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Review Article

A Review on Guava Leaf As A Herbal Gel

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ABSTRACT

Herbal gel was prepared by using different concentration of powdered guava leaves and Carbopol 934, propylene glycol as a gel base. Topical gel is designed to be applied to specific mucosal surfaces or skin surfaces for local action and percutaneous absorption of dose forms. Natural remedies like guava leaves extract have shown promising potential in managing such conditions due to their anti-inflammatory and antimicrobial activities. The guava leaves extract was prepared using a maceration method and incorporated into a gel base consisting of Carbopol 934. The present study aims to formulate and evaluate an herbal aqueous gel utilizing guava leaves extract for the antifungal activity. The focus is on developing a safe and effective alternative remedy that can alleviates the discomfort associated with fungal activity without causing adverse side effects.

INTRODUCTION

Gels are mainly semisolid formulations having a liquid phase that has been thickened with some other components. Topical gel preparations are used for the skin application or percutaneous penetration of medicament or local action to certain mucosal surfaces [9]. Gels can be classified based on their structure, composition, and application. Structurally gels can be categorized into two main types [10].

1) Chemical Gels: These gels form through chemical reactions, such as cross linking of Polymer chains. The cross links create a three-dimensional network that traps liquid within giving the gelits characteristic semi-solid consistency [10].

2) Physical Gels: Physical gel forms through physical Interactions such as hydrogen bonding, Van-der Waals forces or electrostatic interactions. These interactions hold the gel's structure together allowing it to maintain its shape while still being deformable [10].

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Application[11]

1. Personal care products
2. Pharmaceuticals
3. Food and beverages
4. Biotechnology and medicine
5. Materials and science
6. Cosmetics

Definition of Guava:

Any of a number of myrtle-family tropical American shrubs or small trees(genus Psidium) in a perticular:A shrubby trees(P.guajava) are commonly grown for their sweet,acidic yellow or pink meat and yellow-skinned fruit.The guava fruit,which is shaped resembles a round to pear.Guava leaves are a rich source of bioactive chemical and numerous kind of macro and micronutrients which encourage health. The use of plant based medications is gaining huge popularity due to better patient compliance and because of the side effects and the adverse effects of synthetic chemicals [12].The present investigation deals with use of herbal powdered Guava Leaves in the treatment of mouth ulcer in pharmaceutical gel. Commonly known as guava, Peru, Ambrud. A biological source is *Psidium guajava* belongings to family *Myrtaceae.* Chemical composition contains Flavonoids, Triterpenoids, Steroids, Carbohydrates, Oils, Lipids, Glycosides, Alkaloids, Tannins and Saponins. Used as Antioxidant, Antibacterial activity, Anti-inflammatory activity, Anticancer activity.[13] Over three fourth of world population depends mainly on the plants and plant derived herbal medicines. 30% of the plant species are used for medicinal purposes. Market for plant derived drugs of whole world may estimate for about Rs.2,00,000 crores. Presently, contribution of India is less than Rs.2000 crores. Export of raw drugs from India has gradually grown by 26% to Rs. 165 crores in 1994-95 from Rs. 130 crores in 1991-92. The yearly production of raw material from medicinal and aromatic plants is worth about Rs. 200 crores. [14]

Benefits of Guava leaves:

- Guava leaves have been shown to reduce cholesterol.
- Guava leaves help people with diabetes.
- Guava leaves promote better digestion.
- Guava leaves for black spots and acne treatment.
- Guava leaves offer benefits against ageing.
- It could promote weight loss.
- Potential anticancer impact.

MATERIAL AND METHODS:

Chemicals: Guava leaves powder, Honey, Clove, Carbopol-934, Methylparaben, Propyl paraben, Triethanolamine, Distilled water.

Guava

Botanical name: Psidium guajava L

Part typically used: Leaves

Color: Green

Chemical constituents: Flavonoids, Triterpinoids, Steroids, Carbohydrates, Oils, Lipids, Glycosides, Alkaloids, Tannins, And Saponins.

Honey

Botanical name: Nectar of flowers

Common name; Shahad, Madh

Part of typical used: Honey Comb

Color: Dark brown

Chemical constituents: Glucose, Maltose, Gum, Acetic acid, Dextrin.

