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Formulation And Evaluation of Mouth Ulcer Gel from Cressa Cretica.

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 # Abstract:

Nature has been good source of medical agent for thousands of year and an impressive number of modern drugs have been isolated from natural source, many based on their use in traditional medicine. Various medicinal plant has been used for years in daily life to treat disease all over world.

The present study reveals the medicinal values of cressa cretica. The objective this work is to formulate and evaluate a polyherbal mouth ulcer gel purpose for oral care from herbal ingredients. Cressa cretica extract, Gelling agent(carbomer), Humectant (glycerin, honey), Preservative (sodium benzoate), Essential oil (paper mint oil), Soothing agent (aloe gel), pH adjuster (citric acid) then passed through Soxhlet apparatus for extraction of hole dried plant of cressa cretica. And evaluated for its organoleptic and physico-chemical, microscopical characters and chemical evaluation. Then extract is combined with noted herbal ingredient. Thes formulation stimulate Wound healing, antimicrobial activity, Anti-inflammatory effect, and also stimulate synthesis of collagen. The advantage of herbal mouth ulcer gel is their nontoxic nature, reduce the allergic reactions and time-tested usefulness of many ingredients. Thus, in the present work, we found good properties for the oral care and further optimization studies are required on this study to find the useful benefits of oral care on human use as cosmetic product.

Key word:

Cressa cretica, Ulcer gel, Herbal gel, Wound healing.

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 # Introduction:

Herbal medicine is used by up to 80% of the population in developing countries. Cressa cretica L. is a popular halophytic plant and is used in folklore medicine for ailments including diabetes, ulcers, asthma, anthelmintic, stomachic, tonic and aphrodisiac purposes, enriches the blood, and is useful in constipation, leprosy, and urinary discharges. Many traditional medicines in use are derived from medicinal plants, minerals and organic matter. A number of medicinal plants, traditionally used for over 1000 years named Ramayana are present in herbal preparations of Indian traditional health care systems.

C. cretica L., belonging to the family Convolvulaceae, is a perennial plant with a lifecycle that continues in the summer period when the salt marsh area drains. *C. cretica* is a thermocosmopolitan heliophilous species. *C. cretica* usually grows in sandy or muddy saline habitats along the sea coast along with the species *Suaeda maritima, Salicornia europaea, Salsola soda, Limonium vulgate* subsp. *Serotinum*, and *Crypsis aculeate*. Variation in *Cressa* has been handled in two ways: extreme lumping into the single species *C. cretica*, or extreme splitting of every morphological variant into 19 species. Those in the New World represent *C. nudicaulis* and *C. truxillensis*. The two in the Old World, however, are still being placed in a single species, *C. cretica*. Old World plants are considered one species even though those in Europe, Africa, and Asia are morphologically and geographically distinct from those in Australia. In this article, a comprehensive account of morphology, phytochemistry, ehthnomedicinal uses, and pharmacological activities are included in view of many recent findings of the importance on this plant.[i]

c. cretica is a widely grown halophytic plant, also known in Arabic as “Molleih” or “Nadewa” The plant, commonly found in coastal areas, is a small erect dwarf shrub, which is remarkably salt tolerant. Ethnobatanical studies have reported that c. cretica has a stomachic, anthelmic and tonic and in useful in constipation leprosy, asthma, urinary discharges, and in the treatement of

diabetes and general debility. The plant is also known as antibailout and anti-tubercular and as an expectorant.

• Properties of Cressa cretica

1. Anti-inflammatory: May help reduce inflammation and pain.

2. Antimicrobial: May help prevent infection and promote healing.

3. Wound healing: May help accelerate wound closure and tissue r

4. Antioxidant: May help protect against oxidative stress and cell damage.

5.Cytoprotective: May help protect cells from damage and promote overall health.

6. Anti-Ulcer: May help reduce the severity and duration of ulcers.

7.Antibacterial and Antifungal: Some studies suggest it has these properties.

8.Antitussive: Helps reduce coughs.

9.Expectorant and Anti-bilious: Used to relieve coughs and help with bile-related issues.

10Stomachic: Aids in digestion and stomach comfort.

11.Anthelmintic: Helps expel intestinal parasites.

12.Tonic: Strengthens the body and improves overall well-being.

