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Review Article

A review on *Psidium Guajava* & *Jasminum* for mouth ulcer

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ABSTRACT

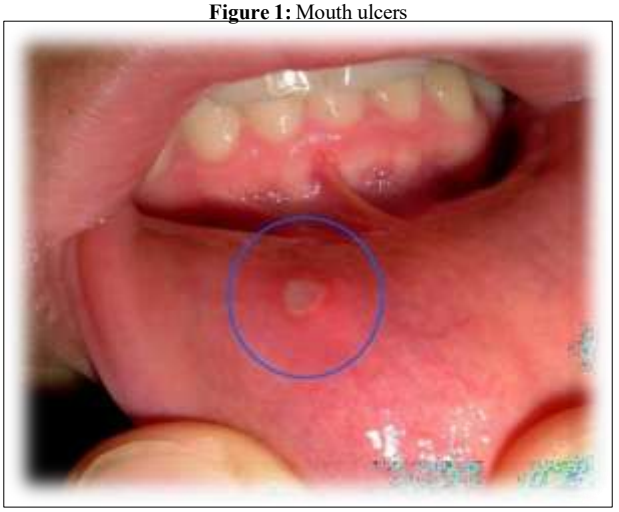
Aphthous ulcers, another name for mouth ulcers, are painful sores that affect the oral cavity's mucous membrane and are frequently brought on by stress, malnutrition, or microbial infections. The ethanolic extract of Psidium guajava (guava) leav es, & Jasmine leaves extract, which are well- known for their strong anti-inflammatory, antibacterial, and wound-healing qualities, will be used in the current study to create and assess a herbal mouth ulcer gel. The guava leaves were pulverized, shade-dried, and extracted using the maceration technique with ethanol. Using peppermint oil as a flavoring and glycerin as a humectant, the extract was added to a carbopol- based gel. Physicochemical characteristics of the produced formulations, including pH, viscosity, spreadability, extrudability, homogeneity, and stability, were assessed. Using the agar well diffusion method, in vitro antibacterial activity was evaluated against Candida albicans and Streptococcus mutans. Excellent spreadability, acceptable pH (6.5–7.0), and high stability were all demonstrated by the optimised formulation. When compared to a commercial formulation, the gel had strong antibacterial action, suggesting that it could be used as a natural remedy for mouth ulcers. According to the study's findings, Psidium guajava leaf extract can be successfully combined to create a herbal mouth ulcer gel that is both stable and effective, with potential therapeutic benefits.

Keywords: Mouth ulcer, *Psidium guajava*, Herbal gel, Antimicrobial activity.

INTRODUCTION

Oral 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. Canker sores, cold sores, leukoplakia (a thick white or grey area), and candidiasis or thrush (a fungal infection) are the most prevalent types of mouth sores. The erosion or loss of some of the fragile tissue lining inside of the mouth in mouth ulcers [1].

Figure 1: Mouth ulcers



Causes of oral ulcer

Microbial disease

Herpetic stomatitis, Chickenpox, Herpes zoster, Hand, foot and mouth disease, Herpangina, Infectious mononucleosis.

Cutaneous disease

Lichen planus, Erythema multiforme, Dermatitis herpetiformis, Linear disease, Chronic ulcerative stomatitis.

Malignant neoplasms

Bold disorder Anaemia, Leukaemia, Neutropenia, Other white cell dyscrasias [2].

Types of oral ulcer

Minor ulcers

These are 2 to 8 mm wide and often go away in 10 to 2 weeks. The discomfort from this ulcer is not severe.

Major ulcers

These are broad, deep, and may have an uneven or elevated border [3].

Topical drug delivery system

Topical drug delivery systems are defined as carrying specific drugs upon contact with and across the skin. The challenge with topical medications is that they cross the skin barrier [6].

Topical drugs include two basic types of products, internal and external. Internal topical preparations for local action on mucous membranes, applied orally, vaginally, or to anorectal tissues. Topical medications are sprayed, or otherwise distributed onto skin tissue to cover the affected area [4].

Advantages of topical drug delivery systems

Avoid primary metabolism.

Easy to use and easy to apply.

Easy to stop medication.

Drugs are selectively delivered to specific sites.

Avoid gastrointestinal intolerance.

Allow the use of drugs with short biological half-lives and narrow therapeutic windows

Better patient compliance.

Self-medication [5].

Challenges of topical drug delivery system

The drug or excipients may cause skin irritation or dermatitis.

