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Review Article

## Herbs used in treatment of mouth ulcer- a review

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### Abstract

The traditional medical study is an integral part of the culture and the perception of health by indigenous population in almost world since primordial times. India has used its knowledge of traditional or herbal medicine to prevent and cure diseases. As herbal medicine have fewer side effects in comparison with synthetic medicine they are getting increase patient demand. A mouth ulcer is an open sore on the skin or mucus membrane lining that is characterized by sloughing of inflammatory dead tissue. The issue of "herbal gel for the treatment of mouth ulcers" is discussed in this article. There is a list of herbs which contain flavonoids which are most commonly used for the treatment.

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### 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. In the field of medicine, traditional herbal remedies are gaining popularity. In the treatment of SARS, traditional Chinese herbal therapy played a key role. Traditional herbal medicine is used by 80% of Africans, and the global annual demand for these treatments is estimated to reach \$60 billion. Many traditional herbal medicine studies will be evalu-

ated by the global health community. Traditional herbal medicine research has been heavily funded by China, India, Nigeria, the United States of America (USA), and the World Health Organization (WHO) [1].

Medicinal plants have been used to treat human illnesses from the beginning of time. It is no surprise that 1.42 billion people, or one-fourth of the world's population, rely on traditional medicines to treat a variety of maladies. Evidences shows that most of the world population is using herbal medicine since ancient times. The Indian flora contains a wide range of therapeutic plants and plant components. These plants can be used to discover effective alternatives to manufactured medications. Plants play an important part in the treatment of a variety of human disorders, and herbal therapies are

gaining popularity among patients due to their lack of the common adverse effects associated with allopathic medicines. So there is need to investigate such type of drugs and their effective formulation for the better patient acceptance. As a result, there is a need to research such medications and their effective formulations in order to improve patient acceptance. In India, herbal remedies or herbal products have been used to treat and cure a variety of illnesses since ancient times. Furthermore, Indian folk medicine includes a variety of prescriptions for a variety of ailments, including wound healing, inflammation, skin infections, leprosy, diarrhea, scabies, venereal disease, ulcers of any kind, snake bites, and so forth. For various types of skin illness, more than 80% of the world's population still relies on traditional remedies. In order to facilitate the creation of a good environment for natural healing, herbal medicines in wound management include disinfection, debridement, surgical intervention, and maintaining a moist environment. Hence it is evident that herbal medicines are playing a major role in treatment strategies which are adopted globally [2].

#### Benefits of Herbal Medicine

- Herbal drugs operate as a reversible source, which is our only chance for constant supply of inexpensive medications for the world's rising population.
- The growth and processing of medicinal plants and herbal goods are environmentally benign and ecofriendly.
- Herbal medicine has contributed many of the most beneficial, useful, and diverse medications to contemporary medicine all around the world [3].

#### Herbal Drug Used In Mouth Ulcer

S.No.	Common Name	Scientific Name	Family	Chemical Constituents	Additional Uses	References
1.	Guava leaves, Amrood	<i>Psidium guajava</i>	Myrtaceae	Flavonoids (quercetin and its glycosides), tannins	Antimalarial, anthelmintic, antiulcer, antispasmodic, analgesic properties	[4]
2.	Indian cherry leaves, Lasoda, Tenti	<i>Cordia dichotoma</i>	Boraginaceae	Alkaloids, flavonoids, amino acids	Used for headaches and ulcers including decoction for sore throat	[5]
3.	Liquorice, Mulethi	<i>Glycyrrhiza glabra L.</i>	Leguminosae	Saponin, flavonoid, liquiritin, isoliquiritin liquiritigenin and rhamnoliquiritin	Anti-inflammatory and expectorant, controls coughing and has hormonal effects.	[4]
4.	Turmeric Haldi	<i>Curcuma longa</i>	Zingiberaceae	Diarylheptanoids, curcumin, dimethoxy curcumin, and bisdemethoxycurcumin	Anti-inflammatory, antiulcer and antiarthritic activity	[6]
5.	Pomegranate flowers	<i>Punica m L.</i>	Punicacea	Polyphenols, gallic acid, ellagic acid and ethyl brevifolincarboxylate, triterpenes oleanolic acid	Peptic ulcers, oral and anal ulcers, intra-nasal ulcers, antioxidative, antimicrobial, anti-inflammatory, analgesic and wound healing properties.	[7]
6.	Betel leaves,	<i>Piper betle L.</i>	Piperaceae	Alkaloids, carbohy-	Anti-ulcer, Anti-	[8]

