



Development And Assesment Of Skin Care Cream Using Rambutan And Orange Peel Extract

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ABSTRACT

Herbal skin care products have gained significant popularity due to their potential benefits in promoting nourishing skin and preventing skin-related problems. This abstract presents the formulation of a novel herbal face cream utilizing the extract of Rambutan and Orange peel. Rambutan and Orange peel have long been recognized for their therapeutic properties, including their ability to nourish and moisturize the skin and enhance health. In this study, the extract of Rambutan peel and Orange peel was incorporated into a synergistic face cream formulation, aiming at their combined beneficial effect and also used to treat acne vulgaris. The formulation process involves the extraction of active constituents from Rambutan peel and Orange peel using an ethanolic solvent system. Through qualitative analysis, the extract was then standardized for key phytochemical compounds such as carbohydrates, proteins, tannins, and flavonoids. These compounds are known to process antimicrobial and moisturizing properties. The standardized extracts were incorporated into a suitable base cream, ensuring proper emulsification and stability. The final product was evaluated for its phytochemical properties, to ensure its stability as a face cream. Preliminary results demonstrated promising skin-related benefits associated with formulated herbal cream. It exhibits considerable potential in promoting healthier skin and reducing dryness and acne.

Keywords: Rambutan peel, Orange peel, Herbal face cream, Anti- acne, Moisturizer, Natural ingredients.

INTRODUCTION

Acne vulgaris is a widespread disease of the Pilosebaceous unit that causes non-inflammatory and inflammatory lesions and varying degrees of scarring. It is not fatal but can leave a scar, irritation, and certain psychological effects depending upon the severity. The development of acne will be based on four factors they are,

- Colonization of sebaceous follicles with bacteria.
- Plugging of the hair follicle with abnormally cohesive desquamated cells.
- Inflammation and immune response.
- Genetically predisposed sebaceous glands hyperactivity.

CREAM

Creams are semisolid dosage forms mainly used for topical application. They contain more than 20% water or volatile components and typically less than 50% hydrocarbons, waxes, and polyols as vehicles. The herbal face acne moisturizer and whitening cream are natural and non-toxic. Cosmetics are made from natural ingredients and extracted from plants instead of synthetic chemicals. The basic function of herbal face cream is to provide moisturizing and elasticity in the skin, which can also help to reduce wrinkles, aging, and other fine lines. It also has anti-aging benefits and acts as a protective barrier against environmental impact. Moisturizer is a topical formulation containing substances that are intended to increase the hydration of the skin and also restore its natural protective function. A cosmetic preparation used to prevent dryness to the skin. Moisturizer and emollient are often regarded as synonymous, even when occlusive and humectants are also part of it.

Types of creams:

A. Oil in water type (o/w):

These products contain more water than oil content, which is non-greasy, lightweight, and ideal for lotions and creams and it is easily removed by washing.

Eg: Vanishing cream, Foundation cream, Shaving cream, and Hand cream.

B. Water in oil type (w/o):

These products contain more oil content than water content, and these are ideal for heavier creams and ointments.

Eg: Cold cream and Emollient cream.

There are three types of moisturizers:

A. Emollients:

These are the most common types of moisturizer. Emollients are substances used to smooth, smooth, and increase moisturizer levels mainly in the skin. These are lightweight oils that soak into the skin and fill the gaps to make the skin smooth. They are often used to treat or prevent dry, itchy, scaly, or rough skin as well as rashes and burns.

E.g. Ceramides, cholesterol, fatty esters, fatty alcohol, and plant oils.

B. Humectants:

Humectants are substances that attract water. It acts as a hydrator and helps to draw water to the skin. Humectants are hygroscopic substances used to moisten the skin. They are used in many products including food, pesticides, medicines, and cosmetics. When used as a food additive, humectants have the effect of moisturizing the food.

E.g. Sorbitol, Urea, amino acid, Glycerin, Hyaluronic acid.

C. Occlusive:

The most intense type of moisturization. They provide a thick protective barrier by minimizing water loss. Many facial moisturizers combine both emollient and humectants for maximum moisturization. At the same time, occlusive is often used in anti-aging creams and applied on thicker-skinned parts of the body such as feet, knees, elbows, and hands.