Some drugs may not penetrate the skin effectively.

Larger particle size drugs may not be easily absorbed through the skin.

Allergic reactions may occur.

Only drugs that require very low plasma concentrations can be used.

Routes of administration may not be suitable for drugs that cause skin sensitisation [6].

Pharmaceutical gel

Gels are homogenous, semisolid preparations, according to the I.P., that are often made up of solutions or dispersions of one or more medications in appropriate hydrophilic or hydrophobic bases.

According to the U.S.P. definition, a gel isa semisolid system made comprised of a dispersion made up of either big organic molecules or small inorganic particles that are enclosed and contacted by liquid. A "house of cards"-like a three-dimensional structure is created by the inorganic particles [7].

Table 1: Herbs used for the treatment of mouth ulcer

Common name	Botanical name	Part used
Guava	Psidium guajava	Leaves, roots, and fruits
Capsicum	Capsicum annum	Fruit
Noni fruit	Morinda citrifolia	Fruit
Aloe Vera	Aloe barbadensis	Leaves, stems, roots
Papaya	Carica papaya L.	Bark, leaves and fruits
Turmeric	Curcuma longa	Rhizomes and stems
Liquorice	Glycyrrhiza glabra L.	Roots and stolen

Drug profile

Guava leaves

Psidium Guajava is also known as Peru, Amrood, and Guava. It belongs to the family of medicinal plants called Myrtaceae. Guava leaves measure 3-5 cm by 7-15 cm. Diabetes mellitus, rheumatism, diarrhea, sore throats, and coughs are among the conditions it is used to treat. It also possesses potent antibacterial and antifungal qualities [8].

Figure 2: Guava leaves & powder

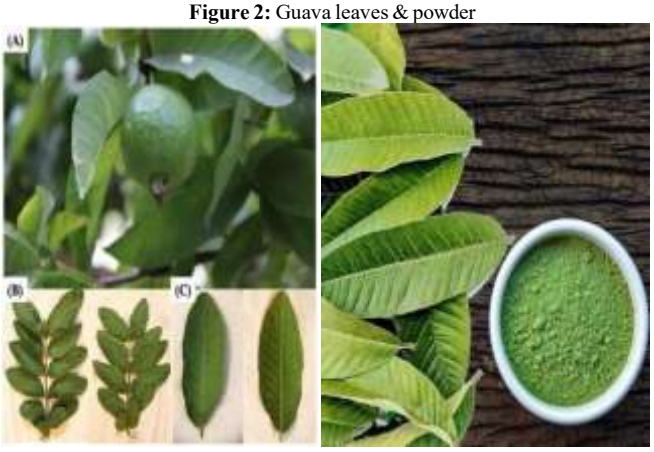


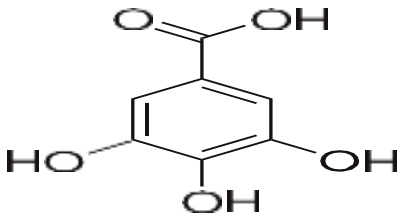
Table 2: Scientific Classification

Character	Description
Scientific name	*Psidium guajava* Linn.
Family	Myrtaceae
Common name	Guava, Amrood (Hindi)
Part used	Leaves

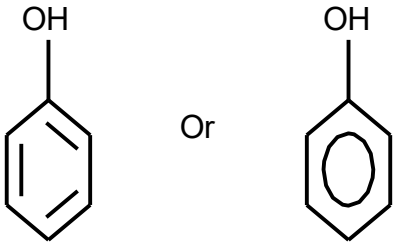
Chemical constituents

Flavonoids (quercetin, guaijaverin), tannins, saponins, terpenoids, carotenoids, and essential oils. [9] These compounds contribute to antimicrobial, anti-inflammatory, and antioxidant properties of the guava leaf.

Gallic Acid



phenolic Compound



Macroscopic features

Size and shape

Leaves arpe simple, opposite, and elliptic to oblong in shape, measuring about 5–15 cm in length and 3–7 cm in width.

Colour

Fresh leaves are bright green on the upper surface and light green beneath; when dried, they turn brownish-green.

Odor

Characteristic, aromatic, pleasant.

Taste

Astringent due to the presence of tannins.

Pharmacological activity

Medicinal plants are considered a reservoir of different types of bioactive chemicals containing varied therapeutic qualities. The extensive area of therapeutic benefits linked with medicinal plants includes anti-inflammatory, antiviral, anticancer, antimalarial, and analgesic capabilities [8, 9].

