

## Herbs used in the treatment of mouth ulcer

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### ABSTRACT

India has used its knowledge of traditional or herbal medicine to prevent and cure diseases. Herbal medicines have been used since ancient times to treat various oral diseases or to maintain oral hygiene. Since herbal medicines have fewer side effects in compared to synthetic medicines, they are increasingly demanded by patients. A mouth ulcer is an open sore on the skin or mucous membrane characterized by detachment of inflammatory dead tissue. This overview focuses on the causes of canker sores, factors that are responsible for the .canker sore. As we know, because of the better culture acceptance, better compatibility with the human body and less side effects, herbal medicine is the mainstay of primary health care, papaya, glycyrrhiza glabra, turmeric, noni fruit along with their biological source, family, morphology, chemical components and uses.

### I. INTRODUCTION:

To facilitate the creation of a good environment for natural healing, herbal medicines in wound management include disinfection, debridement, surgical procedures, and maintaining a moist environment. Therefore, it is evident that herbal medicines play an important role in the treatment strategy. Traditional herbal medicines are naturally occurring plant-derived substances that have been used in local or regional healing therapy practices with little or no industrial processing to cure disease. In medicine, traditional herbal remedies are gaining popularity. Medicinal plants have always been used to treat human diseases. It's no surprise that 1.42 billion people, or a quarter of the world's population, depend on traditional medicines to treat a variety of diseases. The Indian flora contains a wide range of therapeutic plants and plant components. These plants can be used to discover effective alternatives to manufactured medicines. Plants play an important role in treating a variety of human ailments, and herbal therapies are gaining popularity among patients because they lack of the common side effects of allopathic medicines. In India, herbal remedies or herbal

products have been used to treat and cure a variety of ailments since ancient times. In addition, Indian folk medicine includes a variety of recipes for a variety of ailments, including wound healing, inflammation, skin infections, leprosy, diarrhea,

### Advantages of herbal medicines:(3,4)

- Herbal medicines have a long history of use and better patient tolerability and public acceptance.
- Medicinal plants have a renewable source so we can have a sustainable supply of cheaper medicines for the growing world population.
- Due to the rich agroclimatic, cultural and ethnic biodiversity of developing countries like India, the availability of medicinal plants is not a problem.
- The cultivation and processing of medicinal herbs is environmentally friendly. Prolonged and seemingly uneventful use of herbal medicines is safe and effective.

### DISADVANTAGES(5)

- Herbal medicines can have many benefits. But it also comes with a number of disadvantages.
- On the one hand, herbal medicines take a longer to work than pharmaceutical medicines. When a person decides to take the herbal alternative to medicines, they have to be very patient.
- Herbal medicines are often self-administered. Therefore, no dosage or warnings are given. When herbal medicines are consumed together with medicines, the two can interact with each other and lead to adverse health effects.
- It is also important to know that plants used as a herbal medicines can poison someone rather than cure them. It can happen that a certain part of a plant is edible and another part is poisonous. Take rhubarb for example.
- The roots of rhubarb are used as a laxative and the stalk is edible. However, its leaves are poisonous. A person may not be able to identify a poisonous plant.
- This would put the person at risk of poisoning themselves or others.

### Oral Ulcers:(6,7,8)

- Oral ulcers are a very common disorder of the oral mucosa membrane sloughing of inflammatory dead tissue characterizes mouth ulcers, which are open sores of the skin or mucus membrane lining.
- 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.

### Types of mouth ulcer:(9,10)

- 1.Minor ulcer
- 2. Large ulcer
- 3.herpetiform sore

#### 1.Minor:

Minor aphthous ulcers are the most frequent type, accounting for around 80% of occurrences. Small round or oval ulcers, known as mild canker sores, heal in one to two weeks without scarring.This type can range in size from about 2 millimeters (mm) up to 8 mm across.



#### 2.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



#### 3.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 .( 11)



#### Ulcerative Conditions:

Mouth ulcers are very common and are mainly due to trauma such as from ill-fitting dentures, fractured teeth, or fillings. However, biopsy or other investigation should be done for patients with an ulcer of over three weeks duration to exclude malignancy or other serious conditions such as chronic infections.(12,13).

