

# Formulation and Evaluation of Antiulcer Cream from the Leaves Extract of Jasminum [Jasmine Leaves] and Its Comparative Study with Marketed Product

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**Abstract -** Mouth ulcers are very frequent condition observed globally, it can be seen due to various reasons. Mouth ulcers also known as canker sores- are normally small, painful lesions that develop in mouth and they can make eating, drinking, and talking uncomfortable. The world health organization has estimated that 75% of the earth and 6 million inhabitants rely only upon traditional medicine. For their primary health care need. Major part of the treatment involves usages of plant extract as it is. The use of plant-based medication is gradually becoming popular through the world. The objective of present article represents investigation and formulation and evaluation of herbal gel for mouth ulcers using different ingredients like plant extract, different types of preservative, and gelling agents. In this particular study we have been used Jasminum leaves extract, the phytochemicals present in Jasminum are alkaloids, coumarins, flavonoids, tannins, terpenoids, glycosides, essential oils saponins. Jasminum leaves shows potent antimicrobial, antifungal, antioxidant, antifertility, anti-inflammatory, antiseptic, astringent and various dermatological effects which can helps to cure mouth ulcers in very short period of time. In the traditional use of Jasminum leaves people were used to chew the plant leaves directly to treat mouth ulcers. In the present study we have evaluated our product using different parameter like ph, Spreadability, viscosity, appearance, stability, extrudability, gelling strength, antifungal and antibacterial activity. The antifungal and antibacterial study of formulation revealed excellent efficacy against different fungi and bacteria. And it is safe to use.

**Keywords:** Jasminin, antimicrobial, antiseptic, E. coli, lactobacilli, antiulcer-gel formulation.

## I. INTRODUCTION

Gel is wellknown type of dosage form which is easy to formulate and evaluate. Gels are mainly coming under the semi-solid formulations consist liquid phase, which has been made thick using different components. Topical gel preparations are use for skin application also called percutaneous penetration of medicament or oral action to certain mucosal surface. mouth ulcers are small pimple or sores an abrasion that develops in inner area to mouth. We can also define mouth ulcers as canker sores or aphthous ulcer the breaks are formed in the inner mucous membrane, leads to white or yellow depression in mouth. There are number of causes of mouth ulcers like accidentally biting

the inside of your cheek, injury from tooth brush, constant rubbing against misaligned, food allergies, hormonal change, vitamin deficiency, bacterial infection. The diagnosis of oral ulcer lesions might be quite challenging. oral ulcerative lesions were classified in to three major groups as acute, chronic and recurrent ulcer. The introducing symptoms are usually redness, burning sensation and pain, it can present in any part of the oral cavity.

The market base gel consists different types of synthetic and semisynthetic active agents which have many adverse effects like staining on the teeth, irritation, burning sensation because they contain high degree of alcohol and other organic compounds. The aim of these study to use herbal powder of jasmine leaves in the therapy of mouth ulcer in pharmaceutical gel. jasmine is botanically known as jasmine officinale or Jasminin and belongs to the olive family of Oleaceae. this plant is clinging plant. The branches are striped and leaves are upward facing and uneven. Jasmine leaves show analgesic, antidepressant, antiseptic, expectorant, sedative, stomachic, diuretic, astringent, stimulating, anthelmintic, antioxidantizing, anti-inflammatory property.

The leaf of plant present ascorbic acid, anthranilic acid and its glucoside, indoloxigenase, alkaloid, salicylic acid. The leaves of plant contain main chemical called Jasminin. The oil contains benzyl acetate, methyl ethynylate and iliquil. It cures kapha and pitta and different disorders. Medicinal plant has valuable part in both medicinal and economical. now days herbal medicine uses are increased and their safety, quality and efficacy also increased. Herbal medicines illustrate greater results as compare to other medicinal like allopathic medicine and herbal medicines avoiding typical side effects and gives better results to patients. In the present situation people are targeting on herbal medicine and using different natural products to cure and prevent disease. according to Indian culture different types of medicinal plant is available, Indian culture offer different herbal medicine to world to cure and prevent different disease.

**II. MATERIAL AND METHODS**

The leaves of Jasminum plant were collected from the local area of Paithan, Maharashtra, India in the month of May 2021.

**CHEMICALS:**

Ethanol, methanol, methyl paraben, propyl paraben, propylene glycol 400, triethanolamine, distilled water, Carbopol 940. All above mentioned ingredients were taken from laboratory (Shreeyash institute of pharmaceutical education and research, Aurangabad).

**EQUIPEMENTS:**

Weighing balance, pH meter, magnetic stirrer, electric oven, water bath, viscometer, thermometer, conical flask, mechanical grinder, Soxhlet apparatus, beaker, tripod stand, whatsmann filter paper.

The aim of study is to prepare and evaluate the formulation of herbal antiulcer mouth gel containing powder of Jasminum leaves extract to treat mouth ulcer.

