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FORMULATION AND EVALUATION OF HERBAL CREAM CONTAINING GUAVA LEAF EXTRACT

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ABSTRACT

The primary objective of our study is to create a new herbal cream recipe using guava leaves to treat skin diseases. Skin conditions are best treated topically. Many medications seem to benefit more from the development of topical drug delivery systems with systemic effects due to a number of advantages over traditional routes of administration. Physiochemical tests are being conducted on the formulation. It is discovered that the created herbal cream will be both safe and successful in treating skin conditions.

KEYWORDS

Creams, Topical drug delivery system and Stability studies.

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INTRODUCTION

Psidium guajava is commonly known as guava. It is a tropical bush tree and nourishment plant that belongs to Myrtaceae family. It has a brief trunk, clashing, smooth and peeling bark. It has white sprouts, and the common thing contains squash and little troublesome seeds. It is a local of Central America but is presently broadly developed, dispersed and the natural products enhance the diets of millions of individuals in the tropics of the world. It is a sort of around 133 genera and more than 3,800 species of tropical bushes. Guava develops about all through India up to 1500 m in tallness and is developed commercially in nearly all states, the add up to evaluated range being 50,000 hectares. Uttar Pradesh, Bihar, Maharashtra, Assam, West Bengal and Andhra Pradesh are the key guava-

growing states in India. Developed assortments grow to a height of around 10 meters and offer natural products in four years. Wild trees have many branches and can grow up to 20 meters in height. The tree is easily identified by its distinctive copper-colored, smooth, lean bark that falls off and leaves a greenish layer underneath. Because they thrive in a variety of soil types, multiply efficiently and produce natural goods quickly, guava trees have spread widely throughout the tropics.

PLANT PROFILE

Plant name: *Psidium guajava*

Synonyms

Guajava pumila (vahl) kuntze

Psidium guajava Griseb

Psidium angustifolium Lam.

Psidium pumilum var. intermedium blume

Taxonomical classification

Kingdom : Plantae

Subkingdom : Tracheobionta

Super division : Spermatophyta

Division : Magnoliophyta

Class : Magnoliopsida

Subclass : Rosidae

Order : Myrtales

Family : Myrtaceae

Subfamily : Myrtoideae

Tribe : Myrteae

Gender : *Psidium*

Species : *Psidium guajava*

Botanical description

Psidium guajava is a huge dicotyledonous bush or little evergreen tree, large 3-10m tall with numerous branches.

Root

Root system is generally superficial and very extensive, frequently extending well beyond the canopy. Each has a few profound roots but no particular taproot.

Stem

The stems are crooked and the bark is light to reddish brown, thin, smooth and continuously flaking.

Leaves

The leaves are opposite and simple; stipules are absent, petiole short, 3-10mm long; blade oblong to elliptic, veins prominent, gland dotted.

Flowers

The flowers are white, incurved petals, 2 or 3 in the leaf axils; they are fragrant, with four to six petals and yellow anthers.

Fruit

The fruit is small, 3 to 6 cm long, pear-shaped, reddish-yellow when ripe. The fruit contains several small seeds and consists of a fleshy pericarp and seed cavity with pulp.

Vernacular names

Tamil - Koyya

Malayalam - Adakkapazham koyya

Kannada - Perala

Manipur - Pungton

Telugu - Goyya pandu

Hindi - Amrud

Chemical constituents

Psidium guajava contained tannins, phenols, triterpenes, flavonoids, essential oils, saponins, carotenoids, lectins, vitamins, fibre and fatty acids.

Traditional uses

Fruit

Psidium guajava natural product (Guava) is an ethnomedicine. It has significant relevance in the traditional system of medicine. In Ayurveda, it is recognized as a significant herbal remedy for dysentery and diarrhoea. It is used to treat a wide range of illnesses in the system of Traditional Chinese Medicine. It has long been utilized to enhance human health.

Leaves

In India, the leaves' decoction or infusion is used as an antispasmodic, febrifuge, and rheumatism remedy. In the United States, the leaves are used as an antibiotic in poultice or decoction to treat toothaches, wounds and ulcers. Guava teas can also be used to treat respiratory conditions, cough, bronchitis, and asthma problems.

Bark

In the Philippines, the bark is used as an astringent in decoction and poultice to cure ulcers, wounds and diarrhoea; in Panama, Bolivia and Venezuela, it is used to treat skin conditions and dysentery. It can be

used as a decoction or poultice to help evacuate the placenta after childbirth, as well as for skin infections, wounds from vaginal haemorrhage, fever, dehydration, and respiratory disorders.

