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FORMULATION AND EVALUATION OF HERBAL ANTI-ACNE FACE GEL

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ABSTRACT

Nowadays, the use of herbal formulations are drastically increasing.The current research investigation focuses on creating and testing a herbal anti-acne face gel that contains dried guava leaf powder. *(Psidium guajava).*It have been observed that the plant in the scientific journal having rich antioxidant, antibacterial, antiacne properties and vitamin B and C are also abundant in the leaves. Gram-positive and gram-negative bacteria are both susceptible to the antibacterial properties of guava leaves. Face gel was made and tested for a number of characteristics, including colour, odour, homogeneity, smoothness, transparency, pH, washability, spreadability, and found out that the F2 formulation is the better product.

KEYWORDS: *Psidium guajava* ,Anti-acne, Anti bacterial, Face gel.

INTRODUTION

Acne affects a majority at some stage in their lives. It is a highly prevalent skin ailment (pilocebaceous unit). Acne is more common early populaces, affects a portion of men and women in their 20s and 30s. There are several types of acne, including comedonal, papular, pustular, cystic, and nodular. Both blackheads and whiteheads are non-inflammatory forms of comedoneal acne. Blackheads (open comedo) are open pores with dark skin roughage made by melanin, oil, and follicular cells, whereas white heads (closed comedo) are fresh or white colored, perched lumps.

The objective of the research is to develop face gel formulations that are more effective. A gel is a solid or semisolid structure that consists of at least two parts, such as an inflated mass that is flanked and penetrated by a liquid. Gel categorized established the properties of the endless level.

1. Hydrogel (water based)
2. Organogels (with a non-aqueous solvent)
3. Biological Xerogels

Gels are designed to hydrate, soothe, and rejuvenate the skin while promoting a healthier, glowing complexion. Unlike creams or lotions, face gels have a lightweight, water-based consistency that makes them ideal for people with oily or acne-prone skin, as they are easily absorbed and don't leave a greasy residue.

Anti-acne face gel made with dried guava leaves possesses various antibacterial, anti-acne, and antioxidant components. It additionally offers well-known advantages like lowering cholesterol, controlling diabetes, preventing diarrhoea, and promoting healthy vision. Vitamins B and C are also abundant in the leaves. The presence of tannins, saponins, terpenoids, alkaloids, and phenol constituents in the leaves is indicative of their antibacterial properties, which can aid in the treatment of acne and be advantageous for certain topically used formulations. Gram-positive and gram-negative bacteria are both susceptible to the antibacterial properties of guava leaves.

MATERIALS AND METHOD

Fig. No.1: *Psidium guajava* leaves.

Scientific Name : *Psidium guajava*
Synonyms : *Guajava pyrifera, Psidium littorale*
Family : Myrtaceae
Kingdom : Plantae

Phylum : Tracheophyta
Class : Magnoliopsida.
Order : Myrtales
Genus : *Psidium*
Species : *P.guajava*
Native Place : South America, India, Indonesia

Table no. 1: Ingredients and their uses.

Si.no.	Name of ingredients	USES
1.	Guava leaves	Antiacne, Anti-bacterial, Antioxidant.

1. COLLECTION OF PLANT MATERIAL

Leaves of Psidium guajava were collected from local areas of Perumbavoor, Ernakulam.

2. PREPARATION OF HERBAL FACE GEL

2.1-PREPARATION AND EXTRACTION

Following collection, the leaves were first cleaned with running tap water to get rid of any dust or debris. They were shade dried for 3 days, ground into a coarse and fine powder, and kept in a container for future research.

Fig. No. 2: Dried leaves.

Fig. No.3: Powdered leaves.

2.2-EXTRACTION OF Psidium guajava LEAVES USING ETHANOL AS SOLVENT

The maceration extraction method is used to create a phytochemical extract of Psidium guajava. After being cleaned with distilled water, the leaves are left for three to four days to dry. For a subsequent extraction procedure, dried leaves are ground into a fine powder. Now, 70% ethanol (1:10) was used to dissolve the powdered plant material; 1 g of the sample should dissolve in 10 ml of solvent. For three days, these mixtures were stored at room

temperature in a dark location to prevent exposure to the sun. To prevent evaporation, storage beakers are sanitized and covered with aluminum foil. Following three days of maceration, the mixtures were filtered through What Man No. I filter paper and allowed to evaporate the solvent at 37°C.