#### Causes of mouth ulcers

There is no definite etiology and pathology known for mouth Ulcer; although some factors are considered important which Include nutritional deficiencies such as iron, vitamins

Especially B12 and C, poor oral hygiene, infections, stress, Indigestion, mechanical injury, skin disease etc.[14] Some other Factor include such as:



### 1. Genetic factors:

There is a genetic component in patients With aphthous ulcers, with about 30%-40% of patients Having a family history [15]. A family history of recurrent Aphthous ulcers is obvious in some patients.

A familiar Connection includes a young age of onset and symptoms Of increased severity. Recurrent aphthous ulcers are Highly correlated in identical twins [16].

### 2. Physical or Psychological Stress:

There is a strong connection of aphthous ulcer occurrences with stressful life [17]. Psychological stress may play a role in the appearance of recurrent aphthous stomatitis as a trigger or a modifying factor. No studies have convincingly proved stress as a causative or precipitating factor for recurrent aphthous stomatitis [18].

### 3. Nutritional deficiency:

Various nutritional deficiencies have been implicated in a subset of aphthous ulcer patients, which involving of iron, folic acid, vitamin B12, B1, B2 and B6. The contribution of nutritional deficiencies to aphthous ulcers are likely to vary across different regions based on diet and food supplementation[19].

### 4. Trauma:

The most likely factors which bring about aphthous ulcers are local trauma and stress. Injury to the oral mucosa may give result from accidental self-biting, dental procedures, tooth brush bristles, and sharp-edged Foods (e.g., potato chips), anesthetic injection. Apart from This environmental and emotional stress also result into Aphthous ulcer [20].

### 5. Food allergies:

There are various food which is able to cause allergies. Antibodies to cow's milk and wheat Protein (celiac disease) are demonstrated in patients with Recurrent aphthous stomatitis. Therefore, many foods that Are commonly allergenic (e.g., strawberries, tomatoes, And nuts) haven't been causally associated with recurrent Aphthous stomatitis [21]. Foods like chocolate, coffee, Peanuts, cereals, almonds, strawberries, cheese, tomatoes (even the skin of the tomatoes) and flour (containing Gluten) could even be implicated in some patients [22]

### 6. Immune disorders:

Aphthous ulcers are more common and more severe in patients with immune disorders, Including cyclic neutropenia, inflammatory bowel Disease, Behçet's disease, and HIV disease [23].

### 7. Tobacco smoking:

The patients suffering from recurrent aphthous stomatitis usually are non-smokers, but there is a lower prevalence and severity of recurrent aphthous stomatitis among heavy smokers as critical moderate smokers. Some patients report an onset of recurrent aphthous stomatitis after smoking cessation, while others report control on re-initiation of smoking. the use of smokeless tobacco is expounded to a significantly lower prevalence of recurrent aphthous stomatitis. Nicotine-containing tablets also appear to control the frequency of recurrent aphthous stomatitis [24].

Some other factors which causes mouth ulcers are:

- Toothpastes and mouthwashes that contain sodium Lauryl sulfate
- Hormonal changes
- Viral infections
- Allergies and sensitivities
- Infectious agents (both bacterial and viral)
- Medical conditions [25]

### Symptoms (26)

Ulcers can be painful, and the pain can be made worse by food, drink, and poor oral hygiene.

HU lesions may:

- Appear as extremely painful ulcers in the mouth.
- Recur very quickly, so infections seem continuous.
- Increase in size, eventually coming together to form a large, ragged ulcer.
- Take 10 or more days to heal
- Appear anywhere in the mouth
- They tend to be found in more females than males and are more common in older adults.

### Symptoms of minor and major ulcers include:

- One or more painful sores that may appear on the cheeks, the roof of the mouth, or the tongue
- The appearance of round lesions that have red edges and are yellow, white, or gray in the middle.

### Herbs used in the treatment of mouth ulcer:

#### 1. Aloe vera:

**Common name:** Aloe vera

**Scientific name:** Aloe Barbadensis

**Biological source:** Aloe is dried latex of leaves of aloe vera.

**Family:** Liliaceae

**Chemical constituents:** sterols, amino acids, enzymes, anthraquinones, lignins, vitamins, Minerals, polysaccharides, monosaccharide, saponins, salicylic acid.