E. g. Beeswax, lanolin, Shea butter, Cocoa butter, and Paraffin.

Advantages of herbal face cream

- These are easily incorporated with skin and hair.
- Easily available
- Easily found in large quantity and variety.
- Easy manufacturers
- Reduce the risk of side effects.
- Extract of plants decreases the bulk properties of the cosmetics and gives appropriate pharmacological effects.
- They do not provide allergic reactions.

Disadvantages of herbal face cream

- Herbal drugs have a slower effect as compared to the Allopathic dosage form.
- They are difficult to hide taste and odor.
- Manufacturing processes are time-consuming and complicated.

MATERIALS AND MEHODS

PLANT PROFILE

The peel of Rambutan and orange was collected in September from Palakkad district. The plant was authenticated by Dr. M. U. SHARIEF scientist 'F' & head of the office, a botanical survey of India, Coimbatore.

A. CITRUS X AURANTIUM F. AURANTIUM

Synonym: Citrus fruit

Common name: Sour orange

Biological source: It consists of fresh and dried peel of citrus maxima and citrus reticulata.



Figure no. 1: Organge peel

Description

Citrus x aurantium f. aurantium, a member of the family Rutaceae is a species of small trees or shrubs of the genus Citrus they are nearly round fruit that have leathery, oily rinds, and edible and juicy inner flesh.

Chemical constituents:

- Vitamin C: It helps to support the immunity system
- Citric acid: It helps the kidney function properly.
- Flavanoids: Anti-oxidants, antiviral, anticancer and anti-inflammatory properties.
- Carotenoids: Pro vitamin A carotenoids like beta cryptoxanthine, can help with metabolic syndrome like type 2 diabetes.
- Limonoids: It has anti-oxidant, anti-bacterial, anti-angiogenic, and anti-inflammatory effects.

- Essential oils: It contains limonene alpha and beta-pinene myrcene, octanal, decanol, and linalool.

Uses

- Skincare
- Natural cleanser
- Dental hygiene
- Blood pressure depression and anxiety
- Boost the immune system
- Improve heart health

B. *NEPHELIUM LAPPACEUM L*

Synonym: Rambutan fruit Common name: Hairy lychee

Biological source: It consists of fresh and dried peels of *Nephelium lappaceum L*.



Figure no. 2: Rambutan peel

Description

Nephelium lappaceum L, member of *Sapindaceae* family is a tropical fruit with red and spiky exterior soft and juicy white inside that have sweet and tangy taste. Rich source of anti-oxidants, dietary fibers, vitamins and minerals.

Chemical constituents:

- Minerals: It includes various minerals like potassium (K), copper (Cu), manganese (Mn).
- Polyphenol compounds: It includes like geraniin, corilagin and ellagic acid which have antioxidant properties.
- Organic acids: The rambutan peel contain citrus acid as the main organic acid as well as malic, tartaric and ascorbic acid.

- Bioactive compounds: Rambutan peel contains bioactive compounds such as mome inositol, catechol, 5-hydroxy methyl furfural, 2-pentanal acetic acid, 1,2,3- propanetriol and 2-furan carboxaldehyde.
- Vitamin c: Rambutan are the source of vitamin c.

Uses:

- Cosmetics
- Food
- Natural colorants
- Health benefits
- Better skin and hair health
- Improve heart health
- Anti-oxidant
- Anti-bacterial
- Anti-inflammatory

METHODOLOGY

A. Preparation of Extract *Nephelium Lappaceum L*

Nephelium lappaceum L peel was collected, cleaned, shade dried and grained into coarse powder. The 100g of *Nephelium lappaceum* coarse powder material were weighed out and extracted by using maceration technique with 300ml of ethanol and then loaded into maceration chamber, after 72 hours the extract was filtered.

B. Preparation of Extract of *Citrus X Aurantium F. Aurantium*

The 40g of fresh orange peel was collected, cleaned and chopped into coarse powder. It was extracted by soxhlation technique with 500ml of ethanol and then loaded into soxhlation chamber, after 6 hours the extract was filtered

C. PREFORMULATION STUDIES

PRELIMINARY PHYTOCHEMICAL TEST

Table no 1: Preliminary phytochemical studies

SL.NO	PHYTOCHEMICAL CONSTITUENTS	TEST
1	TEST FOR CARBOHYDRATE	Fehling's test Benedict's test
2	TEST FOR FLAVANOIDS	Alkaline test Ferric chloride test
3	TEST FOR PROTIENS	Ninhydrin test Xantho protien test
4	TEST FOR GLYCOSIDES	Keller killani test Legal test
5	TEST FOR TANNINS	Lead acetate test
6	TEST FOR SAPONIN	Salkowski reaction