 # General introduction of mouth Ulcer:

Oral/mouth ulcers are painful lesions that are open sores or canker sores. Gum, lip, inner cheek, and palate ulcers can develop in the mouth. A mouth ulcer is the loss or erosion of the mucosal membrane, the fragile tissue that lines the mouth. Keep in mind that mouth sores are distinct from cold sores, which are brought on by a virus that manifests itself in the lips.[ii]

Common symptoms include discomfort, a burning feeling, and/or dens. They can appear anywhere in the oral cavity, but if they do so in the moveable area, they could be uncomfortable. An ulcer that develops on the mucous membrane of the oral cavity is known as a mouth ulcer, also known as an oral ulcer. Also caused by Nutritional deficiencies, such as iron deficiency, vitamin deficiencies, particularly B12 and C, poor dental hygiene, infections, stress, in digestion, mechanical damage, food allergies, hormonal imbalance, skin conditions, etc. are common causes of mouth ulcers. Mouth ulcer softens referred to as aphthous ulcers, might hurt when drinking, eating, or cleaning your teeth.

 # Factors responsible for the mouth ulcers

Toothpastes and mouthwashes that contain Sodium lauryl sulfate

Emotional stress / Psychic stress

Hormonal changes

Nutritional deficiencies

Mechanical trauma viral

benefits of mouth ulcer gels:

Pain Relief:

Many gels contain ingredients like lidocaine or benzocaine that provide a numbing effect, reducing pain and making it easier to eat and drink.

Faster Healing:

Gels with ingredients like hyaluronic acid or choline salicylate can help reduce inflammation and promote tissue repair, accelerating the healing process.

Antiseptic Protection:

Some gels contain antiseptics that help prevent infection and maintain oral hygiene.

Antiseptic Protection

Some gels contain antiseptics that help prevent infection and maintain oral hygiene.

 # Plant Profile:[iii]

1.SCIENTIFIC NAME: ***Cressa cretica L.***

Common name: Rudravanti.

2.CLASSIFICATION:

Kingdom: Plantae

Order: Solanales

Family: Convolvulaceae

Genus: Cressa

Species: Cressa cretica

3. CHEMICAL COMPOSITION:

Contains alkaloids, flavonoids, glycosides, tannins, triterpenoids, and sterols

4. PHARMACOLOGICAL ACTIVITY:

Antimicrobial and antioxidant effects.

Hepatoprotective and anticancer properties.
Anti-inflammatory and antipyretic activity.

5.DESCRIPTION[iii]:

Small, perennial, woody-based herb or undershrub

Stems are branched, prostrate or ascending

Leaves are sessile, oblong-lanceolate, and slightly hairy

Flowers are small, white to pale pink

Fruits are capsules containing 2–4 seeds

Formulation of mouth ulcer gel:

The purpose of formulating a mouth ulcer gel using *Cressa cretica* extract is to develop a safe, effective, and herbal-based topical treatment for oral ulcers. Mouth ulcers, also known as aphthous ulcers, are painful lesions that affect the mucous membrane inside the oral cavity. They can cause discomfort while eating, drinking, or speaking and are often recurrent in nature.

Formulation of gel required following ingredient:

- Cressa cretica extract dry powder form.
- Carbomer 934
- Glycerin
- Sodium benzoate
- Peppermint oil
- Aloe vera gel
-

 # Methodology[iv]:

1. Collection and Authentication of Plant Material

The whole plant of Cressa cretica L. was collected from [Rural area from Kolpewadi] during [winter season/January].

The plant was authenticated by a qualified botanist at [S.S.G.M. College]

2. Preparation of Extract

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a. Drying and Powdering: The collected plant material was washed, shade-dried for 5–6 days, and pulverized using a mechanical grinder. The coarse powder was sieved through mesh.

b. Extraction Process: Solvent: Hydroalcoholic solvent (ethanol: water in 70:30 ratio).

Method: Soxhlet extraction for 6–8 hours.

3. Formulation of Mouth Ulcer Gel

Ingredients and Functions:

Cressa cretica extract	Active herbal ingredient
Carbomer 934	Gelling agent
Glycerin	Humectant and moisturizer
Peppermint oil	Flavouring agent
Sodium benzoate	pH adjuster
Distilled water	Vehicle.

Procedure:[v]

Soak Carbomer 934 in distilled water overnight for proper hydration.

↓

Mix glycerin, propylene glycol, and methyl paraben in a separate container.

↓

Dissolve the required amount of Cressa cretica extract in the above mixture.

↓

Add the extract mixture to the hydrated Carbopol base with gentle stirring.

↓

Adjust the pH of the formulation using triethanolamine to reach ~6.5–7.0 (suitable for oral mucosa).

FORMULATION:

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Wet Carbomer 934 in distilled water overnight for proper hydration.

Mix glycerin, propylene glycol, and methyl paraben in a separate container.

Dissolve the required amount of Cressa cretica extract in the above mixture.

Add the extract mixture to the hydrated Carbomer 934 base with gentle stirring.