Jasmine leaves

Jasminum Officinale is also known as Chameli, Jai. The Oleaceae family's medicinal plant. The ovate leaves measure 2–7.5 cm in width and 4–12.5 cm in length. Astringent, stimulant, sedative, stomachic, antioxidant, and anti-inflammatory qualities are all present in jasmine officinale [10, 11].

Figure 4: Jasmine leaves & flowers

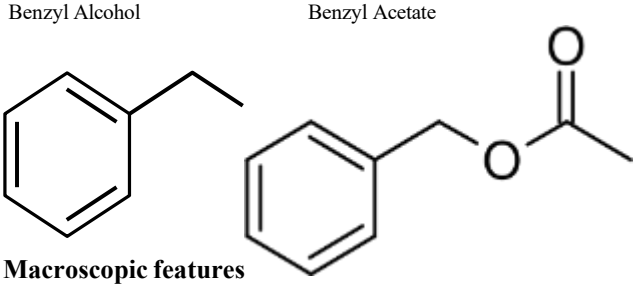
Table 3: Scientific Classification

Parameter	Description
Scientific name	*Jasminum officinale* Linn.
Family	Oleaceae
Common names	Jasmine, Common jasmine, Chameli (Hindi)
Part used	Leaves and flowers (for herbal gel and essential oil formulations)
Habit	Woody, twining shrub

Chemical constituents

Benzyl Alcohol, Benzyl acetate, Linolool, Indol, Benzyl Benzoate, Geroniol

Benzyl Alcohol Benzyl Acetate



Macroscopic features

Shape

Leaflets are ovate to lanceolate, measuring 2–6 cm in length and 1–3 cm in width.

Colour

Bright green on the upper surface and lighter green beneath; when dried, it turns a greenish-brown.

Odour

Pleasant, characteristic jasmine aroma.

Taste

Mild, slightly bitter

Pharmacological activity

This plant belongs to the Oleaceae family, which also includes numerous other significant aromatic and medicinal plants. Analgesic, antidepressant, anti-inflammatory, antiseptic, aphrodisiac, sedative, expectorant, and tonic (uterine) properties are suggested by the historic use of this herb.

Materials and methods

Preparation of the extract of guava leaves

For isolating the extract from Guava leaves, Guava leaves were properly wash and dried them.

Crush the dried guava leaves.

One hundred grams of dried guava leaves were placed in 1.5 ml of ethanol for 48 hours.

Then, after 48 hours, the extracts were filtered using Whatman filter paper [12,13].

Preparation extraction of jasmine leaves

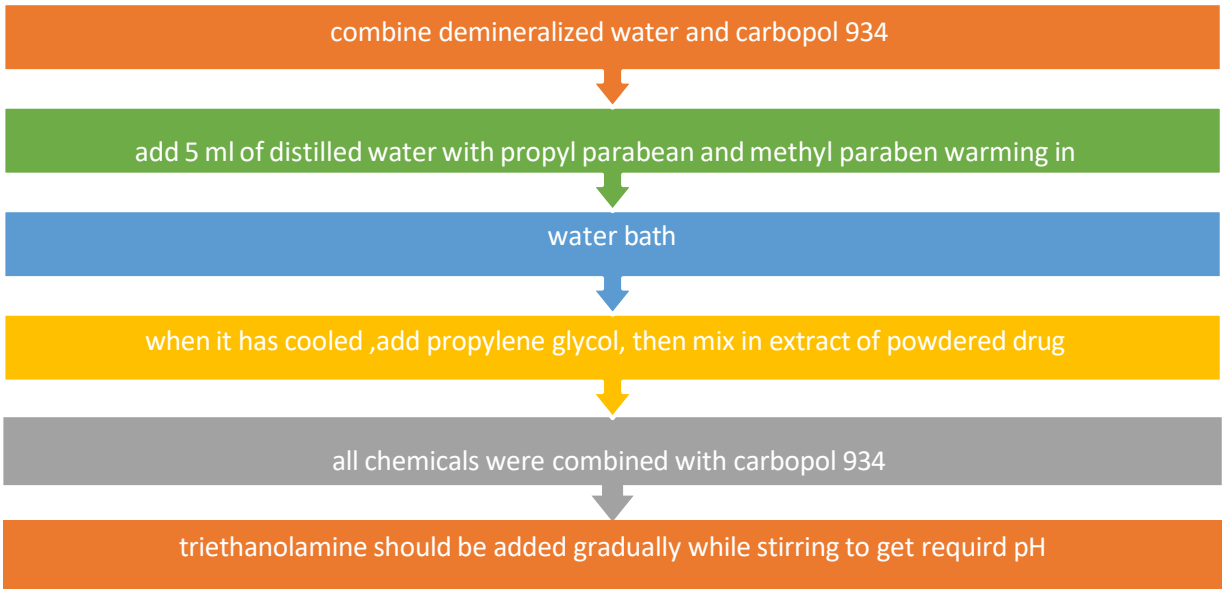
For isolating the extract from jasmine leaves, jasmine leaves were properly wash and dried them.