**Use:** antiulcer, anti-inflammatory, anti-diabetic, antioxidant, anticancer, healing (27).



Aloe Vera is used in the treatment of mouth ulcers, its anti-inflammatory property helps

in reducing the pain of ulcer. Aloe vera shows soothing and wound healing activity on burn.

Through cell proliferation, aloe vera boosts the rate of wound closure and the tensile strength when applied to wounds this is due to aloe vera. Aloe vera speeds up blood flow to the areas that have been injured by increasing the amount of collagen and the level of collagen cross linking therefore promoting wound concentration and breaking of scar tissue. Antibacterial action of aloe vera helps in wound healing.(28)

#### 2. Guava leaves:

**Common name:** Guava leaves, (Amrood)

**Scientific name:** Psidium guajava.

**Biological source:** Psidium guajava L.

**Family:** Myrtaceae

**Chemical constituents:** Flavonoids, (Quercetin and its glycosides), tannis, saponin, oleanolic acid.

**Fruit:** Vitamins, iron, phosphorus & calcium.



**Use:** Antimalarial, antiulcer, anthelmintic, analgesic, antispasmodic.(29)

Guava leaves are used in the treatment of aphthous ulcers. Specifically it reduces the pain of ulcer and effectively decreases the size of ulcer. The guava leaves are most frequently used to treat and disinfect wounds by rinsing affected areas with decoction of the leaves. The presence of flavonoids extracted from guava leaves, such as quercetin, morin-3-o-lyxoside, and morin-3-o-arabioside, may show a significant reduction in the size of aphthous ulcers.

Antiviral and antibacterial properties were observed for 3-O-arabioside. One of the potential causes of the healing of an aphthous ulcer is characterised by hypersensitivity and inflammation

and size of ulcer are reduced by the action of flavonoids.(30).

### 3.Neem

**Common name:** Neem

**Scientific name:** Azadirachta indica

**Biological source:** It consists of leaves and other aerial parts of Azadirachta indica.

**Family:** Meliaceae

**Use:** Anti-inflammatory, Anti ulcer, Anticarcinogenic, Anti oxidant, anti mutagenic, Anti bacterial, Antiviral, Antifungal, Antihyperglycemic.(31)

**Chemical Constituent:** Azadirachtin, nimbin, DPPH, Azadiradione, salninin, Azadirone, gedunin, 2- pentadecanone, methyl starate, phytol, nimbidin, gueraceatin, ascorbic acid, amino acid, polyphenolic flavonoids(32). Neem leaves are rich with antioxidants, they improve the immune response in gum and tissue Of the mouth, which are good remedies for mouth ulcers. Neem leaves act as pain reliever in mouth ulcer and toothache problems.(33)



Neem contain azadirachtin, nimbin, nimbidin, nimbolide, have antibacterial effect. Neem inhibit the growth of bacteria and fungi .Neem Leaves show anti-inflammatory effect. Neem leaves play an important role in wound healing by tensile strength of the healing tissue. Azadirachta indica leaf extracts stimulates wound healing by triggering an inflammatory response and neovascularization.(34)

### 4.Tulsi:

**Common name:** tulsi

**Scientific name:** Ocimum sanctum.

**Biological source:** It consists of fresh and dried leaves of Ocimum sanctum Linn.

**Family:** Lamiaceae

**Chemical Constituents:** Fixed oil: Linoleic acid, Linolenic acid, oleic acid, Palmitic acid.

**Essential oil:** eugenol, cubenol, Linalial, carinen

**Minerals:** Vitamin C, Vitamin A, calcium, Zink, iron.

**Uses:** Anti-cancer, antiulcer, antiarthmitic, antibacterial, antifungal, antioxidant, anti-Inflammatory, anti-helminthic, antispasmodic, imunomodulatory(35).Tulsi leaves are effective in oral infection.