	Paan			drate, amino acids, tannins and steroids	bacterial, Anti-fungal, Antioxidant, Anti-inflammatory activities,	
7.	Aloe vera	<i>Aloe barbadensis Miller</i>	Liliaceae	Amino acids, anthraquinones, enzymes, minerals, vitamins, lignins, monosaccharides, polysaccharides, salicylic acid, saponins, and sterols are among the many substances found in plants.	Properties that are anti-inflammatory, anti-oxidant, anticancer, healing, anti-ulcer, and anti-diabetic	[9]
8.	Capsicum	<i>Capsicum annuum L.</i>	Solanaceae	Capsaicin, paprika oleoresin, and dihydrocapsaicin	GI issues include gas in the stomach, cramps, stomach pain, diarrhoea, and mouth ulcers, among others.	[10]
9.	Noni Fruit, Indian Mulberry, Nuna	<i>Morindacitri-folia Linn.</i>	Rubiaceae	Anthraquinones, flavonoids and phenolics	Abnormal menstruation, acne/boils, constipation, diarrhoea, arthritis, diabetes, fever, high blood pressure, gastric and other ulcers, arthritis, diabetes, fever, high blood pressure, gastric and other ulcers.	[10]



Fig. A-Dry Indian cherry leaves, B- Aloe vera, C- Turmeric, D- Betal (paan) leaves and E- Guava leaves

### Oral Ulcers

Oral ulcers are a very common disorder of the oral mucosa membrane[11]. Sloughing of inflammatory dead tissue characterizes mouth ulcers, which are open sores of the skin or mucus membrane lining[12]. One of the most prevalent pathologic disorders involving ulcers in the oral mucosal membrane is Recurrent Aphthous Stomatitis (RAS). Recurrent Aphthous Stomatitis causes a single or multiple chronic ulcer in the oral mucosa, which is painful and has an erythematous halo. Antiseptics, anti-inflammatory, analgesics, lasers, and herbal therapy are all used to treat aphthous stomatitis[13].

Mouth ulcer can occur in any age group or population. Mouth ulcer can also be occur due to some of the reasons like- diseases, ailments, disorders and conditions that can be serious, sometimes it is life threatening . These include oral cancer and leukoplakia. Mouth ulcers are painful sores on the gums and in the mouth. Canker sores are another name for them. Although most mouth ulcers are harmless, they can be quite uncomfortable for some people, making it difficult to eat, drink, or brush their teeth. The size of a mouth ulcer varies, and the signs of a mouth ulcer vary depending on the type of ulcer.

### Causes of mouth ulcer

Mouth ulcers are caused by a variety of factors that vary from person to person. Still, there are some common causes:

- Other foods high in acidity or spice, citrus fruits.
- Burns from hot drinks or food.
- Irritation from chemicals that are present in toothpaste or oral rinses.
- Chewing the insides of the cheeks or biting the tongue.
- Braces, poor-fitting dentures, and other instruments that may rub against the mouth and gum.
- Medications including beta-blockers and pain killers.
- Anxiety or stress.
- Some are the genetic factors[14].

### Types of mouth ulcer

Minor, large, and herpetiform canker sores all exist.

#### Minor

Small round or oval ulcers, known as mild canker sores, heal in one to two weeks without scarring.

#### Major

Canker sores that are big in size and depth are larger and deeper than those that are small. It can take up to

six weeks to repair these uneven edges. Long-term scarring is a risk with major mouth ulcers.

### Herpetiform

Herpetiform canker sores are small, cluster in groups of 10 to 100, and most commonly afflict adults. This type of mouth ulcer has irregular edges and will often heal without scarring within one to two weeks [15].

### Various Dosage Form used for the Treatment of Mouth Ulcers

- Pastes
- Mouthwashes
- Buccal tablet
- Buccal patch
- Medicated chewing gum
- Pharmaceutical Gel

### Pharmaceutical Gel

A gel is a solid or semisolid system made up of at least two components that contains a condensed mass and is interpenetrated by a liquid. Gels and jellies are made up of a tiny quantity of solids scattered in a big amount of liquid, however they have a solid-like rather than a liquid-like consistency. The presence of some type of epidermal structure, which gives jelly and gel their solid-like qualities, is a distinguishing feature.

