

# A Review on Herbal Aqueous Gel of Powder Cordia Dichotoma Leaves and Psidium Guajava Leaves for Mouth Ulcer

**Mr. Siddheshwar Rameshwar Pawar and Mrs. Madhu Shewale Mam**

Yashodeep Institute of Pharmacy (B. Pharm), Pimpalgaon Pandhari, Chhatrapati Sambhaji Nagar, India

**Abstract:** *One of the most widespread diseases is oral ulcer. Oral ulcers, commonly referred to as tiny sores, are painful lesions that appear at the gum line inside the mouth. There are numerous formulations used to treat mouth ulcers. There are numerous synthetic and natural formulations on the market. Topical gel is designed to be applied to specific mucosal surfaces or skin surfaces for local action and percutaneous absorption of dose forms. This present investigates the formulation and evaluation of a herbal aqueous gel utilizing powdered leaves of Cordia dichotoma and guava (Psidium guajava) for the treatment of mouth ulcers. Mouth ulcers are common ailments that can cause significant discomfort and affect quality of life. The study aims to harness the anti-inflammatory and antimicrobial properties of these plants to create an effective topical treatment. Aqueous extracts were prepared from the powdered leaves, which were then combined with a suitable gel base to achieve the desired consistency and stability. Preliminary tests indicated favorable properties, suggesting potential effectiveness in soothing and healing oral lesions. In vitro studies were conducted to assess the antimicrobial activity of the gel against common pathogens associated with mouth ulcers. Results indicated significant antimicrobial properties, supporting the therapeutic potential of the formulation.*

**Keywords:** Cordial Dichotoma leaves, herbal formulation, guava leaves, herbal gel

## I. INTRODUCTION

Mouth ulcers, also known as aphthous ulcers, are painful lesions that can occur on the mucous membranes of the oral cavity. They can significantly affect an individual's ability to eat, speak, and maintain oral hygiene, leading to discomfort and decreased quality of life.

Traditionally, treatment options for mouth ulcers include topical analgesics, corticosteroids, and antiseptic mouthwashes. However, these may have side effects or limited effectiveness, leading to a growing interest in natural remedies. Herbal medicine has been widely recognized for its therapeutic potential, particularly in the management of oral health issues. Cordia dichotoma, commonly known as the dichotoma tree, has been used in traditional medicine for its anti-inflammatory and healing properties. • Guava leaves are similarly valued for their antimicrobial and soothing effects.

The gel formulation is expected to provide localized relief, enhance healing, and improve patient comfort. Introduced Cordia dichotoma Forst, are well-known traditional medicinal plants commonly known as "Bhokar or Bahuvaraka, "found throughout India in the tropical and subtropical zones, used in Indian folk medicine. Various phytochemical studies are carried out in various parts of the plants, such as flavonoids, tannins, alkaloids, and carbohydrates, which are responsible for pharmacological activity, has to be screened .

Many other researchers reported various pharmacological actions of C. dichotoma, such as contraceptives, anthelmintic, anticancer, hepatoprotective, anti-diabetic and diuretic purposes and for treating digestive system, respiratory, and blood disorders 5-7. Thus, the objectives of the present review are to provide an overview of the recent research status on morphology, microscopy, phytochemical screening, and pharmacological activity of whole plant parts.

### **Causes Of Mouth Ulcer:**

1. Injury or Trauma: Cuts, burns, or abrasions from dental work, braces, or accidentally biting the cheek.
2. Nutritional Deficiencies: Lack of vitamins and minerals, particularly vitamin B12, folate, zinc, and iron.
3. Infections: Viral infections, bacterial infections, or fungal infections
4. Allergic Reactions: Sensitivity to certain foods, medications, or dental products.
5. Stress: Emotional stress or anxiety can trigger the development of ulcers.
6. Chronic Conditions: Diseases like inflammatory bowel disease, celiac disease.
7. Immune System Disorders: Conditions that affect the immune system can lead to recurrent mouth ulcers
9. Other causes of mouth ulcers include –
  - Accidental cheek biting, toothbrush injuries, constant rubbing against braces or dentures. ▪ Burns from eating hot food.
  - Irritation from potent antiseptics like mouthwash. Reactions to certain medications.
  - Autoimmune diseases, underlying vitamin or iron deficiency.
  - Stress.
  - Illness or extreme fatigue

## **II. AIM AND OBJECTIVES**

**Aim:** The aim of this study is to formulate and evaluate a herbal aqueous gel containing powdered **Cordia dichotoma leaves and guava leaves** for the treatment of mouth ulcers, providing a natural, effective, and safe alternative to conventional treatments.