D. FORMULATION OF HERBAL FACE CREAM

Table no 2: Formulation face cream

SLNO	INGREDIENTS	FUNCTION	WORKING FORMULA (50g)
1	Cocoa butter	Emollient	10g
2	Bees wax	Thickener	5g
3	Cetostearyl alcohol	Emulsifier	5g
4	Glycerin	Humectants	2.5ml
5	Phenoxy ethanol	Preservative	2.5ml
6	Orange peel extract	Brightening, antioxidant	6.25ml
7	Rambutan peel extract	Hydrating, antioxidant	5ml
8	Orange oil	Fragrance, Antioxidant	1.25ml
9	Stearic acid	Lubricating agent	5g
10	Distilled water	Solvent	7.5ml

Weigh accurately the required amount of ingredients. Oil phase is prepared by melting the cocoa butter ,bees wax, cetostearyl alcohol and stearic acid on a china dish at 70-75°C. Aqueous phase is prepared by adding glycerin and water in a beaker and heated at 70-75°C, followed by the addition of active ingredients

like orange peel extract and rambutan peel extract. Then the water phase is transferred in to the oil phase at 40°C with constant stirring. The required phenoxy ethanol and orange oil were added, and the smooth cream is formed.

RESULT AND DISCUSSION

A) PRE-FORMULATION STUDIES

Preliminary phytochemical screening

Table no 3 : Preliminary Phytochemical screening

TEST	NEPHELIUM LAPPACEUM L	CITRUS X AURANTIUM F. AURANTIUM
Carbohydrates		
Fehling’s test	+	+
Benedict’s test	+	+
Flavanoids		
Alkaline test	-	-
Ferric chloride test	+	+
Proteins		
Ninhydrin test	-	-
Xanthoprotein test	+	+
Glycosides		
Keller killani test	+	-
Legal test	+	-
Tannins		
Lead acetate test	+	+
Saponin		
Salkowski test	+	-



Figure no. 3: Chemical Test for Ethanolic extract Rambutan peel



Figure no 4: Chemical Test for Ethanolic extract Orange peel

FORMULATED HERBAL FACE CREAM



Figure no 5 : Formulated of herbal face cream

EVALUATION STUDIES

a) Organoleptic properties of herbal face cream

Result showed the organoleptic properties of herbal face cream

Table no 4: Organoleptic properties of herbal face cream

SL.NO.	ORGANOLEPTIC PROPERTIES	INFERENCE
1.	Colour	Pale orange
2.	Odour	Pleasant odour
3.	Appearance	Smooth texture

b) Determination of pH

pH of the face cream was observed by using digital pH meter and the pH of the cream was found to be 5.25pH

Table no 5: Determination of pH

SL. NO.	FORMULATION	pH
1	FC	5.25

FC-Formulated cream

c) Determination of Viscosity

Viscosity of face cream was done by using Brookfield viscometer at room temperature using spindle no.64 at 100 rpm. Viscosity of the face cream was found to be **3906 Cp**.

Table no 6: Viscosity evaluation

SL.NO.	FORMULATION	VISCOSITY
1	FC	3906 Cp

d) Spreadability

Table no 7: Spreadability of cream was observed.

Formulation	Weight used	Length(cm)	Time taken(s)	Spreadability (gcm/s)
FC	100	7.5	50	15

e) Stability study at room temperature

No visible change in colour, odour and physical state was observed upon 3 month storage at room temperature. This indicate stability of the optimized formulation at room temperature.

f) Antimicrobial activity by Agar well plate method

Antimicrobial activity of the cream against gram positive and gram negative was evaluated by agar well plate method, using Gentamicin as the standard reference drug. The anti-bacterial activity was measured individually and compared the zone of inhibition sample (skin care cream by using rambutan peel and orange peel extract) against (Gentamicin).

Table no 8: Antimicrobial activity of cream was observed.