### Advantages

- Stay away from the first-pass metabolism.
- Convenient, acceptable, and simple to implement.
- Ability to more precisely distribute medications to a specific location.
- Allowing for the use of medicines with a short biological half-life.
- Improving the drug's physiological and pharmacological response.
- Increase patient adherence.
- It can be used for self-medication.
- Avoid the risks and drawbacks of intravenous therapy, as well as the varying conditions of absorption, such as enzyme presence and pH variations.
- It is easily able to terminate the medications, when needed.

### Disadvantages

- The medication and/or excipients can cause skin irritation in people with contact dermatitis.
- Some medications have a low permeability through the skin or mucous membrane, which might lead to allergic responses.

- Only used for drugs that require a very low plasma concentration to function.
- Drugs may be denatured by an enzyme in the epidermis.
- Drugs with bigger particle sizes are more difficult to absorb via skin [16].

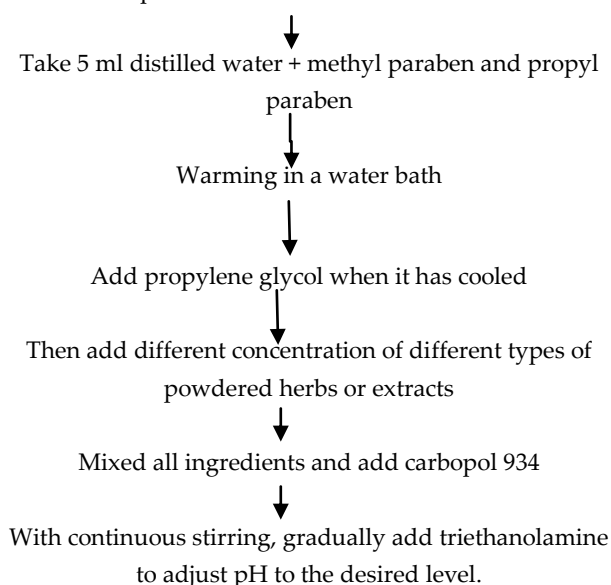
#### Uses of Gel

Gels or gelling agents are used:

1. As medication delivery methods for drugs that are taken orally.
2. To provide a topical medication to the skin, mucous membranes, or eyes.
3. Gels for dental care prophylactic like Sodium fluoride and Phosphoric acid gel.
4. Gels as lubricant for catheters [17].

#### Preparation of simple herbal gel [5], [18]

Carbopol 934 mixed in demineralized water



#### Discussion

To treat mouth ulcers, researchers developed and tested a herbal oral gel combining extracts of powdered *Psidium guajava* Linn leaves and *Curcuma longa* Linn rhizomes. The results demonstrated that the optimized herbal oral formulation including guava leaf extract and turmeric rhizomes extract is compatible with all of the typical range of physicochemical characteristics. Antifungal study of formulation revealed excellent efficacy against *Candida albicans* [6].

In a different study three gel formulation were prepared by using different concentration of guava leaves and mulethi root extract. Stability study suggested that the formulation was stable at the room temperature and no significant changes in the pH of the formulation were observed. In antimicrobial study all three gel formula-

tions were evaluated and compared with the standard gel (marketed gel formulation) which shows the better results than marketed gel formulation. The use of herbal medications guava leaves and liquorice root extract were found to be particularly effective in the treatment of oral cavity mouth ulcers [4].

Various herbs which were used in prevention of oral diseases such as dental caries, gingivitis, periodontitis, mouth ulcer, oral candidiasis were studied. Herbal medications were discovered to offer various advantages over synthetic preparations. Herbal drugs contain phytochemical constituents which possesses antimicrobial properties and antifungal properties etc. There was high demand for herbal drugs as they were reported to have less side effects and less toxicity when compared to synthetic drugs [5].

Different formulations of *Psidium guajava* leaves, betel leaves, and liquorice extract possessing anti mouth ulcer activity were formulated. *Psidium guajava* alcoholic extract, betel leaves, and liquorice aqueous extract were used to make the gel. Developed formulations had potential to treat mouth ulcers [8].

In a work carried out on uses of herbal remedies for the treatment of mouth ulcer focuses on the causes and the factor that are responsible for causing mouth ulcer. They pinned out the points that herbal medicine is the primary stage for healthcare because it has some features like better compatibility, better culture with human body and minimal side effects of herbal medicine. Members summaries the study with the herbs that are used for treatment of mouth ulcer which are aloe vera, turmeric, *Capsicum annum*, *Glycyrrhiza glabra* and many more along with their benefits [10].