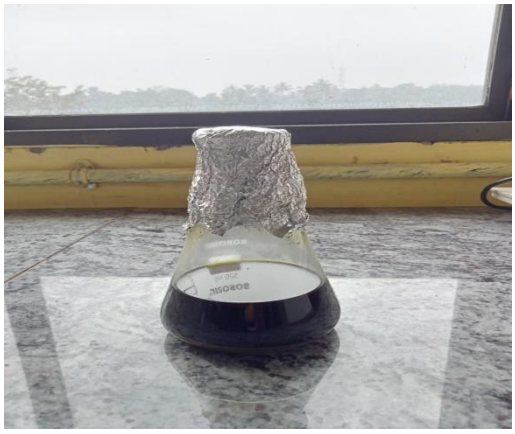

Fig. No.4: Extraction of leaves.

2.3-FORMULATION OF HERBAL FACE GEL USING *Psidium guajava*

Accurately weighing the required concentration of gelling ingredients, they were then mixed with hot filtered water while stirring gently to prevent air entrapment and left to soak overnight. By gently boiling the remaining amount of water, the desired amount of methyl paraben was dissolved. The remaining PEG4000 combination, propylene glycol, and herbal extracts were then added to the mixture mentioned above. Finally, this was combined with the gel formulation that had been soaked beforehand. The pH was adjusted by adding triethanolamine. The herbal face gel formulations of various carbopol concentration such as 0.5, 0.75 & 1 gram were prepared.

Table no. 2: Composition of Face gel.

Composition of face gel	**F1**	**F2**	**F3**
Psidium guajava extract (ml)		2.5	2.5
Carbopol 940 (g)	**0.5**	**0.75**	**1**
PEG4000 (ml)	2.5	2.5	2.5
Methyl paraben (g)	0.1	0.1	0.1
Propylene glycol (ml)	7.5	7.5	7.5
Triethanolamine (ml)	q.s	q.s	q.s
Distilled water (ml)	q.s	q.s	q.s
Orange oil (ml)	q.s	q.s	q.s

2.4 Evaluation of Formulation

Physical appearance

The colour, odour and smoothness of the emollient preparations were checked.

❖ **Colour**

Formulated face gel was evaluated for its colour by visual inspection.

❖ **Odour**

Odour was checked by smelling the product.

❖ **Smoothness**

The smoothness was checked by rubbing the formulation between the fingers.

Homogeneity

All the gel formulations were allowed to set in the vessel. After that all the established emollients remained verified aimed at homogeneous spending visual examination. They were tested for their appearance based on presence of any tumours, flocculates or wholes.

Transparency

A 10 ml container was filled with roughly 5 ml of the prepared gel, and its transparent nature was examined visually.

Washability

Following utilizing the prepared face gel formulation to the skin, the ease and duration of water washing was assessed as usual.

Measurement of pH

A digital glass electrode pH reader was used for this. The pH was determined by moving the electrode in close proximity to the formulation's surface.

Preparation of test solution: Dissolve 1g sample in 30 ml distilled water until it completely dissolves. pH is measured using pH meter.

The ability to spread

Two glass slides were positioned between the weighed amount of gel (about 0.5g) For 10 minutes, a 100g weight was kept in place. After that, the weight was taken out, and measurements were made of the spread circle's diameter at various locations.

$$S=(MxL)/T$$

Where S positions for spreadability, M for mass on the slide, L for circle diameter in centimeters, and T for time in seconds.

Anti-bacterial activity

The antibacterial activity of *Staphylococcus aureus* and *E.coli* was assessed using a face gel formulation containing ethanol extract of guava leaves. The media was prepared with wells created according to a specified formula. Subsequently, the media was placed in an incubation chamber at a temperature of 37°C for a duration of 18 to 24 hours.

