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Formulation and Evaluation Herbal Gel from Psidium Guajava and Jasminium Officinali for Mouth Ulcer Treatment

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Abstract: ***India has long employed traditional or herbal medicine to diagnose, treat, and prevent illness. The study's objective was to create and assess a herbal gel that contained extract from jasmine officinale and Psidium guajava for the treatment of mouth ulcers. Herbal gel made using powdered extracts of Psidium guajava and Jasminum officinale at varying concentrations. Psidium guajava has high antifungal and antibacterial action and is used to treat a number of illnesses, including diabetes mellitus, diarrhea, rheumatism, wounds in the throat, and coughs. Tannins, flavonoids, triterpene, quercetin, pentacycline, triterpenoids, gujanoic acid, saponins, carotenoids, lectin, ellugic acid, sitosterol, and oleanolic acid are found in Psidium guajava leaves, whereas the properties of Jasmine Officinale include analgesic, antioxidant, anti-inflammatory, stomachic, astringent, stimulating, and sedative effects.***

Alkaloids, tannins, terpenoids, glycosides, steroids, essential oil, and saponin are among its constituents.Guava and jasmine leaf extracts, Carbopol 934, propylene glycol, propyl paraben, methyl paraben, triethanolamine, and distilled water were used to make the herbal gel formulation. To keep the pH between 7 and7.5, triethanolamine was added. The evaluation's viscosity, homogeneity, PH, and spreadability parameters. The gel strength and extruadability were ascertained.The results indicate that all assessment parameters found to be acceptable with the normal range were discovered in the optimized herbal gel formulation containing extracts from guava and jasmine leaves. For the treatment of oral ulcers, the herbal formulation proved to be more stable, safe, and successful than the synthetic formulation.

Keywords: Herbal Gel, Psidium Guajava, Jasminum Officinale, Leaves Extract, Mouth Ulcer.

I. INTRODUCTION

The semi-solid substance is called a gel. Gel formulations are used to apply localized or topical medication penetration to specific mucosal regions.

Due to the high alcohol content and the presence of some chemical compounds, gel active agents that are synthetic or semi-synthetic produce burning sensations and various forms of tooth sensitivity.Gels and jellies are made out of a small amount of solid ingredients that resemble liquid ingredients. Herbal gel is becoming more and more popular for treating and preventing mouth ulcers, but synthetic gel could include several dangerous chemicals that have serious negative effects. Due to its safety as goods or homemade formulas, herbal cosmetics are becoming more and more popular around the world. Gel can prevent gastrointestinal pH-related problems with medicine absorption in the gastrointestinal tract. A more drastic strategy for making herbal gel more widely used would be to alter customer expectations by placing more of a focus on efficacy and safety. This research focuses on the development, content, and assessment techniques of herbal mouth ulcer gel. Aphthous ulcers are another name for mouth ulcers. An ulcer (aphthous) that develops on the oral cavity's mucous membrane. Mouth ulcers are quite frequent, arising from a variety of diseases and causes, but typically have no significant underlying cause. It is not always indicative of oral cancer if a mouth ulcer heals quickly.

A. Symptoms of Mouth Ulcer

1) Edema surrounding the ulcer.
2) More pain when you wash your teeth.
3) Pain that gets worse when one eats spicy food.
4) Pain causing difficulty when brushing or biting teeth.

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Fig 1. Mouth ulcer

B. What Causes Mouth Ulcers?

It is unknown exactly what causes mouth ulcers. However, a number of things can lead to the formation of these sores, including: Minor tissue damage resulting from dental procedures, such filling a cavity.

1) Biting your tongue or cheek by accident.
2) Allergic response to specific microorganisms.
3) Using retainers or braces for orthodontics.
4) Deficits in vitamins.
5) Using toothpaste that is rough or harsh.
6) Consuming an abundance of acidic foods, such strawberries, pineapples, and oranges.
7) variations in hormones during menstruation.
8) Tension.
9) Insufficient sleep.

C. Advantages of Mouth Ulcer Gel

1) *Pain Respite:* Anesthetic compounds, which are frequently found in mouth ulcer gels, offer momentary respite from the pain and suffering that come with ulcers.
2) *Promotes Healing:* Certain gels have components that could hasten the healing of mouth ulcers.
3) *Topical Application:* By applying gels directly to the afflicted region, the ulcer is targeted without having an impact on the body as a whole.

D. Disadvantages of Mouth Ulcer Gel

1) *Temporary Relief:* Gels only provide short-term relief; they might not deal with the mouth ulcer's underlying cause.
2) *Texture and Taste:* The gel's taste and texture may not be to everyone's liking, which might make application uncomfortable.
3) *Allergy Reactions:* Some people may be allergic to some of the gel's chemicals, which could cause them more discomfort.
4) *Not Suitable for Extreme Cases:* Professional medical intervention may be required in extreme cases or when ulcers are an indication of an underlying problem.
5) *Short Duration of Action:* The gel's effects are sometimes transient, necessitating repeated applications to provide long-lasting relief.