**PREPARATION OF PLANT EXTRACTS:**

- a) The leaves of Jasminum were collected and washed with tap water (removes all dust particles). Keep it on clean paper and let it dry under room temperature for 21-30 days.
- b) Make a coarse powder of dried leaves with the help of mechanical grinder.
- c) Passed the coarse powder through 40 number mesh size.
- d) The powder was then subjected to extraction by Soxhlet extraction using methanol.
- e) After 24hrs mixture were filtered out using simple filtration method and collected in beaker. To get the extract the solvent was removed from the filtrate.
- f) Keep it in oven at 50°C for 5 minutes (to reduced extra solvent and pressure).

**PREPARATION OF HERBAL GEL:**

- a) Take a beaker, add 15ml of distilled water and Carbopol 940 into it.
- b) Stir it with help of magnetic stirrer for 25-30 minutes and keep it aside for 30 minutes.
- c) Take another beaker, add 5ml of distilled, small quantity of methyl paraben and propyl paraben to it. Keep the beaker in water bath for heating for 10-15 minutes.
- d) Cool the solution, after that add propylene glycol 400.

- e) Add the Jasminum leaves extract (which was prepared) into this solution. Mixed it with Carbopol 940 gel with continuous stirring.
- f) Makeup volume by adding distilled water up to 30 ml and add triethanolamine drop wise to the formulation.
- g) Adjust the pH as mouth pH (6.5-7).
- h) Same method was done for preparation of control sample without adding any extract.

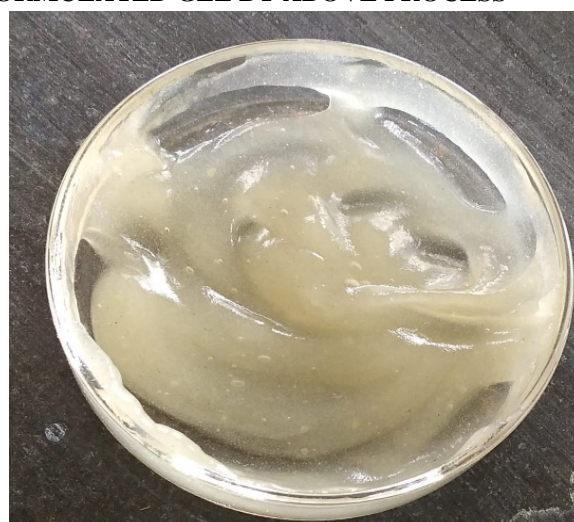
**FORMULATION TABLE:**

The method describes above and the formulae were tabulated in table no 1. Along with the control sample gel were prepared by addition of required quantity of Jasminum leaves extract to prepared 1%,2% and mixed mouth ulcer gel respectively.

**TABLE NO 1:** composition of various gel formulations.

Ingredients	Quantity in ml or gm			
	F1	F2	F3	F4
	-1%	-2%	-1%	-2%
Jasminum leaves extract	0.3	0.6	-	-
Carbopol 940(1%)	0.3	0.3	0.3	0.3
Methyl paraben (0.2%)	0.06	0.06	0.06	0.06
Propyl paraben (0.1%)	0.3	0.3	0.3	0.3
Propylene glycol 400 (5%)	1.5	1.5	1.5	1.5
Triethanolamine (1.2%)	0.36	0.36	0.36	0.36
Glycerin (1.5%)	0.45	0.45	0.45	0.45
Distilled water	Up to 30 ml	Up to 30 ml	Up to 30 ml	Up to 30 ml

**FORMULATED GEL BY ABOVE PROCESS**



### III. EVALUATION PARAMETERS

#### Physical parameters

Physical parameters mainly include color, Odour, consistency. It was checked visually.

**Color:** the color of formulation was determined by visual inspection.

**Consistency:** consistency of the formulation was checked by its application on outer surface of the skin.

**Odour:** by mixing the gel with water and the smell was observed.

**Percentage yield:** weigh the empty container in which the gel formulation was filled for the storage. The again weight of that container with gel formulation was note, to obtain the practical yield subtract the weight of empty container with the filled container of gel formulation. In this way we had calculate the percentage yield of the product.

$$\text{Percentage yield} = \left[ \frac{\text{practical yield}}{\text{theoretical yield}} \right] \times 100$$

**Ph measurement:** ph of the formulation is determined by using digital ph meter. We had measured 2 gm of gel and dissolve into 20 ml distilled water and keep aside for 2 hr. the the measurement of ph is performed by dipping the glass electrode completely into the gel system three times and average values are noted.

**Homogeneity:** all prepared gel formulation were examined for homogeneity by visual inspection after the gel have been settle into the particular container. It was observed that the gel are presence and its appearance to form aggregates.

**Viscosity:** Brookfield viscometer was used to determine the viscosity of the formulation with spindle number 1 at 25dc the gel was rotated at speed 0.3, 0.6 and 1.5 rotations per minutes and each speed the corresponding dial reading was noted.