Root

In West Africa, the root is used as a decoction to treat diarrhoea, coughs, stomach aches, dysentery, toothaches, indigestion and constipation. In South Africa, the Philippines and Fiji, the roots are used as astringents in wounds and ulcers and as a poultice to treat diarrhoea. Whole plant: In Tahiti and Samoa, the entire plant or its shoots are typically used as a skin tonic, infusion, decoction and paste. They are also used as analgesics for painful periods, miscarriages, uterine haemorrhage, early labour and wounds.

Whole plant

In common, the entirety plant or it shoots are utilized in the shape of implantation, decoction and glue as skin tonic in Tahiti and Samoa and as absence of pain in excruciating monthly cycle, premature deliveries, uterine dying, untimely work and wound. Pharmacological considers almost have outlined that *P. guajava* extricates have antimutagenic, lipid-lowering, torment soothing, anti-hyperglycemic affect, anti-inflammatory adaptogenic, antidiabetics anti-cestodal, antidiarrheal, anti-angiogenesis, hepato-protective, antioxidant, anticancer, antimicrobial, cardioprotective, spermatoprotective, anti-hypertensive, antiparasitic and anticough activities

Psidium guajava L., commonly known as guava is an essential tropical nourishment plant with differentiating supportive values. In conventional pharmaceutical, it is utilized in the treatment of particular sicknesses such as the runs, diabetes, torment, ulcers, wild fever, hack and bacterial illnesses.

Psidium guajava include phytochemicals (gallic acid, casuariin, catechin, chlorogenic acid, rutin, vanillic acid, quercetin, syringic acid, kaempferol, apigenin, cinnamic acid, luteolin, quercetin-3-O- α -L-arabinopyranoside, morin, ellagic acid, guaijaverin, pedunculoside, asiastic acid, ursolic acid, oleanolic acid, methyl gallate and epicatechin) and essential oils (limonene, trans-caryophyllene, α -humulene, γ -

murolene, selinene, caryophyllene oxide, bisabolol, isocaryophyllene, δ -cadinene, α -copaene, α -cedrene, β -eudesmol, α -pinene, β -pinene, β -myrcene, linalool, α -terpineol and eucalyptol).

Psidium guajava has pharmacological exercises such as antidiabetic, antidiarrhoeal, hepatoprotective, anticancer, antioxidant, anti-inflammatory, antiestrogenic and antibacterial exercises which back its conventional uses.



Figure No.1: Guava

METHODOLOGY

FORMULATION OF CREAM

Table No.1: Formulation of cream

Formulation	Steric acid (gm)	Cetyl alcohol (gm)	Liquid paraffin (gm)	Guava Leaf Extract (gm)	Sodium benzoate (gm)	Glycerol (ml)	Rose water (ml)
F1	5	0.5	12	10	1.5	1	Q.S
F2	6	1	11.5	10	0.5	1	Q.S
F3	7	1.5	9.5	10	1	1	Q.S

PREPARATION OF CREAM

Collection of plant

Leaves of guava (*Psidium guajava*) were collected from the Excel herbal garden. The collected leaves were washed with water and shade dried for 15 days and grind into pours powder using a mixer grinder and sieve it.



Figure No.2: *Psidium guajava* powder

Collection of ingredients

All chemicals procured from the college laboratory. Rose water is procured from market.

Preparation of plant extract

The dried leaf powder was used for extraction of phyto constituents. The powdered plant leaves were stored in a air tight container and the powder was subjected to soxhlet extraction using ethanol as solvent. 50 grams of dried leaf powder sample is extracted using 500ml of ethanol. The extract was collected and concentrated using a hot water bath. The crude semisolid extract was collected and stored in air tight container.



Figure No.3: Soxhlet extraction apparatus

Preparation of cream base

Take steric acid and cetyl alcohol and liquid paraffin in needed amount which are used as oil phase melt them on water bath. Again take distilled water and glycerol in needed amount which are used as aqueous phase and heat it on water bath. Mix the two phases. Now cream base is prepared.

Preparation of herbal cream

The prepared cream base was mixed with plant extract and sodium benzoate and rose water is added for fragrance. The ingredients are added in fixed ratio. Finally cream was prepared.



Figure No.4: Herbal cream

EVALUATION OF CREAM

Physical Appearance

The cream's color, roughness, and texture are used to determine how it looks physically.

Spreadability

Two glass slides are filled with an adequate amount of material, and the slides are then subjected to a 100-gram weight application for five minutes. $S = m \cdot l / t$ is the formula for spreadability, where 'm' is the weight on the top slide. 'L' represents the glass slide's length travelled. 't' is the duration of the activity.