Tulsi leaves include antibacterial like carracrol and terpene & sesquiterpene b carbophyline. Tulsi leaves can be chewed to maintain good dental hygiene. The tulsi has immunomodulatory Properties. Additionally it affects the hemopoetic tissues and skin. Thus, Tulsi can be applied to oral Lichen planus therapy. Tulsi helps in healing the sores of ulcers. Antiulcer effect of tulsi is due to cytoprotective effect.(36)

Tulsi is used in the treatment of different types of ulcers. Due to its anti-inflammatory, anti-bacterial, anti-oxidant and immuno-modulatory characteristics, tulsi can be promising herb in the treatment of various oral disorders.

### 5.Ginger



**Common name:** Ginger.

**Scientific name:** *Zingiber officinale*

**Biological source:** Ginger consists of the rhizomes of *Zingiber officinale*.

**Family:** Zingiberaceae

**Chemical Constituents:** Gingerol, shigaol, sesquiterpene, hydrocarbons, oleoresin.

**Uses:** Anticancer, Antiulcer, Anti-inflammatory, Antioxidant, antimicrobial, anti-diabetic.(37)

Ginger is used in the treatment of Aphthous ulcers. Anti-inflammatory effect of ginger reduce the pain of ulcer. With the help of mucoadhesive containing liquorice extract decrease the size of lesion and also reduce the pain. Yanoacrylate-2-octyle mucoadhesive which help in wound healing, decrease the time (duration) of healing and also decrease the size of lesion.(38).

**6.Honey:**



**Common name:** Madhu, Mel.

**Scientific name:** Honey.

**Biological source:** Honey is a sugar secretion deposited in honey comb by the bees.

**Family:** Apidae

**Chemical constituents:** Glucose, Fructose, Sucrose, dextrin, formic acid, protins, enzymes, vitamins.

**Uses:** Antiseptic, Antibacterial, anti-inflammatory, immune boosting, antifungal.(39)

Honey is used in treatment of minor RAS. The rate of tissue regeneration is accelerated by honey and inhibition of edema, exudation, malodour, inflammation in wounds. Since honey is readily available worldwide and is less expensive, it could be used as an alternative treatment for the patients who have oral ulcers. Honey reduced the severity of the pain, the size of the ulcer and the erythema in a safe and effective manner.(40).

**7.Turmeric:**

**Common name:** Haldi

**Scientific name:** *Curcuma longa*

**Biological Source:** It is the dried rhizome of *Curcuma longa* Linn.

**Family:** Zingiberaceae

**Chemical constituents:** Diarylheptanoids, curcumin, dimethoxycurcumin, bisdimethoxycurcumin.



**Use :** antiulcer, anti-arthritis activity, antioxidant, anticarcinogenic, anti inflammatory. Antimutagenic, anticoagulant, antifertility, antidiabetic, antibacterial.(41).

Turmeric is used in the treatment of RAS. Turmeric helps in reducing the pain of the ulcer. Curcumin shows wound healing activity, so it also effective in the treatment of mouth ulcer By increasing cellular proliferation & collagen synthesis at the wound site as evidenced by Increase in DNA and total protein & also shows increase in type-III collagen content of Wound tissue, results in faster rate of epithelialization and wound contraction, it also shows Increase in tensile strength.(42).

**8.Licorice (*Glycyrrhiza glabra*)**



An active ingredient found in licorice root is glycyrrhiza extract, which has anti-inflammatory

properties and is used to calm and soothe the affected area. Licorice has been found to be effective in the treatment of herpes labialis and radiation-induced mucositis.(43,44)Recent research has suggested that licorice due to its bioactive ingredients such as glycyrrhizin, glabridin, licochalcone A, licoricidin, and licorisoflavan A has specific potential for treating oral disease.(45).

#### 9. Noni Fruit:

Noni (*Morinda citrifolia* Linn.) also Known as Indian Mulberry, Nuna, Cheese fruit, tookunja, Great morinda, Mouses'pineapple, Yellow root, belonging to family Rubiaceae.

**Morphology:** It is an evergreen tree having stem diameter of 13 cm. Sapwood is yellowish-brown soft in nature and the bark is of gray or brown color smoothish to slightly rough in nature. Twigs are light green and four-angled.