Table no. 3: Anti-bacterial Evaluation of Face gel.

SAMPLES	ZONE DIAMETER			
	S. aureus		*E coli*	
	100 microlitre	200 micro litre	100 microlitre	200 microlitre
F1	1.5 cm	1.7 cm	1.1 cm	1.2 cm
F2	1.9cm	2.1 cm	1.2 cm	1.4 cm
F3	1.7 cm	1.9 cm	1.1 cm	1.2 cm

Observation

Fig No.6: Staphylococcus aureus

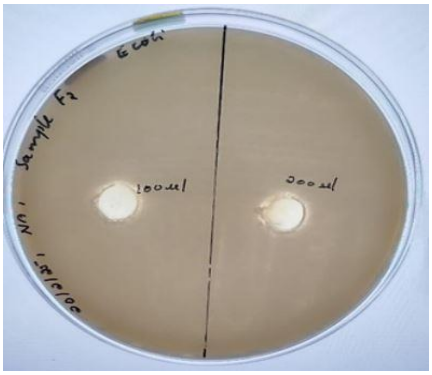

Fig No.7: .E.coli

3. RESULTS AND DISCUSSION

The results of evaluation are displayed in Table for physical appearance and physico-chemical evaluation. The study of colour, odour, smoothness and pH combined form under investigation provided the important feature of organoleptic and physicochemical evaluation. The pH of face gel was obtained as 4.90 for F2 which indicated that gel was acidic in nature

is taken as better product. It is easily washable with water. Antimicrobial evaluation was performed with *Staphylococcus aureus* and *E. coli* and F2 was found out as the most active formulation.

PHYTOCHEMICAL SCREENING

Phytochemical screening by qualitative investigation agreed & active ingredients are identified. A results given below.

Table No. 4: Phytochemical screening.

Si.No.	Chemical Constituent	Inference
1	PHENOLS	+VE
2	FLAVANOIDS	+VE
3	TANNINS	+VE
4	TERPENOIDS	-VE
5	GLYCOSIDES	+VE
6	SAPONINS	-VE

Table NO. 5: Evaluation of face gel.

Sl no.	Evaluation parameters	Observation
A.	**Physical appearance**	
1.	colour	Light golden
2.	odour	Pleasant
3.	smoothness	Very smooth
B.	**Physicochemical Evaluation**	
4.	Homogeneity	Excellent
5.	Transparency	Translucent
6.	Ph	4.90
7.	Spreadability	1.0
8.	Washability	Easily washable

4. CONCLUSION

Herbal formulation are often favoured due to the perception of increased safety and fewer side effects compared to synthetic alternatives. The global market exhibits a growing demand for herbal products. The development of an herbal anti-acne face gel is a positive step. This study demonstrate the suitability of the face gel for cosmetic use in humans exhibiting favourable properties. The herbal face gel is a natural and effective solution for skin care, combining the antiacne and antibacterial properties of guava leaf extract This herb helps to promote overall skin health, addressing various skin diseases such as acne pimples etc. Several individuals suffer with acne vulgaris, sometimes known as acne, which is a skin ailment that impacts nearly everyone.. The gels formulations is designed to provide an

effective solution for skin care minimising the risk of irritation and adverse effects. Extraction of leaves was carried out by maceration processes. From this study it is determined that guava leave's constituent phenol and flavonoid are responsible for the antibacterial property. Guava leaf extract rich in flavonoids, tannin and phenols offers antioxidant and antibacterial activity. For further studies various chemical test are carried out to detect the presence of constituents like phenol, flavonoid, tannins and glycoside The formulation was prepared and evaluated for organoleptic evaluation, homogeneity, spreadability, washability and measurement of pH through this it was confirmed that the guava leaf extract have good antibacterial activity. And the formulation also proved antibacterial activity against *Staphylococcus aureus* and *E .coli* and the formulation F2 is considered as the better product due to its properties when compared with F1 & F3.

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