Value of Saponification

After taking 2gm of the material, reflux it for 30 minutes with 25 millilitres of 0.5N alcoholic KOH. After that, titrate it using the 0.5N HCL and add 0.1ml of phenolphthalein as an indicator. The saponification value is equal to $(b-a) \cdot 28.05 / w$, where w is the weight of the material in grams.

Determination of pH

With the use of a standard buffer solution, the pH metre is calibrated. 0.5gm of cream were weighed, diluted in 50.0 millilitres of purified water, and their pH is determined using a digital pH metre.

Viscosity

The Brookfield viscometer was used to measure the cream's viscosity at 100rpm using spindle No.3 or No.4.

Wash ability

The cream was applied on the hand and observed under the running water.

Stability Study

Stability study is conducted for formulation according to ICH guidelines.

RESULTS AND DISCUSSION

Table No.2: Physical properties of cream

S.No	Parameters	Characteristic
1	Colour	Light Greenish
2	Odour	Characteristic odour
3	Texture	Smooth

Table No.3: Spread-ability of cream

S.No	Formulation	F1	F2	F3
1	Spread-ability	9	9.2	8.9

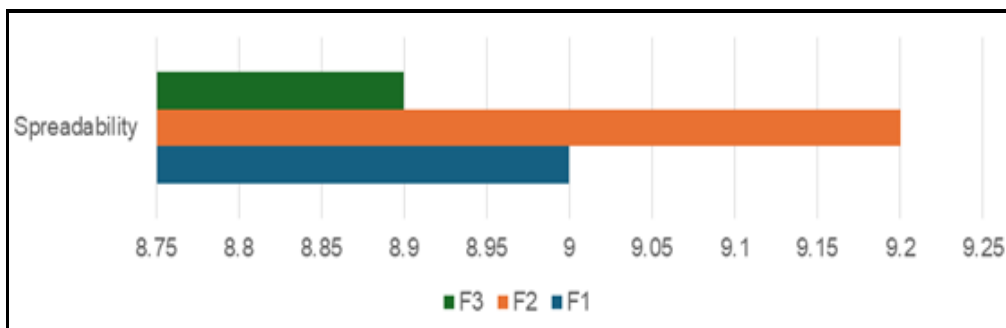


Figure No.5: Spread-ability

Table No.4: pH of cream

S.No	Formulation	F1	F2	F3
1	pH	6.1	5.8	6.3

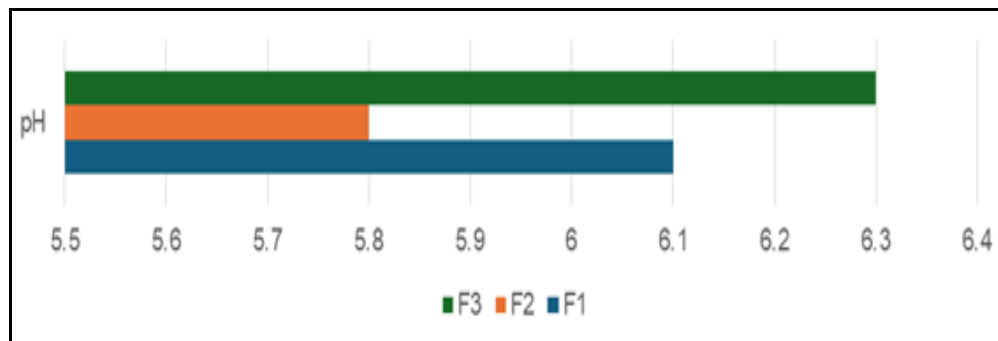


Figure No.6: pH

Table No.5: Viscosity of cream

S.No	Formulation	F1	F2	F3
1	Viscosity	2671	2631	2567

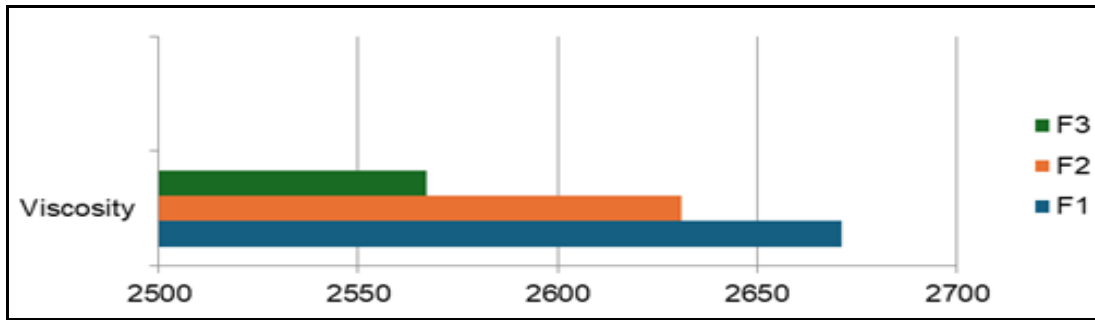


Figure No.7: Viscosity

Table No.6: Wash-ability of cream

S.No	Formulation	F1	F2	F3
1	Wash-ability	10	10	9

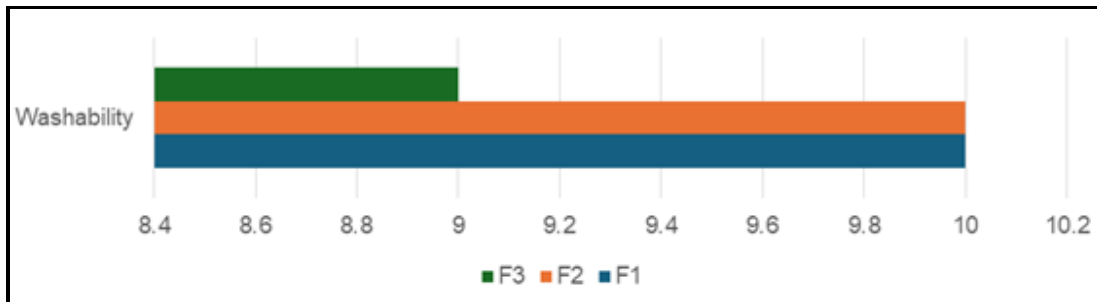


Figure No.8: Wash-ability

Table No.7: Stability test of cream

S.No	Days	Temperature	Formulation	Colour	Viscosity	Type of Emulsion	Type of Smear	Irritancy