II. PLANT PROFILE

A. Guava Leaves

Peru, Amrood, and Guava are other names for Psidium Guajava. It is a member of the Myrtaceae family of medicinal plants. The dimensions of guava leaves are 3-5 cm by 7-15 cm. It is used to treat a number of illnesses, including diabetes mellitus, rheumatism, diarrhea, sore throats, and coughs. It also has strong antifungal and antibacterial properties. Tannins, triterpene, flavonoids, quercetin, pentacycline, triterpenoids, gujanoic acid, saponins, carotenoids, lectin, ellugic acid, sitosterol, and oleanolic acid are all present in Psidium Guajava leaves.

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Fig 2. Guava leaves

- Kingdom: Plantae
- Class: Tracheophytes
- Order: Myrtales
- Family: Myrtaceae
- Genus: Psidium
- Species: Psidium Guajava
- Chemical Constituents: Isopropyl alcohol menthol

Uses

- diabetes mellitus,
- diarrhea,
- rheumatism.

B. Jasmine Leaves

Another name for Jasminum Officinale is Chameli, Jai. The Medicinal Plant of the Oleaceae Family. The ovate leaves are 4–12.5 cm in length and 2–7.5 cm in width. Jasmine Officinale has astringent, stimulant, sedative, stomachic, anti-oxidant, and anti-inflammatory properties. Alkaloids, tannins, terpenoids, glycosides, steroids, essential oil, and saponin are all contained in it. Jasmine is used to treat skin conditions and wound healing.

Fig 3.Jasmine leaves

- Kingdom: Plantae
- Class: Tracheophytes
- Order: Lamiales
- Family: Oleaceae
- Genus: Jasminum
- Species: J. officinale
- C.C: benzyl alcohol, benzyl acetate

Uses

- Liver disease, pain due to liver scarring and abdominal pain due to severe diarrhea.
- It is also used to prevent stroke, to cause relaxation, to heighten sexual desire and in cancer treatment.

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III. MATERIAL AND METHOD

All chemicals used for different experimental studies such as chloroform, conc.H2SO4, ammonium hydroxide, methanol, formic acid, acetonitrile, ampicillin, glucose, phenol red, 5,5- dimethyl pyrroline- N-oxide (DMPO), FeSO4, H2O2 were of analytical grade procured from M/s. SDFine, M/s. Qualigens and M/s. SRL, India. Pectin was procured from Purix India Pvt. Ltd., 2,2- diphenyl- 1-picrylhydrazyl (DPPH).

Fig 4 .Guava leaves Powder

A. Preparation of Plant Extract

The leaves of guava and Jasmine were washed under running tap water to remove dust particle and shade dried at room temperature for 3-4 weeks. The dried plant parts were reduced to coarse powder with a mechanical grinder and passed through #40 mesh sieve. The Powered was then subjected to extraction by cold maceration using water, methanol and ethanol to attain their respective extract. Both 15 gm of dried guava and jasmine powdered were macerated in 62 ml of ethanol and water and separate conical flask for 24 hours at room temperature, under occasional shaking. After 24 hours mixture was filtered out using simple filtration method and filtrates were collected in separatevessels. To obtain the extract the solvent was removed from the filtrate under reduced pressure by using a rotary vacuum evaporator at 45-50°C.

Fig 5. Extraction of Guava Powder

Fig 6. Extraction of Jasmine Powder

B. Preparation Of Herbal Gel

Take 10ml of distilled water in a beaker and dissolve specified amount of carbopol 934 in it with continuous stirring. Put the beaker aside to swell the carbopol for half hour. In another beaker take 5 ml of distilled water and add required quantity of propyl paraben and methyl paraben to it by heating on water bath. Cool the solution, then add Propylene glycol. Further required quantity of extract was added to the above mixture and this solution was mixed properly to the Carbopol 934 with continuous stirring, finally volume made up to 30 ml by adding remaining distilled water and triethanolamine was added drop wise to the formulations for adjustment of required mouth skin pH (6.5-7) and to obtain the gel required consistency.

C. Formulation Table

The composition of herbal prepared from powered extract of guava and jasmine leaves coded as F1, F2 and F3 is tabulated in table 1.

Table 1: Composition Of Gel

Ingredient	F1	F2	F3
Guava leaves extract	2%	1%	0.5%
Jasmine leaves extract	2%	1%	0.5%
Carbopol 934	2%	2%	2%
Propyl paraben	0.01%	0.01%	0.01%
Methyl paraben	0.0015%	0.0015%	0.0015%
Triethanolamine	q.s + 6.5-7	q.s + 6.5-7	q.s + 6.5-7
Distilled water	Up to 30ml	Up to 30ml	Up to 30ml

D. Evaluation Parameter

1) Physical Appearance

Physical parameter such as color odor and consistency

Color: color of the formulation was checked by visual inspection.

Oduor: The odor of the formulation by olfactory sensation.

Consistency:The consistency of formulation was checked by applying on skin.

2) Measurement of pH

The pH of herbal gel formulations were determined by using digital pH meter. 1 gm of gel was taken and dispersed in 10 ml of distilled water and keep aside for 2 hours.