Crush the dried jasmine leaves.

The 100 gm of dried jasmine leaves placing in 1.5 ml of ethanol for 48 hours.

Then after 48 hours, the extract were filtered using whatman filter paper.

Methods Of Preparation of Simple Herbal Gel [3,14].



Formulation table

Name of Ingredients	Role
Guava leaves	API
Jasmine leaves	API
Carbapol 934	Gelling agent
Methyl paraben	Preservative
Propyl paraben	Preservative
Triethanolamine	pH adjuster neutralizer
Peppermint oil	Flavourant
Distilled water	volume makeup

Evaluation test

Visual appearance

The prepared gels were tested for color, clarity, texture, transparency and presence of any gritty Particles.

Measurement of pH: The pH of herbal gel formulations were determined by using digital pH meter. 1 gm of gel was Taken and disperse din 10 ml of distilled water and keep aside for two hours. The measurement of P H of formulation was carried out in 1 time and the average values are reported. pH of gel formulation was reported.

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 for their presence and appearance of any Aggregates.

Spread ability

Spread ability is expressed in terms of time in seconds taken by two slides to slip off from gel that Is placed in between the slides under the direction of certain load. If the time taken for separation of two slides is less then better the spread ability. Spreadability is calculated by using the Formula: $S = M \times L / T$

Where,M= weight tied to upper slide L = length of glass slides

T = time taken to separate the slides Spreadabilty of gel formulations were reported in T [20].

Viscosity

The viscosity of all the prepared formulations were analysed by the Brookfield's viscometer. 6. Stability study: Stability studies were done with open and close Container. Here, by subjecting the product to room Temperature for 1 month Stability study was reported [16-19].

Future aspects

The future of herbal mouth ulcer gels lies in the development of standardised, evidence-based formulations supported by rigorous scientific validation. Key areas for advancement include [21-24].

Phytochemical standardisation

Establishing quality control parameters for active compounds to ensure consistency, safety, and therapeutic efficacy.

Nano-formulations

Utilisation of nanocarriers (e.g., liposomes, nanoparticles, nanoemulsions) to enhance solubility, penetration, and sustained release of herbal actives.

Clinical validation

Conducting large-scale clinical trials to compare herbal gels with conventional therapies and validate their pharmacological potential.

Biopolymer innovations

Exploration of biodegradable and natural polymers for eco-friendly, biocompatible gel bases.

Synergistic formulations

Combining multiple herbal extracts with complementary mechanisms of action for enhanced therapeutic performance.

Personalised herbal care

Application of pharmacognosy and digital health technologies to design customised herbal oral care products based on patient needs and oral microbiome profiling [25-27].

CONCLUSION

In conclusion, rose oil represents a remarkable natural product with diverse therapeutic, cosmetic, and pharmacological benefits, attributed to its rich composition of bioactive compounds such as geraniol, citronellol, nerol, phenylethanol, and rosmarinic acid. Extensive studies have demonstrated its potent antioxidant, anti-inflammatory, antimicrobial, antidepressant, and neuroprotective activities, validating its traditional and modern medicinal applications. The oil's ability to promote skin health, relieve anxiety, reduce pain, and potentially inhibit cancer cell growth highlights its broad therapeutic potential. Furthermore, its applications extend beyond healthcare into perfumery, aromatherapy, and the cosmetic industry, emphasising its commercial and societal importance. However, the production of rose oil remains challenging due to its labour-intensive extraction process and environmental concerns associated with post-distillation waste. Thus, future research should focus on sustainable extraction methods, efficient utilization of rose biomass, and advanced formulation technologies to enhance its yield, stability, and efficacy. Overall, rose oil stands as a promising, eco-friendly, and multifunctional bioactive agent with immense potential for integration into pharmaceutical and wellness industries, contributing to both human health and environmental sustainability.

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