1	0	37±1°C	F1	Light beige	2839	O/W	Non greasy	No Irritation
			F2	Light beige	2631	O/W	Non greasy	No Irritation
			F3	Light beige	2567	O/W	Non greasy	No Irritation
2	5	37±1°C	F1	Light beige	2839	O/W	Non greasy	No Irritation
			F2	Light beige	2566	O/W	Non greasy	No Irritation
			F3	Light beige	2567	O/W	Non greasy	No Irritation
3	10	37±1°C	F1	Light beige	2845	O/W	Non greasy	No Irritation
			F2	Light beige	2654	O/W	Non greasy	No Irritation
			F3	Light beige	2567	O/W	Non greasy	No Irritation

4	15	37±1°C	F1	Light beige	2850	O/W	Non greasy	No Irritation
			F2	Light beige	2358	O/W	Non greasy	No Irritation
			F3	Light beige	2567	O/W	Non greasy	No Irritation
5	20	37±1°C	F1	Light beige	2852	O/W	Non greasy	No Irritation
			F2	Light beige	2589	O/W	Non greasy	No Irritation
			F3	Light beige	2573	O/W	Non greasy	No Irritation

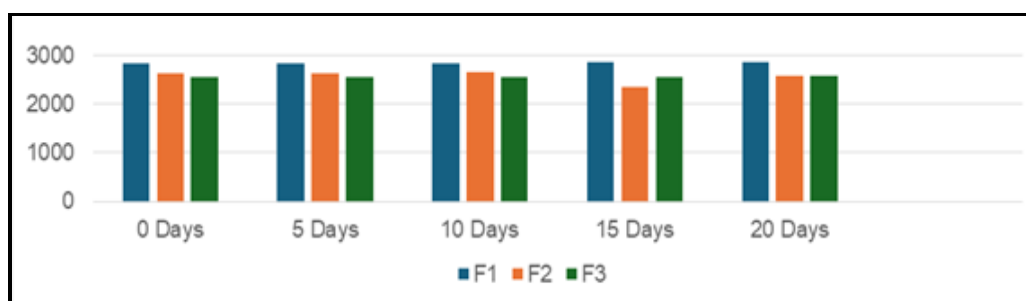


Figure No.9: Stability test

CONCLUSION

The Present study of report for the development of new formulation of guava leaf extract cream following topical administration. The result demonstrate that the properties of the cream is dependent on polymer of cream base. The dependent variable viscosity and *in-vitro* stability activity are influenced by concentration of polymer. By observing the above results and discussion it can be concluded that the formulation F2 gives better evaluation profile compare with other formulation with F1 and F3. So, these formulation seem to be very specific and will be useful for the effective action of Anti- fungal, Anti- oxidant, Anti-inflammatory and However *In-vivo* studies are needed to carry out to establish its potential.

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CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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