### **Objectives**

- Easy to use, agreeable, and convenient.
- Avoid using first-pass metabolism.
- To evaluate the analgesic and anti-inflammatory effects of the gel in patients with mouth ulcers.
- To assess the antimicrobial efficacy of the gel against oral microorganisms.
- To investigate the potential of the gel in preventing or treating oral mucositis.
- To examine the effect of the gel on wound healing and tissue repair
- Improve patient compliance.
- It is applicable for self-medication.
- Avoid intravenous therapy's risks and downsides as well as the various absorption circumstances, like the presence of enzymes and PH changes.
- The drugs can be stopped quickly if necessary

## **III. TYPES OF MOUTH ULCER**

1. **Aphthous Ulcers:** The gel's anti-inflammatory and healing properties can help reduce pain and promote recovery.
2. **Traumatic Ulcers:** It can soothe irritation and support healing from injuries caused by biting or dental appliances.
3. **Herpetic Ulcers:** While not a cure, the gel may alleviate discomfort and support healing of lesions caused by the herpes simplex virus.
4. **Oral Lichen Planus:** The soothing effects of the gel may help manage pain and inflammation associated with this chronic condition.
5. **Necrotizing Ulcers:** The antimicrobial properties may assist in preventing secondary infections. Overall, the gel is particularly suitable for non-infectious and inflammatory ulcers, providing symptomatic relief

#### IV. PLANT PROFILE

##### **Cordia dichotoma-**

**Common Name:** bhokar, Lasora, Clammy cherry

**Family:** Boraginaceae

Distribution: India, Africa, and Southeast Asia.

##### **Medicinal Uses:-**

Anti-inflammatory properties.

Used traditionally for wound healing and treating ulcers.

Antimicrobial activity against various pathogens.

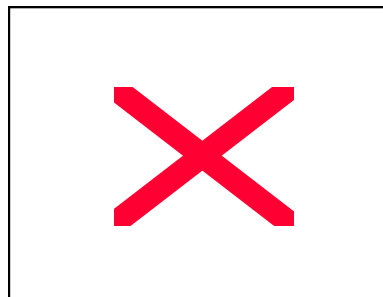
**Antiulcer and G.I.T. Protective Activity:** The expulsion of dichotoma fruits was performed using ethanol, and the extract was fractionated using petroleum ether, solvent ether, ethyl acetate, butanol, and butanone in combination. The extract was studied in albino Wistar rats using multiple models like pyloric ligation, aspirin, and indomethacin-induced ulcers, and rats were injured in the gastric mucosa relevant to the above models. Fruit extracts of various solvents (petroleum ether, solvent ether, ethyl acetate, butanol and butanone) were administered at 300 mg/kg body weight. The results reveal that the expulsion of ethyl acetate, butane, and butanone prominently inhibits ulcer activity. Other than apigenin (5 mg/kg, p.o.) from *C. dichotoma*, prominent ulcer medication and scarcity in inflammatory enzymes were estimated for ulcerative colitis.

The methanolic and water extracts of *Dichotoma* fruit were screened for gastroprotective effects using an aspirin-induced gastric ulcer and pylorus ligation model in rats, and OECD 423 guidelines calculated the oral dose, and it falls in the GSH 5 category. Effective deficiency in ulcer index is observed in water extract-treated Wistar rats as equivalence to methanolic extract, and results were equivalence to standard ranitidine (50 mg/kg). The water extract showed a prominent antiulcer effect in the aspirin-induced gastric ulcer model as well as in the pylorus ligation model. The various plant parts of *Cordia* systems of medicine for the treatment of various illnesses and conjugation conditions. However, *dichotoma* were used in the Ayurvedic and Unani different plant parts have been reported for various pharmacological activities.