3) Homogeneity

All developed gel formulations were tested for homogeneity by visual inspection after the gels have been set in to the container. They were tested to check presence and appearance of any aggregate.

4) Extrudability

The gel formulations were filled in standard capped collapsible aluminum tubes and sealed to the end. The Extrudability was determined by pressing of the thumb.

5) Clarity

The clarity of all the three batches was determined by visual inspection.

6) Spread ability

The spread ability was measured by spreading of 0.5 g of the gel on a circle of 2 cm diameter premarket on a glass plate and then a second glass plate was employed. 100gm of weight was permitted to rest on the upper glass plate.

IV. RESULTS AND DISCUSSION

Formulation and evaluation herbal gel was prepared.

A. Observation Table

Evaluation	F1	F2	F3
Physical Appearance	Greenish	Greenish	Greenish
pH	7.1	7.0	7.2
Homogeneity	Good	Good	Good
Extrudability	Good	Good	Good
Spread ability	Good	Good	Good

Table no:2

V. CONCLUSION

The data presented in the study; it was demonstrated that the developed herbal gel formulation possess significant, therapeutically efficacious, suitable vehicle for drug delivery in low cost but definitely with high potential. Developed new herbal gel formation is suitable for mouth ulcers treatment.

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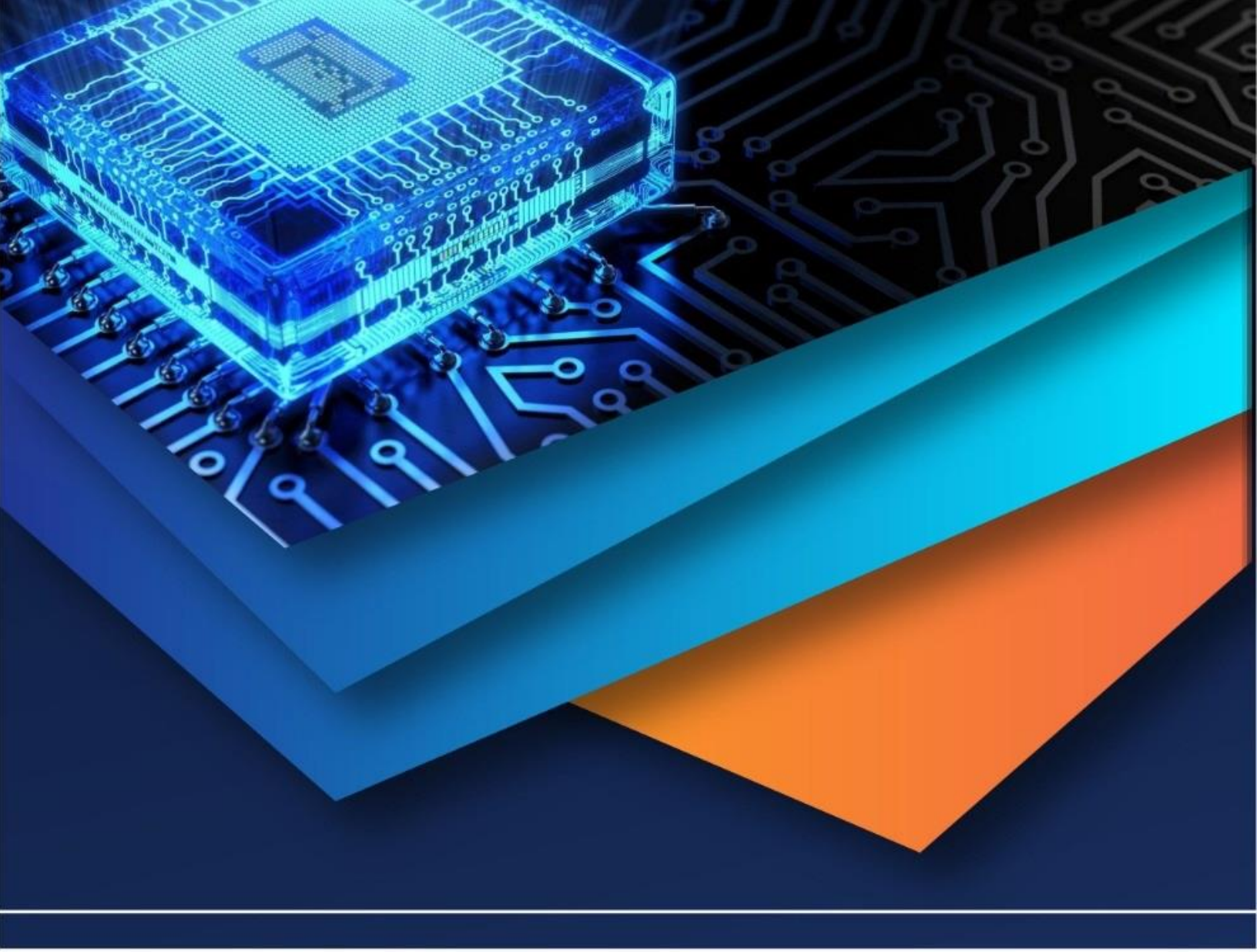

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