hypertension, low blood potassium levels (hypokalemia), and muscle weakness in individuals.^{[8][9][10]} Consuming liquorice should be avoided during pregnancy. Liquorice root contains triterpenoids, polyphenols, and polysaccharides. Flavonoids account for the yellow root color. The principal glycoside, glycyrrhizin, exists in content of 7% to 10%, depending on cultivation practices



Fig. No. Glycyrrhiza glabra

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Turmeric

Turmeric or *Curcuma longa* is a flowering plant in the ginger family Zingiberaceae. It is a perennial, rhizomatous, herbaceous plant native to the Indian subcontinent and Southeast Asia that requires temperatures between 20 and 30 °C (68 and 86 °F) and high annual rainfall to thrive. Plants are gathered each year for their rhizomes, some for propagation in the following season and some for consumption. Turmeric powder is about 60–70% carbohydrates, 6–13% water, 6–8% protein, 5–10% fat, 3–7% dietary minerals, 3–7% essential oils, 2–7% dietary fiber, and 1–6% curcuminoids.^[9] The golden yellow colour of turmeric is due to curcumin.^[6]

Phytochemical components of turmeric include diarylheptanoids, a class including numerous curcuminoids, such as curcumin, demethoxycurcumin, and bisdemethoxycurcumin. Curcumin constitutes up to 3.14% of assayed commercial samples of turmeric powder (the average was 1.51%); curry powder contains much less (an average of 0.29%). Some 34 essential oils are present in turmeric, among which turmerone, germacrone, atlantone, and zingiberene are major constituents.



Fig. No. Turmeric powder

Aloe vera

Aloe vera leaves contain phytochemicals under study for possible bioactivity, such as lignans, phytosterols, polyphenols, acetylated mannans, polymannans, anthraquinones C-glycosides, anthrones, and other anthraquinones, such as emodin and various lectins. Aloe gel typically is used to make topical medications for skin conditions, such as burns, wounds, frostbite, rashes, psoriasis, cold sores, and dry skin. Aloe latex is used individually or manufactured as a product with other ingredients to be ingested for relief of constipation. Aloe latex may be obtained in a dried form called *resin* or as "aloe dried juice.



Fig. No. Aloe Vera

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Neem

Azadirachta indica, commonly known as neem, margosa, nimtree or Indian lilac,^[3] is a tree in the mahogany family Meliaceae. It is one of the two species in the genus *Azadirachta*. It is native to the Indian subcontinent and to parts of Southeast Asia, but is naturalized and grown around the world in tropical and subtropical areas. Margosa leaves are dried in India and placed in cupboards to prevent insects from eating clothes, and in containers in which rice and wheat are stored. The flowers are also used in many Indian festivals like Ugadi.

Tulsi

Tulsi (from Sanskrit), is an aromatic perennial plant in the family Lamiaceae. It is widely cultivated throughout the Southeast Asian tropics. It is native to tropical and subtropical regions of Asia, Australia and the western Pacific. This plant has escaped from cultivation and has naturalized in many tropical regions of the Americas.

Theplantanditsoilcontaindiverse phytochemicals,including tannins, flavonoids, eugenol, caryophyllenes, carvacrol, linalool, camphor,and cinnamylacetate,amongothers. One study reported that the plant contains an eponymous family of 10 neolignan compounds called *tulsino*.amongacetate,among



Fig. No. Tulsi

Observation table

Sr. No.	Name of Ingredients	Role
1	Glycyrrhiza glabra	Anti-inflammatory, soothing
2	Turmeric	Antibacterial, wound healing
3	Aloe vera	Cooling, healing, anti-inflammatory
4	Neem	Antibacterial, antiseptic
5	Tulsi	Antiviral, soothing
6	Clove oil	Pain relief, antiseptic
7	Methyl paraben	Preservative
8	Glycerine	Smoothing agent
9	Distilled water	Vehicle

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II. MATERIALS AND METHODS

The literature review was started with a defined background to review the studies involving interventions using herbal medicaments for mouth ulcer cream. The review was conducted using electronic databases PubMed, Google Scholar, Cochrane Database, Science Direct, Springer Link, and Scopus. The search strategy involved the use of the following keywords: "herbs," "plants," medicinal plants," "herbal compounds," "herbal remedies," "Indian herbs," "oral ulcers," and "mouth ulcers." The studies were selected using the previously described protocol titles and abstracts of clinical trials were then screened.

Discussion

The major reason for a growing trend towards the preferred use of traditional and alternative therapy for various diseases is people getting more proactive towards prevention and selfcare. Recently, there has been a surge in the sales of products labelled as natural and herbal, but the marketing strategy behind it implying "natural means safe" may not always turn out to be true. Although herbal products are safe and have negligible adverse effects, there are several case reports of overdose and unintentional injuries caused by unqualified practitioners using herbal products.

Steps involved in formulation of cream

- 1. **Herbal Extraction:** The active ingredients are extracted from herbs like Glycyrrhiza glabra Turmeric, Aloe vera, Tulsi and Neem. (Using water or alcohol).
- 2. Cream Base Preparation: A soft, spreadable cream is made using ingredients like beeswax and oils.
- 3. Mixing: The herbal extracts are mixed into the cream base.
- 4. Preservation: Natural preservatives (Methyl Paraben) may be added to increase shelf-life.
- 5. Packaging: The cream is filled into sterile containers or tubes.



Fig. No. Herbal Extraction

Evaluation Parameters:

Sr. No.	Test	Observation
1	Texture	Smooth
2	Colour	green

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3	рН	Should be alkaline
4	Spreadability	Should spread easily
5	Microbial	Should be free from harmful bacteria
6	Irritation Test	it doesn't irritate the mouth
7	Healing Efficacy	fast

III. CONCLUSION

The main aim first to formulate herbal oral mouth ulcer gel that will cure mouth ulcer and reduce pain and irritation and side effects too. As seen from the results, it is possible to formulate herbal mouth ulcer gel by using guava leaves and betel leaves which is useful to treat the ulcer. Ulceration in the mouth Creams can aid in mouth ulcer healing and discomfort relief. They cover the ulcer with a protective layer that lessens food and drink irritation, and they frequently include pain and inflammation-reducing substances. Using a lotion could help ease the discomfort caused by mouth ulcers and promote their healing. However, it's best to speak with a healthcare provider for additional assessment and treatment if the ulcers are serious or persistent. Clinical research assessing these herbal medicines' efficacy has revealed encouraging outcomes in terms of lessening the severity and duration of mouth ulcers. To completely comprehend their mechanisms of action and provide standardized procedures for their application in clinical practice, more study is necessary. Patients should speak with medical professionals before using herbal remedies, especially if they have underlying medical conditions or are taking medications that may interact with them. Herbal remedies can be thought of as alternative or adjunctive therapies for managing mouth ulcers.

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