##### **Botanical Description of Cordia dichotoma Forst:**

*Cordia dichotoma* family Boraginaceae is a small to average-sized autumn tree with a short, flexuous trunk. Leaves are simple, entire, and slightly dentate, elliptical-lanceolate to broad ovate, with a round and sagittate base. The stem bark is longitudinally creased and greyish-brown in colour. These flowers are 25 mm long, dull pinkish or white, small in axillary cymes, and polygamous. Fruits have edible sticky yellow or greenish-yellow shining glabrous or minutely pubescent calyxes. It turns black on ripening, and the pulp gets viscid, sweetish, transparent, surrounding a central stony part. It is used in food and pickles

##### **Leaves flower root**



**Chemical Constituents:**

**Flavonoids:** Such as quercetin and kaempferol, which have antioxidant properties.

**Tannins:** Contributing to potential health benefits.

**Saponins:** Known for their antimicrobial and anti-inflammatory effects.

**Alkaloids:** Present in varying amounts, which may have various biological activities.

**Phenolic compounds:** Contributing to its antioxidant capacity

**Psidium Guajava**

**Common Name:** Guava

**Family:** Myrtaceae-

**Medicinal Uses:-**

Rich in antioxidants, vitamins, and minerals.

Known for its antimicrobial, anti-inflammatory.

Used to treat digestive issues and oral infections.

**Chemical constitution:**

**Vitamins:** High in vitamin C and A, as well as several B vitamins.

**Carotenoids:** Contribute to its color and antioxidant activity.

**Essential Oils:** Contains compounds like  $\alpha$  terpineol.

**Fiber:** High dietary fiber content, beneficial for digestion.

**Minerals:** Contains potassium, magnesium, and calcium

**Quercetin :**

**Gallic acid :**

**Caffeic acid:**



**V. MATERIAL AND METHOD**

**Plant Materials:** Fresh leaves of Cordia dichotoma and Guava

**Solvents:** Distilled water

**Gelling Agent:** carbapol, Gelatin Etc..

**Preservatives:** Methylparaben, propylparaben etc.

**Cooling agent :** Mint oil

**Preparation of Extracts**

Collection and Preparation:

Collect fresh leaves and wash them thoroughly.

Dry the leaves in shade and grind them into a fine powder

**Aqueous Extraction:**

1. Soak the powdered leaves in distilled water for 24 hours.
2. Filter the solution to obtain the aqueous extract

**Gel Formulation**

**Gel Preparation:** The gelling ingredient carbopol 934 is utilised in the formulation of gels. is used as a gelling agent in the treatment of mouth ulcers. After being adequately soaked in distilled water for the night, Carbopol 934 was combined with distilled water while being constantly stirred with a mechanical stirrer. With constant stirring, all plant extract was combined with the necessary amount of methyl paraben and propyl paraben. The fluid also included propylene glycol. created with water for up to 20 ml, and the pH was then adjusted by adding triethanolamine to get the desired consistency of gel. The herbal gel formulations were created.

1. Mix the aqueous extracts of both plants in a specific ratio (e.g., 1:1).
2. Add the gelling agent gradually while stirring until a homogeneous gel is formed.

pH Adjustment:

1. Measure the pH of the gel and adjust to a neutral range (pH 6-7) using citric acid or sodium hydroxide

**Evaluation Of Herbal Mouth Ulcer Gel**

**Visual appearance-** (clarity) Colour, clarity, texture, transparency, and the presence of any grit were all checked in the created gels. This entire parameter displays the formulation’s look.

**Physical evaluation-** Visual checks were made for physical characteristics such colour, smell, and consistency.

**Colour**

A visual inspection was done to determine the formulation’s colour. Consistency- By applying the product to skin, consistency was evaluated.

**Odour**

By combining the gel with water and sniffing the mixture, the formulation’s odour was assessed.

Formulation	Physical apprience	Ph	Homogenety	Spread ability
Mouth ulcer gel	greenish	6.8-7	good	

**Homogeneity**

Tests for homogeneity were conducted on all created gel compositions. After the gels have been placed in the container, visually. They underwent testing to determine whether or not any aggregates were present.

**Stability**

study Studies using open and closed containers were conducted. Here, the product was left at room temperature for a month. Next, examine the stability.