Clove

Botanical name*: Syzygium aromaticum*

Common name: Laung

Part of typical used: Buds

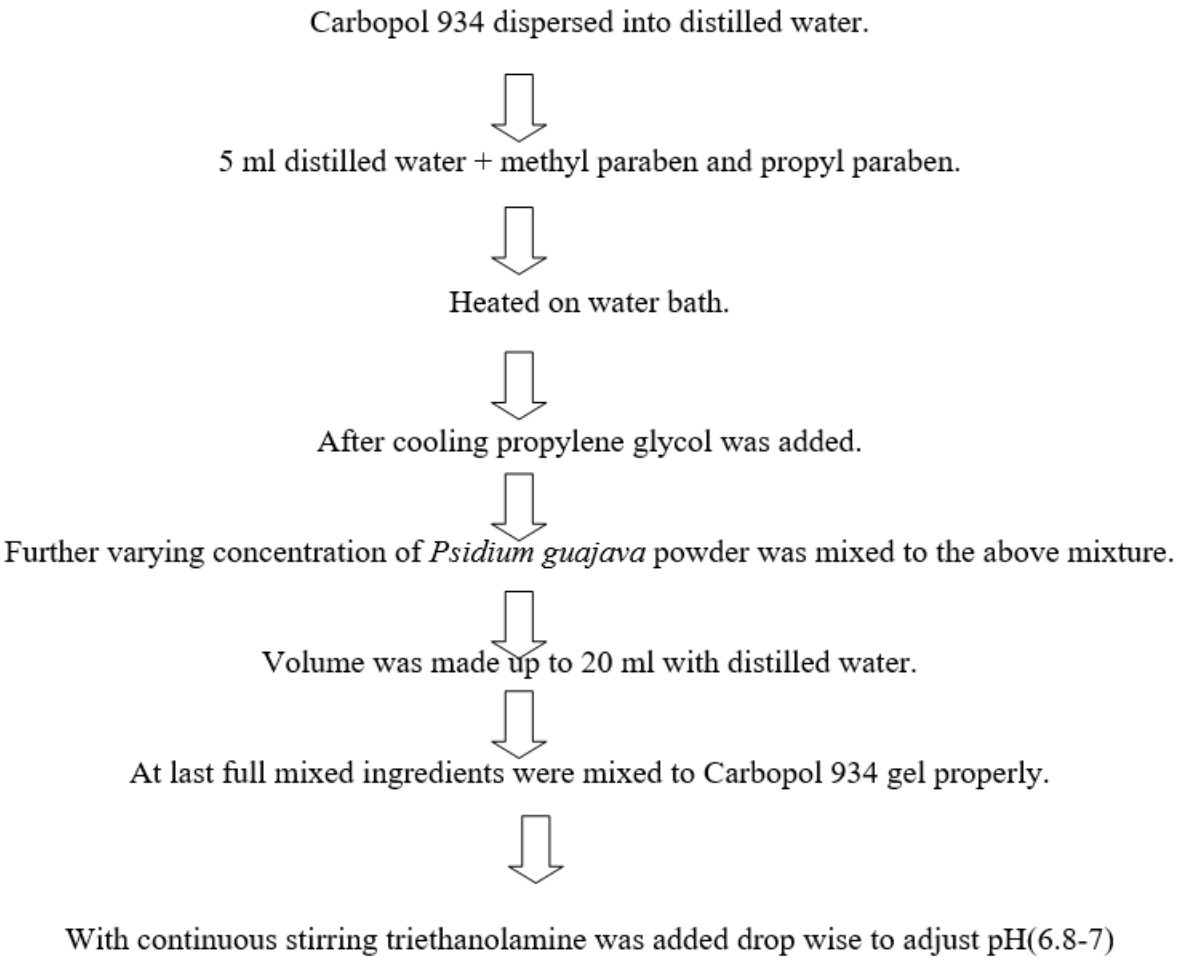
Colour: Reddish brown

Chemical constituent: Eugenol,Flavonoids,Phenolic acid,Essential oils.

Formula:

Ingredients	**Quantity**	***Use (activity)***
Guava leaves extract	2.5***m***l	Antioxident
Carbopol 934	2.0 ***gm***	Gelling agent
Propylene glycol	2 ml	Co-solvent
Methyl paraben	0.015 ***ml***	Preservative
Propyl paraben	0.01 ***ml***	Preservative
Triethanolamine	1.5 ml	Adjust pH
Clove oil	1 ml	Anti-inflammatory
Honey	2 ml	Anti-inflammatory, Antibacterial
Distilled Water	1.5 ml	As a Solvent

Procedure for Gel:



Evaluation

The herbal gel formulated was evaluated as per following parameters.

- **Physical appearance**: Physical parameters such as color, odour and consistency were checked visually.
- **Color:** The color of the formulations was checked by visual inspection.
- **Odour:** The odour of the formulations was checked by mixing the gel in water and by sniffing the smell.
- **Consistency:** The consistency of formulations was checked by applying on skin.
- **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 two hours. The measurement of pH of formulation was carried out.[13]
- **Homogeneity**: Tests for homogeneity were conducted on prepared gel prepared 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.[14]
- **Viscosity**: A Brookfied viscometer was used to measure viscosity.The rheological characteristics of the prepared gels were

examined at 250c.The measurement was conducted throughout a speed range of 10 rpm to 100 rpm, with a 30-second interval between each succeeding speed,then subsequently in the opposite order.

- **Spreadability:** Spreadability was determined by glass slide and wooden block apparatus. Weights about 20 gm were added to the pan and the time were noted for upper slide to move to separate completely from the fixed slide. An excess amount of gel 2 gm under study was placed on this ground slide. The gel was then sandwiched between this slide and another glass slide having the fixed ground slide and there is provided with the hook. A 1 kg weighted was placed on the top of the slides for 5 minutes to provide a uniform film of the gel and remove air between the slides. Excess of the gel was removed off from the edges. The top plate was then subjected to a pull with the help of string attached to the hook and the time in seconds required by the top slide to cover a distance of 7.5 cm be noted. A shorter or less interval indicates better Spreadability.

Spreadability of gel was calculated using the following formula. [16, 17]

$S = M \times L / T$

Where M = weight tied to upper slide

L = length of glass slides

T = time taken to separate the slides

Antifungal activity: Antifungal activity of blank formulation and optimized formulation were carried out by using the Cup-plate method, the effectiveness of all the samples and the control samples were assessed in comparison to commercially available samples. Nutrient that had been prepared was brought, placed into sterile petri dishes, and set away for cooling and drying. Indicates that a micron wire loop was used to disseminate the candida albicans culture. Drilling holes 4 mm deep required a sterile cork borer with a 6 mm diameter. Then place 0.5 gm of gel from each formulation into holes. After that, plates were incubated for 48 hours at 27°C.The zone of inhibition (diameter in mm) was determined. [15]

CONCLUSION:

It was concluded that the antifungalgel which are prepared from herbal ingredients they show fewer side effect as compared to synthetic gel which are prepared from synthetic compound. The prepared antifungalgel was evaluated using various parameter and was found to be satisfied for the use.

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