Part used: fruit

**Chemical constituents:** The anthraquinones, flavonoids and phenolics are the major groups of secondary metabolites responsible for the therapeutic activities of the plant Indian Mulberry 24. Oligo- and Polysaccharides, glycosides, alkaloids components, Octoanoic acid, potassium, vitamin C, terpenoids, anthraquinones (nordamnacanthal, morindone, rubiadin, and rubiadin, methyl ether, anthraquinone Glycoside), carotene, vitamin A, flavones glycosides, Linoleic acid, alizarin, amino acids, acubin, L- asperuloside, caproic acid, caprylic acid, ursolic acid, rutin, and a putative proxeronine are mainly present in noni.

**Uses:** Noni fruit juice traditionally has been used in different disorders such as abnormal menstruation, acne/boils, constipation, diarrhea, arthritis, diabetes, fever, high blood pressure,

gastric ulcers, sprains, mental depression, senility, poor digestion, atherosclerosis, blood vessel problems, and drug addiction.(46)

#### 10. Papaya:

The biological source of papaya is *Carica papaya* Linn. It belongs to the family Caricaceae and well known for various medicinal properties. The fruits are reported to possess antiulcer activity. The seeds are reported to exert antimicrobial, anthelmintic, Antiamoebic properties.



**Morphology:** Papaya plant is a large, single-stemmed herbaceous perennial tree having 20–30 feet height. The leaves are very large (upto 2 ½ feet wide), palmately lobed or deeply incised with entire margins and petioles of 1-3 feet in length. Stems are hollow, light green to tan brown in color with diameter of 8 inches and bear prominent scars. Plant part used: bark, leaves and fruit.

**Chemical constituents:**

The papaya's principal active ingredient, papain, is a powerful digestive enzyme very useful in different uses. The fruit is rich in vitamins C and E and minerals (especially potassium). Contains papain and chymopapain, strong proteolytic enzymes.

**Uses:** Papain is the dried and purified latex of the fruit of *Carica papaya*. Papain is a substance which contains a mixture of proteolytic enzymes found in the unripe fruits of papaya tree. Papain is used extensively for tenderizing meat. Another use of this enzyme is as an ingredient in a cleansing solution for soft lenses. Papain is used as a digestant for protein because it has an action much like that of pepsin. It is used to relieve the symptoms of episiotomy that acts on the casein of milk.(47)

### 11. Punica Granatum –

Punica granatum belonging to the Family Punicaceae. It is commonly known as “pomegranate”. They hold various types of ingredients including flavonoids, Ellagitannins and proanthocyanidin. Pomegranate fruit arils contain organic acids, sugars such as glucose, fructose, Minerals, vitamins, and polyphenols. It also contains pectin, Organic acids including citric, malic, tartaric, succinic, Fumaric and ascorbic acid [48].



### 12. Beta Vulgaris –

Beta vulgaris belonging to the family Chenopodiaceae is commonly known as “beetroot.” It is also known as sugar-beet. It is also cultivated in gardens in many parts of India for the sake of its flesh roots and leaves. There are two kinds: white and red. Chemical constituents in this plant are an active principle “betin” [49].



### 13. Hibiscus Rosa Sinesis –

Hibiscus rosa sinensis belonging to the family Malvaceae is commonly known as “changing Rose.” Chemical constituents in this plant are flavonoids, Anthocyanins, quercetin, cyaniding, kaempferol, and Hydrocitric acid. (50)

### 14. INDIAN JASMINE:



- It is also known as chameli in India

Family:-Oleaceae

Botanical name:-Jasminum

• Chemical constituents:-

- Benzyl Alcohol
- Benzyl acetate
- Linolool
- Indol
- Benzyl Benzoate
- Cis jasmine
- Geraniol
- Methyl antrolinate



Mechanism of action:

Due to the anti-inflammatory, antibacterial activity the jasmine applied on ulcer so decrease the ulcer so automatically decrease the pain due to the ulcer.

Uses

- It gives anti-inflammatory action so it is used to decrease the inflammation due to the ulcer.



- It is used to decrease pain due the presence of ulcer in mouth and also used in the treatment of cancer as a pain removal.
- It is used to healing of canker in mouth.
- It is also used in treat constipation so automatically treat mouth ulcer.