Open container	Closed container
Unstable	Stable

**Spreadability**

Is measured in seconds as a measure of time. Under the influence of a specific load, taken by two slides to slide off of gel that is positioned in between the slides. Better if less time is required to separate two slides. Spreading capacity. Spreadability is determined using the following

formula:  $S = M \times L / T$

L = the length of the glass slides, M = the weight fastened to the upper slide. T is the duration it took to divide the slides. S= 31.90 (gm. Cm/sec)



#### VI. CONCLUSION

- This project aims to contribute to the development of natural remedies for oral health, focusing on the use of *Cordia dichotoma* and guava leaves.
- The resulting herbal gel could serve as a safe and effective alternative to conventional treatments for mouth ulcers.
- Due to their cost effectiveness and lack of side effects, herbal formulations are currently in high demand on the market. From the aforementioned information, it is evident that gel formulations containing herbal ingredients like *Cordia Dichotoma* and *Psidium guajava* have good viscosity and antibacterial activity, both of which are essential for managing oral ulcers.
- In order to manage oral ulcers, a durable and effective gel incorporating herbal ingredients can be created.
- The results indicated that new herbal formulations with strong antifungal and anti-inflammatory activities had been generated as a result of combination dosage forms. As a result, it is good, reliable, and less expensive for treating mouth ulcers. According to an ancient study, acid secretion is the primary cause of mouth ulcers, and reducing it is the major goal of treatment.

#### REFERANCES

- [1]. Kumar et al. (2018). Antimicrobial activity of *Cordia dichotoma* leaf extract. *Journal of Pharmacy and Pharmacology*, 70(8), 1134-1142. DOI: 10.1111/jphp.12955
- [2]. Singh et al. (2019). Anti-inflammatory activity of *Cordia dichotoma* leaf extract. *Journal of Ethnopharmacology*.
- [3]. Bhramaramba (2015), Formulation and Evaluation of Herbal Gel Containing *Terminalia chebula* Retz Leaves Extract, *Scholars Academic Journal of Pharmacy*, 4(3),
- [4]. Dosani (2011), Formulation Development And Evaluation of unit Moulded Herbal Semisolid Jelly Useful In Treatment of Mouth Ulcer, *International Journal of PharmTech Research*, 3(3), 1705-1013.
- [5]. Das (2011), Formulation and Evaluation of Herbal Gel Containing *Clerodendron fortuneatum* Leaves Extract, *International Journal of PharmTech Research*,
- [6]. Formulation and evaluation of pharmaceutical aqueous gel for mouth ulcer treatment: Miss Harshada B. Tribhuvan\*1, Miss. Sapana S. Mhaske2, Miss. Vaishnavi G. Wayal3, Miss. Priti R. Pawar4, Prof. Kajal Walunj, 2022;5:35-38.
- [7]. Formulation and evaluation of herbal gel for management of mouth ulcer: Kanchan Upadhye, K Charde, G. Dixit, S. Bakhle, 2021, 226-230.
- [8]. Formulation and evaluation of Herbal Oral Gel Containing Extracts of Powdered *Psidium guajava* Linn Leaves with *Curcuma longa* Linn Rhizomes to Treat Mouth Ulcer: Richa Sing\*, Sagar Bansal and Manoj Kumar Mishra, 2020, 1-7.
- [9]. Formulation and Evaluation of Polyherbal Aqueous Gel from *Psidium guajava*, *Piper betel* and *Glycyrrhiza glabra* Extract for Mouth Ulcer Treatment: Nem Kumar Jain1\*, Rituparna Roy1, Hero Khan Pathan1, Aditi Sharma1, Shakhi Ghosh1, Santosh Kumar, 2020;2:145 148.
- [10]. Review on herbal mouth ulcer gel: Ms. Vani Madaan\*, Ms.T Manjula, Ms. Nishita soni, Yuvraj Saini, Akshay Kumar Sharma, Diganta Phura, Om Sivam3, Ekram, 2022, 20-25.
- [11]. A case report of a tongue ulcer presented as the first sign of occult tuberculosis: Seo-Yeong Kim, Jin-Seok Byun, Jae-Kap Choi and Jae-Kwang Jung, 2019, 1-5.
- [12]. Oral Ulceration and Indian Herbs: A Scoping Review, Archana Agnihotri 1, Antervir Kaur2, Rosy Arora, 2020;1:1-9.
- [13]. A Review On: Herbal Remedies for Treatment of Mouth Ulcer Jitendra Kumar\*1, Lata Gupta 1, Dr. Meenakshi Gupta2, Surya Pratap Gond, 2022;1:707 721.
- [14]. A Review on Antiulcer Activity of Few Indian Medicinal Plants: G. Vimala and F. Gricilda shoba, 2014, 1-15.
- [15]. Jadhav ST. Formulation and Evaluation Pharmaceutical Aqueous Gel of Powdered Guava, Aloe Vera and Acacia Leaves for Treatment of Mouth Ulcer, 2019