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Formulation of Herbal Face Pack and Face Scrub of Musa Paradisiaca

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Abstract: ***Skin is largest organ of body whose main function is protection. There are a lot of marketed preparations available for the protection of skin from various factors. Banana leaves are the source of various active constituents which are useful for the skin. Theyare allantoin, flavonoids, polyphenols, lignin, hemicellulose, tannins, rutin, anthocyanin, etc. The aim of this research is to study the medicinal properties and benefits of leaves of Musa paradisiaca on various diseases and especially on skin. The banana leaf extract was used in preparation of face pack and face scrub. As the face pack and face scrub used to cleansing and smoothening of skin, the banana leaves contains antioxidants which helps skin to rejuvenate and gives smootheness.***
Keywords: Banana leaves, Face pack, Face scrub, Musa paradisiaca

I. INTRODUCTION

The skin is the body's largest organ. It covers the entire body. It serves as a protectiveshield against heat, light, injury, and infection.

A. Skin Anatomy & Physiology

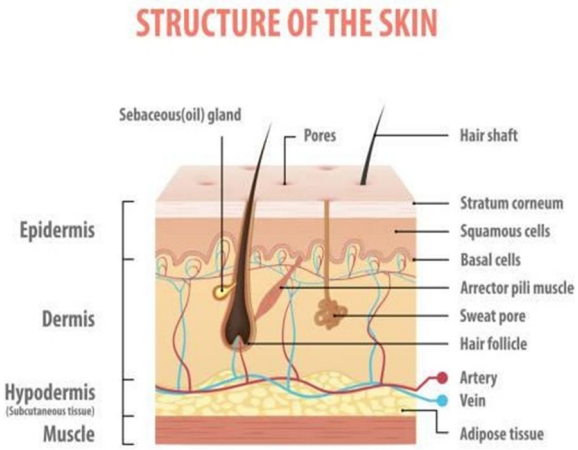


Figure No. 1 Anatomy of Skin

B. Functions of Skin

1) Regulates body temperature
2) Stores water and fat
3) Is a sensory organ
4) Prevents water loss
5) Prevents entry of bacteria
6) Acts as a barrier between the organism and its environment
7) Helps to make vitamin D when exposed to the sun

Your skin takes on different thickness, color, and texture all over your body. For example, your head contains more hair follicles than anywhere else. But the soles of your feet have none. In addition, the soles of your feet and the palms of your hands aremuch thicker than skin on other areas of your body.

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C. The skin is Made up of 3 Layers

1) Epidermis
2) Dermis
3) Subcutaneous fat layer (hypodermis)

II. VARIOUS COMMON SKIN DISEASES

1) Skin Dryness
2) Acne
3) Skin Redness
4) Skin Burning
5) Skin Tanning

A. Skin Dryness



Figure No 2. Skin Dryness

Dry skin is skin that doesn't have enough moisture in it to keep it feeling soft and supple. People with dry skin may have rough-feeling patches that flake offor look scaly. It may or may not be itchy (pruritis). Severe dry skin may crack and bleed.

B. Acne


Figure No 3. Acne

Acne is a skin condition that occurs when your hair follicles become plugged with oil and dead skin cells. It causes whiteheads, blackheads or pimples. Acne is most common among teenagers, though it affects people of all ages. Effective acne treatments are available, but acne can be persistent.

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C. Skin Redness



Figure No 4. Skin Redness

Skin redness can have many different causes, including burns, allergic reactions, infections, and some health conditions. Certain causes are more severe than others and may require medical treatment. In this article, we discuss several possible reasons for skin redness and when a person should see a doctor.

D. Skin Burning



Figure No 5. Skin Burning

A second-degree burn, which often looks wet or moist, affects the first and second layers of skin (epidermis and dermis). Blisters may develop and pain can be severe. Burns are tissue damage that results from heat, overexposure to the sun or other radiation, or chemical or electrical contact.