In a study, a medicinal aqueous gel comprising powdered *Cordia dichotoma* leaves was mixed with guava leaves. As per investigation it was established that genus cordia and guava have the potential as new biotechnological investment in herbal medicines for treatment of oral ulcers [19].

In a study herbal gel was prepared for mouth ulcer treatment. Different herbal leaves were used such as dried powdered guava, aloe vera and acacia leaves. Herbal gel was made with various concentrations of powdered guava, aloe vera, and acacia leaves, as well as propylene glycol and carbopol 934 as a gel base. Different metrics were used to test the formulations. Physicochemical parameters of formulations were investigated. Stability tests were carried out for three months in accordance with ICH guidelines at varied temperatures and humidity levels. In comparison to synthetic formula-

lations for the treatment of oral ulcers, the developed herbal formulation proved effective, stable, and safe[7]. The antibacterial and inhibitory properties of different concentrations of aloe vera gel against oral pathogenic microorganisms were investigated. Study was done on 20 patients, each identified bacteria was separately cultured and incubated at specific temperature for 24 hours. The inhibitory concentration was obtained using the broth micro dilution method, and antimicrobial activity was assessed using the aloe vera gel disc diffusion method. Comparison with marketed products (ofloxacin 5mcg and ciprofloxacin 30 mcg) was done. It was found that it can be used as alternative for oral health care[20]. Another study focuses on various herbs that were used in dentistry such as a clove oil, sesame, aloe vera, turmeric, cranberry, tea tree, garlic, meswak, red clover, and evening primrose. It was curative treatment for oral health problems [21]. A review on herbal drugs suggested of using herbs for dental pain. The herbal dental gel is a unique formulation which include three essential oils, namely they are clove oil, camphor, and menthol which have a role in dental pain management when applied locally [22]. In a different study a method to treat oral mucositis was discussed. A herbal oral gel containing a methanolic extract of *Psidium guajava* was prepared. After evaluating the gel results indicated that the *Psidium guajava* herbal oral gel was safe to use, stable and good for treating oral mucositis [23]. A study showed that different types of herbs can be used for oral health. *Herbal preparations from Azadirachta indica, Ocimum sanctum, Murrayakoenigii L., Acacia nilotica, Eucalyptus camaldulensis, Hibiscus sabdariffa, Mangifera indica, Psidium guajava, Rosa indica, and Aloe barbadensis* have been proven to reduce tooth cavities and periodontal infections. The researchers utilised an approach known as "herbal shotgun" or "synergistic multitarget effects" in which they combined multiple types of herbal extracts [24]. *Neem is an evergreen tree with the botanical name Azadirachta indica. Due to its therapeutic and active characteristics, it has been employed by Indians for the treatment of numerous diseases and illnesses from ancient times. Antibacterial, cytotoxic, anti-diabetic, anti-carcinogenic, anti-helminthic, anti-oxidant, astringent, antiviral, and anti-inflammatory properties are all present. Nimbidin, azadirachtin, and nimbinin are active chemicals found in neem that have antibacterial properties. Neem and its parts, such as bark, twigs, and leaves, were employed in toothpastes or toothpowders, oral deodorants, toothache relievers, and tooth cleaning.* The objective of this paper was to focus on

the numerous characteristics of *Azadirachta indica* in dentistry as a tool for future research [25].

For the treatment of chronic periodontitis, a comparison was made between a xanthan-based chlorhexidine gel and a herbal extracts gel. The study reveals that the local administration of herbal gel can be employed in the treatment of chronic periodontitis as an addition to mechanical periodontal therapy in a similar way to chlorhexidine gel [26].

## Conclusion

The whole discussion proved that, since time antediluvian herbal medicine and its product used to cure different diseases and ailments. Natural therapies are increasingly acceptable because they are believed to be safer and have fewer adverse effects than synthetic medications. Herbal formulations are becoming increasingly popular on the global market. This study shows that medicinal herbs are still essential in the treatment of mouth ulcers today. The anti-ulcer activity is probably due to the flavonoids which are found in plants. Plants which contain flavonoids are – guava leaves, liquorice (mulethi), turmeric, *Cordia dichotoma* (lasoda) leaves, aloe vera, pomegranate flowers and betal (paan) leaves. Herbal medicines are more culturally acceptable, have a higher level of compatibility with the human body, and have less adverse effects. Herbal medication is the greatest option for treating mouth ulcers because it is naturally available and has a wide range of applications and healing properties.

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