ORGANISM	ZONE OF INHIBITION	
	SAMPLE	STANDARD
Staphylococcus aureus (Gram Positive)	21mm	17mm
Escherichia Coli (Gram negative)	18mm	23mm



Figure no 6: Antimicrobial activity

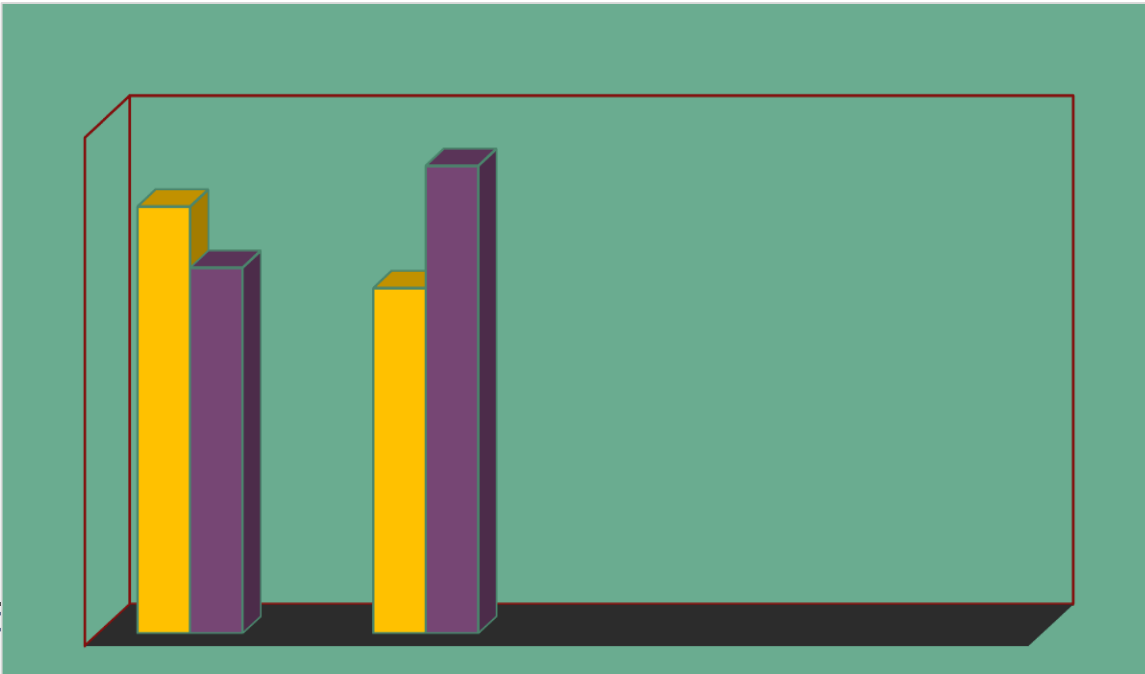


Figure no 17: Graphical representation of Antimicrobial activity

The result shows that cream has anti-bacterial activity against both gram positive and gram negative organisms. In case of *S. aureus*, the zone of inhibition produced by sample was more than tha of the standard. Thus gram positive bacteria (*S. aureus*) show more sensitive to the cream compared to gram – negative bacteria (*E.coli*).

SUMMARY AND CONCLUSION

Herbal formulation for face cream preparation contain various active constituents. The combination *Nephelium lappaceum* and *Citrus x aurantium f. aurantium* peel extract cream shown promising result in promoting anti-acne and moisturizing effect to the skin.

Present study aims at formulating an anti-acne and moisturizing cream. When used in face cream formulation, ethanolic extract of rambutan peel by maceration and ethanolic extract of orange peel by soxhlation work synergistically to moisten the skin and improve the texture of skin and shows anti-acne activity.

The ethanolic extract of rambutan peel and orange peel which contain flavonoids, tannin, carbohydrates and proteins. Thus cream provide intense moisture to the skin and helps to reduce the dryness and blemishes. The herbal cream shows a pale orange colour with pleasant odor.it show acidic pH 5.25, optimum spreadability of 15 gcm/s, viscosity of 3906 Cp and . The anti-bacterial activity was measured individually and compared the zone of inhibition sample against standard.

Thus we conclude study aim at herbal formulation was prepared and various parameter are evaluated. The herbal cream show acidic pH, viscosity, spreadability. The cream has anti-bacterial activity against gram positive organisms. Overall, the herbal face cream enriches and hold the great potential for those seeking natural solution to skin care practices, it can contribute to moisturizing and anti-acne property.

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