E. Skin Tanning



Figure No 6. Skin Tanning

A browning of the skin especially by exposure to sun. The art or process by which a skin is tanned. A natural darkening and hardening of the cuticle of an insect immediately after molting.

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III. BANANA PLANT

Musa is one of two or three genera in the family Musaceae. The genus includes flowering plants producing edible bananas and plantains. Around 70 species of Musaare known, with a wide variety of uses.

Scientific Classification

Kingdom	Plantae
Order	Zingiberales
Family	Musaceae
Genus	Musa

Table no.1 Scientific classification of Banana plant

A. Names of Banana in different languages in India

Hindi- Kela Bengali- Kollaa
Gujarati- Kela, Keda
Malayalam- Pazham, Vazha PazhamMarathi- Kela, Kel
Oriya- Champa Kadali, KadaliKannada- Bale Hannu
Every part of the banana is packed with nutrition and health benefits.

B. Banana Fruit



Figure No. 7 Banana Fruit

The fruit is a source of vital nutrients. It is also a great digestive, which aids bowel movement and contains good fibre for your gut. Rich in vitamin B6 as well as vitaminC, it helps your body absorb iron better, increasing the haemoglobin count and overallblood and cardiovascular health. It is great for pregnant women to eat, as it aids foetal health. It is enriched with potassium as well and is effective to treat cholesterol and high blood pressure. Bananas also relieve stomach issues like constipation and stomach ulcers.

C. Banana Flower



Figure No. 8 Banana flower

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The flower is good for people looking to prevent and control type 2 diabetes because it balances out blood sugar levels in the body. It is also antioxidant-rich, making it ideal for cell health and anti-ageing. It contains a host of essential vitamins and aminoacids, is low in calories, and boost metabolism. It is also great for the overall wellnessof the reproductive organs, aiding breastfeeding moms and keeping infections at bay

D. Banana Stem



Figure No. 9 Banana stem

Consumed with fibre, banana stem slows down the release of sugar and fats stored in the body's cells. The juice of the banana stem helps in flushing out toxins from the body. It is a diuretic, and one of the most effective ways to cleanse your system from ailments. Drinking a glass of banana stem juice mixed with a few drops of lime juice every day prevents the formation of kidney stones and relieves Urinary Tract Infection(UTI). If you've got frequent problems with acidity, banana stem juice helps in regulating the acidic levels in your body and restoring balance. It provides relief fromheartburn and discomfort and burning in the tummy.

IV. BANANA LEAF



Figure No. 10 Banana leaf

As the all parts of banana tree having lots of benefits, the banana leaves also have many benefits both traditional and medicinal. When you ask people about the uses of banana leaf, you will get food wrapper, animal feed, food garnisher, food serving, decorative as answer from them. But the banana leaf also have the uncountable benefits other than these which people don't knows.

A. *Medicinal Uses Of Banana Leaf*

1) *Boosts Immune System:* Banana leaf contains a chemical constituent in it known asALLANTOIN, which is capable to boost the immune system and also helps to accelerates the healing process by acting as an astringent.
2) *Reduces Fever:* As the banana leaf having the astringent property and also it is a richsource of antioxidants, it helps to reduce the inflammations, which takes the form of fever in some conditions. The astringent effect of banana leaf sooth and unease the fever.
3) *Cures Sour Throat:* Drinking banana leaves decoction at least for twice a day, It canbe help you to cure your sour throat. Because, it contains properties that helps to reducethe soar throat.
4) *Heals wounds:* The anti-inflammatory property of banana leaf is the major reason to heal the wounds and reduce the skin irritations. You can apply the banana leaf by crushing it on your affected areas.
5) *Cures Skin Irritation:* Again the anti-inflammatory property shown by the polyphenols present in banana leaf can give relief from skin irritation.
6) Maintains Healthy Skin : Due to presence of enough amount of antioxidants and allantoin, it is use to prevent early aging and also shows the ability to reduce pimples and acne.
7) Reduce Body Weight: A cup of tea made up of banana leaves with the addition of garlic helps to loose your weight and helps to burn the calories.
8) Maintains Healthy Hairs: The extract of banana leaf can be use for maintaining the healthy scalp, to cure dandruff and for maintaining the natural color of your hairs because of the astringent properties present in banana leaf.
9) Rich In Antioxidants: the polyphenols are the type of antioxidants present in the banana leaf which is responsible to show many benefits to the health. It is helpful to fight with many disorders of the body.
10) For Treating Diabetes: Banana leaf contains compound which called Rutin which shows hypoglycemic effect. It increases secretion of insulin and reduces maltose breakdown which results in lowering blood glucose level.