Adjust the pH of the formulation using triethanolamine to reach 6.5–7.0 (suitable for oral mucosa).

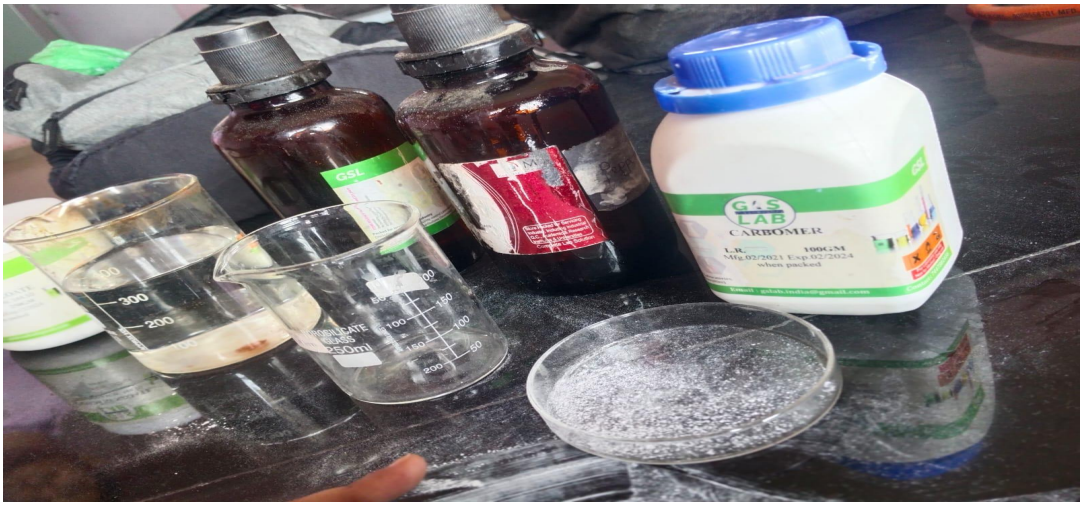

Fig. 2 Ingredient used in mouth ulcer gel.

EVALUATION:

Method of Evaluation:

Methods

1. In vitro testing: Laboratory tests for antimicrobial efficacy and cytotoxicity**.**

2. In vivo testing: Clinical trials to assess efficacy and safety in humans**.**

3.Other method: physiochemical testing, morphological evaluation, phytochemical evaluation, stability test, irritancy test.

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1. Morphological Evaluation:

Sr no.	Parameter	Observation
1.	Colour	Pale greenish
2.	Odour	Pleasant
3.	Appearance	Smooth
4.	Texture	Fine
5.	Smoothness	Smooth

2. Phytochemical Evaluation:

Sr.no	Test	Observation	Inference
1.	Dragendroff's test	Reddish-brown colour	Positive (Alkaloids)
2.	Wagner test	Brown colour	Positive (Alkaloids)
3.	Hangers test	Yellow colour	Positive (Alkaloids)
4.	Tannin test (ferric chloride)	Bluish black colour	Positive (Tannin)
5.	Flavonoid test (Shinoda test)	Red colour	Positive (Flavonoids)
6.	Mayers test	Creamy colour	Positive (Alkaloids)

Fig.1 Phytoconstituent observation of cressa cretica.

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3. Stability testing:

Sr no.	Parameter	Room temperature	40 degree C
1.	Colour	No change	No change
2.	Odour	No change	No change
3.	Ph	6.1-7.0	6.2-7.3
4.	Texture	Fine	Fine
5.	Smoothness	Smooth	Smooth/ grassy

4. Irritancy Test-

Sr.no	Parameter	Observation
1.	Irritation	No
2.	Redness	No
3.	Swelling	No

Result:

formulation the stable and effective mouth ulcer gel was successfully formulated using cressa cretica extract and another excipient.

According to evaluation parameter demonstrated potential wound healing, anti-inflammatory and antimicrobial properties.

The gel demonstrated potential wound healing, anti-inflammatory

Conclusion:

The Cressa cretica mouth ulcer gel formulation:

The formulation and evaluation of the mouth ulcer gel containing Cressa cretica extract suggest its potential as a therapeutic agent for managing mouth ulcers. The gel exhibited favorable physicochemical properties and the inherent antimicrobial and potential anti-inflammatory properties of Cressa cretica could contribute to ulcer healing and prevention of secondary infections. Further in-vivo studies and clinical trials would be necessary to confirm its efficacy and safety in treating mouth ulcers in humans.

1. Showed promising therapeutic efficacy potential treatment for mouth ulcers.
2. Demonstrated stability and safety suitable for oral use.

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