#### 15. TRIDEX PROCUMBENS:

It is also known as coat buttons.



**Family:**-Asteroceae

**Chemical constituents:-**

- Alkyl esters
- Sterols
- Pentacyclitriterpenes
- Fatty acids
- Polysaccharides
- Flavonoids

**Mechanism of action:**

- It applied on mouth ulcer so decrease the pain due to the ulcer because it mainly shows analgesic activity.

**Uses:**

- It shows anti-inflammatory action so it is used to decrease the inflammation in mouth.
- It decrease the growth of micro-organism in mouth because it is potent antimicrobial agent
- It is mainly used to decrease the pain because it gives an analgesic effect in mouth so
- Automatically decrease the pain due to the presence of ulcer.

#### 16. Mint:



**Family:**-Lamiaceae(Labiatae)

**BotanicalName:**-Menth

**Chemical Constituents:**

- Vitamin A
- Vitamin C
- Iron
- Calcium
- Magnesium

**Mechanism of action:**

The mint lives are applied on mouth ulcer so it give cooling effect on ulcer, so decrease the pain due to the ulcer and give fragrance in mouth.

**Uses**

- It gives antibacterial effect against cryogenic bacteria.
- It gives antimicrobial effect, so it is used in the treatment of ulcer.
- The mint leaf is useful for fresh breath due to the presence of flavonoids.
- It also provides cooling effect in mouth.

#### 17.ACACIA ARABICA:

It is commonly known as desi babul in india.



**Family:**-Leguminosae mimosoiceae

**Taste:**-Bland and mucilaginous

**Solubility:**-It is soluble in water and also soluble in alcohol, the watery solution is viscous and acidic.

**Chemical constituents:-**

- It consist arabin, which is complex mixture of calcium, magnesium and potassium salt of arabic acid.
- L-arabinose
- D- galactose
- D- glucuronic acid
- It also contain enzyme oxidase and peroxidase
- Polyphenols
- Galic acid (Bark)
- Sucrose (Bark)
- Tannin (Bark)
- Amino acid (Seeds)
- Fatty acid (Seeds)
- Ascorbic acid (Seeds)
- Tannin (Seeds)

**Identification Test:-**

Solution of gum of  $\{Pb(C_2H_3O_2)_2\}$  lead acetate gelatinises the aqueous solution of indian gum

It is not produce the pink colour with the solution of ruthenium red but on addition of hydrogen peroxide solution and alcohol to aqueous solution of gum to produce blue colour due to the presence of oxidize enzyme.

**Uses**

- It applied on ulcer act as stimulant and astringent.
- It is used for brushing the teeth to remove fragrance micro-organism in mouth.

**18.EUPHORBIA THIAMIFOLIA:**

The euphorbia thiamifolia is also known as laghudhika or choti-dudhi (milk hedge).

**Family:**-Euphorbiaceae

**Chemical constituents:**

- Flavonoids
- Glycosides
- Cardiac glycosides
- Terpenoids
- Saponins
- Queacetin



**Mechanism of action:-**

The mechanism of action of euphorbia is not clear but according to studies the euphorbia thaimifolia is a potent anti-inflammatory property so it is applied on ulcer in mouth so It decrease the inflammation in mouth. The milk hudge is also act as antimicrobial agent, it is applied on ulcer so remove micro-organism present on in mouth and give freshness in mouth.

**Uses:-**

- The euphorbia thiamifolia is mainly used in blood purification.
- It is used in the treatment of constipation so the mouth ulcer is automatically healed.
- It is also used in the treatment of skin infection.
- It is used in the treatment of worm in intestine.(51 to 58)

**II. CONCLUSION:**

From this review it is clear that medicinal plants play a Vital role in the treatment of mouth ulcer. The anti ulcer activities probably due to the presence of flavanoids in herbal plants due to their better compatability with human body and lesser side effects. The herbal Medicine is the best choice for the treatment of mouth ulcer due to the presence of chemical constituents Which are naturally available and with their great uses and healing effects.This study shows that medicinal herbs are still essential in the treatment of Mouth ulcers today.

This review provide the information of treatment of ulcer by different herbal medicinal plants.

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