B. *Uses Of Banana Leaf On Skin*

We know skin is the largest and most sensitive organ of the body. Each and every substance which we apply on skin affects a lot on it. Hence, we should select our cosmetics or topical applications carefully which shows safe and effective results on skin.
There are lot of chemical constituents present in banana leaf which shows such safe and effective results on skin and hairs. They shows their effect on skin by providing healthy, shiny, smooth touch to the skin. Lab studies proved that banana leaves have both antibacterial and antioxidant properties due to which it is a suitable ingredient foruse in creams and lotions. The banana leaves also shows anti-aging properties and prevents wrinkles and fine lines. It also effective against itching, rashes, burns, wounds and fungal infections.

V. CHEMICAL CONSTITUENTS OF BANANA LEAF

The banana leaf consists of chemical constituents like POLYPHENOLS, LIGNIN, HEMICELLULOSE, PROTEIN, ALLANTOIN, ANTHOCYNINS, TANNINS, FLAVONOIDS, RUTIN which are beneficial to health.

A. *Allantoin*

Allantoin is one of the important constituent present in banana leaf which contributes a very huge role for healthy skin. Allantoin shows an astringent effect. It accelerates the healing process of skin by renewing epidermal cell. Allantoin is a skin active compound with moisturizing, anti-irritant and soothing properties. Hence, it is responsible to moisturizes the skin.

B. *Polyphenols*

Another chemically constituent present in banana leaf is Polyphenols. As the Polyphenols are the potent source of antioxidants, EPIGALLOCATECHIN GALLATE (EGCG) is one of the key ingredient present in banana leaf shows various effects on body especially on skin. It shows anti-aging effect on skin and also it can bework against wrinkles, dull skin, wounds and rashes. It also have the anti-inflammatory properties which are used to reduce inflammation. It also can be use to cure fine linesand dark spots on skin.

C. *Lignin*

One more chemical constituent present in banana leaf is Lignin. As the harmful UVrays are not safe for our skin, Lignin helps to protect skin from such harmful UV rays.

D. Hemicellulose

Another chemical constituent of banana leaf is the Hemicellulose. Hemicellulose is the type of polysaccharide which is somewhat responsible for the skin's natural ability to hydrate and retain the water. It also helps to bind the skin stronger and longer by moisturizing it. Banana leaf also contains the proteins which makes the skin cells strong and resilient, also keeps the skin flexible and skin layers healthy.

E. Proteins

The collagen and elastin are the types of proteins. They mainly present inside the skin generally within the middle layer of skin. Collagen keeps the skin cells strong and makes them resilient. Elastin makes skin more flexible and also helps the stretched skin to regain its shape.

F. Anthocyanins

Anthocynins are water soluble compounds with having chemical formula as C15H11Oand having molecular weight 207.24724 g/mol. They are generally groups of polyphenolic pigments. Anthocynins protects the skin from UV light and protect it against UV skin damage. They also helps to reduce the inflammation which could be beneficial for reducing acne.

G. Tannins

Tannins are the class of astringent, polyphenolic biomolecules. They contains the anti-inflammatory properties which are helps to reduce the inflammation and redness. The also protect the skin from damage, by acting as antioxidant against free radicals. They remove excess oil from skin by acting as natural astringent.