**Spreadability:** Spreadability was determine by spreading that gel on the hand surface.

**Extrudability:** formulated gel was packed in standard capped collapsible aluminium tubes and seal by crimping to the end. The amount of extruded gel was collected and weigh, extrudability was determined by measuring the percentage of extruding gel.

**Clarity:** clarity was determined by visual inspection.

**Anti-microbial activity:** anti-microbial activity is performed by well diffusion method and zone of inhibition was calculated in the anti-microbial study we have consider some bacteria and some fungal species

**Anti-fungal activity:** antifungal activity was performed by using two fungal species that are aspergillus Niger and candida albicans

**Anti-bacterial activity:** in the antibacterial activity the two bacterial species are consider that are Escherichia coli and staphylococcus aureus

### IV. OBSERVATIONS

#### Physical evaluation

**Table 2:** physical evaluation of gel formulations

Formulation	Color	consistency	Odour
F 1	Light green	Good	characteristic
F2	Light green	Good	Characteristic
F3	Light green	Good	Characteristic
F4	Light green	Good	Characteristic

#### Percentage yield

**Table 3:** percentage yield of the formulation

Formulations	Percentage yield %
F1	92.12
F2	94.43
F3	93.55
F4	95.55

#### pH

**Table 3:** ph of gel formulation

Formulation	Ph
F1	6.7
F2	6.9
F3	7.2
F4	7.0

#### Homogeneity and Spreadability

**Table4:** homogeneity of gel formulation

Formulation	Homogeneity / Spreadability
F1	Good
F2	Good
F3	Good
F4	Good

#### Viscosity

**Table no 5:** viscosity of gel formulation

Formulation	Viscosity
F1	4500

F2	4300
F3	4600
F4	4200

**Antifungal study**

**Table no6:** zone of inhibition diameter in mm

Formulation	Diameter of zone of inhibition aspergillus niger
Formulated gel	19.5mm
Marketed preparation	20.1mm
Jasminum leaves extract	21.2mm

**Photos of zone of inhibition for aspergillus niger and leaves extract**

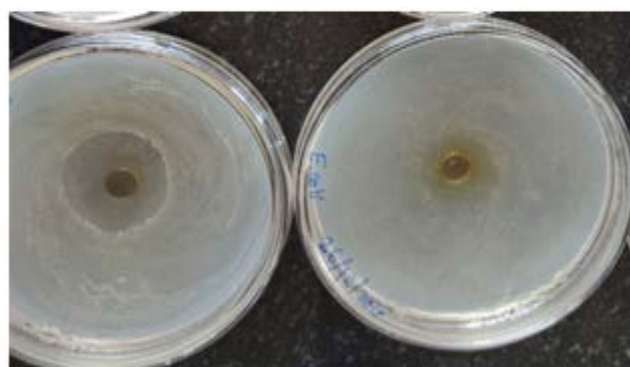


**Antibacterial study**

**Table no7:** zone of inhibition diameter in mm

Formulation	Diameter of zone of inhibition[ e coli ]
Formulated gel	22.5mm
Marketed preparation	18mm
Jasminum leaves extract	20mm

**PhotosZone of inhibition of e coli and Jasminum leaves extract**



**Stability study:**

**Table no7:** stability study for 3 months

Stability study was performed for three months and there is no change in any physical parameter was observed. Gel was stored in close tight container at room tempature, the formulated gel is stable for three- four months.

**Evaluation parameter for stability study**

	Month-1	Month-2	Month-3
Color	Light green	Light green	Light green
Ph	6.8	6.8	6.8
Viscosity	4600	4500	4500
Spreadability	Good	Good	Good
Appearance	Same to the initial formulation	Sameto the initial formulation	Same to the initial formulation

**V. RESULT AND DISCUSSION**

THE GEL FORMULATION WAS PREPARED AND EVALUATED ON THE BASIS OF EVALUATION PARAMETERS LIKE PHYSICAL (Color, Consistency, Odor) AND CHEMICAL (Percentage yield, Ph measurement, Homogeneity, Viscosity, Spread ability, Extrudability, Clarity, Anti-fungal activity, Anti-bacterial activity).

Stability study shows that, in month 3 the gel was as same as same to the initial formulation (month 1) along with its parameters (color, Ph, viscosity, Spreadability, appearance). It was observed that if the gel was kept in the close tight container at room temperature it remains stable for 3 months.

**VI. CONCLUSION**

From the above research we have conclude that the developed oral formulation has good antibacterial and antifungal activity so it is safe for use and stable and good to use for mouth ulcer the data presented In this study an demonstrated that the developed gel formulation possess significant and therapeutically efficacious suitable vehicle for drug delivery in low cost but definitely with high therapeutical value. it is better and significant way to prepare medicine from herbal than synthetic. Along with that we have also done a comparative study of this gel with marketed preparation and our formulation show equal results same as marketed preparation.

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