H. Flavonoids

Flavonoids are the dietary factors, belongs to the class of phytochemicals or plant chemicals. More than 5,000 varieties of flavonoids have been identified. Flavonoids mainly consists of antioxidant properties and shows the ability to absorb ultraviolet (UV) light. Due to powerful antioxidants, they helps the body to fight against harmfulmolecules. Inflammation is one of the body's immune responses. Allergens, germs, toxins, and other irritants can trigger inflammation that results to produce uncomfortable symptoms. Flavonoids helps the body to reduce these symptoms.

I. Rutin

Rutin is a member of the bioflavonoid family which possess the antioxidant properties, which helps to keep the skin healthy. Rutin increases skin elasticity and decreases thewrinkles. Hence, it can be protect the skin from aging.

VI. PROPERTIES OF BANANA LEAVES

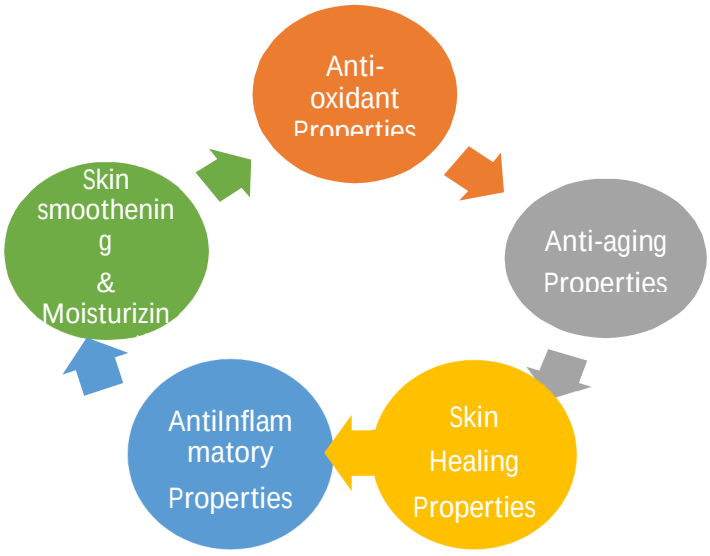


Figure No. 11 Properties of Banana leaf

A. TS of Banana Leaf

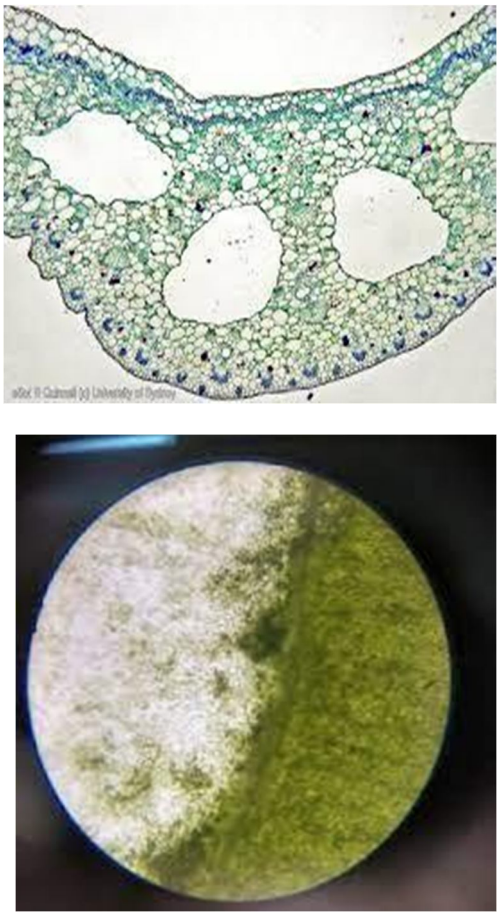


Figure No. 12 TS of Banana leaf

The TS of Banana Leaf contains:

1) Vascular Bundles – a) Xylem b) Phloem
2) Fibers
3) Mesophyll

VII. METHODOLOGY

A. Face Pack

Uses of Face pack :

1) Hydrating and moisturizing the skin
2) Removing excess oil
3) Improving the appearance of pores
4) Pulling out impurities
5) Helping reduce signs of aging
6) Brightens the dark spots
7) Enhance elasticity
8) Decongests clogged pores

Face pack work by driving ingredients closer and deeper into the skin, infusing poresand allowing the skin to absorb more of the product.

B. Some Marketed Ayurvedic Face pack

1) Roop mantra
2) Patanjali
3) Mother's Sparsh
4) Petal Soft
5) Jeev Kanthi
6) Himalaya
7) Dabur
8) DR. Vaidya's Face pack
9) Instaglow
10) Deyga
11) Oshea

Sr.No.	Name of Formulation	Constituents
1.	Roop Mantra	Turmeric , Sandal Wood , Aloe vera ,Sunflower and Olive oil
2.	Patanjali	Almond , Lentil , Black gram , Mustard seed , Soybean , Rice , Turmeric ,Camphor .
3.	Mothers Sparsh	Kesar , Orange peel , Turmeric , RoseWater , Neem
4.	Petal Soft	Indian rose 5% , Indian ginseng , Honey , aqua , Steam distilled rose water , Aloevera leaf juice , Glycerine ,
6.	Himalaya	Curcuma longa (Turmeric , Haridra) , Sodium methyl paraben , Sodium propylparaben , Imidazolodinyl urea
7.	Dabur	Mulethi , Chandan , Milk , Glycerine , Haridra extracts , Herbal extracts , Kesar
8.	Instaglow	Sweet almond oil , liquorice , Cinnamon , Neem , Turmeric , Bitter orange peel ,Honey , Sandalwood extract
9.	Deyga	Native rose grains , Mulethi , Oatmeal ,Essential oil
10.	Oshea	Aqua , Light kaolin , Glycerin , Almondoil , Aloevera extract , papaya fruit extract , licorice extract , Shea butter , Titanium , dioxide

Table no.2 Marketed ayurvedic face packs

C. Preparation and Methodology of Face Pack: Formula

Sr.No.	Ingredients	Quantity (gm)	Category
1.	Banana leaf extract	3 gm	Antioxidant
2.	Multani mitti	2.5 gm	Cleansing agent
3.	Gram flour	2 gm	Cleanser
4.	Fragrance powder	2.5 gm	Flavouring agent

Table no.3 Formulation of face pack

D. Role of Ingredients as per their Category

1) *Antioxidant:* They protect the skin by reducing and counteracting free radicalproduction. It helps to reduce pigmentation and fine lines and wrinkles.
2) *Cleansing Agents:* They helps to remove dead skin cells, oils, sweat, dirt, andother type of pollutants from the skin.
3) *Fragrance / Flavouring agent:* They helps to enhance fragrance of the productwhich helps to give freshness while applying the product.

E. Procedure

1) 3 gm of fine banana leaf powder was taken in mortal and pestle.
2) Multani mitti 2.5 gm and gram flour 2 gm was added to it and mixed properlyfor uniform mixing.
3) The fragrance powder 2.5 gm was added in above mixture.
4) All the contents was mix thoroughly in mortal. The prepared face pack powderwas packed and labelled.

F. Directions for use

1) Take prepared face pack powder in a bowl as per requirement.
2) Add rose water to make paste.
3) Apply on entire face uniformly.
4) Allow to dry and wash with cold water after 10-15 min.

G. Evaluation Parameters:Organoleptic Properties

Sr.No	Parameters	Observations
1.	Colour	Dark green
2.	Odour	More like straw
3.	Texture	Fine powder
4.	Appearance	Solid

Table no.4 Evaluation Parameters

VIII. FACE SCRUB

A. Uses of Face Scrub on Skin

1) Removes Dead Skin Cells
2) Unclogs Skin Pores.
3) Removes Flakes.
4) Reduces Acne Scars.
5) Prevents Ingrown Hair.
6) Provides Smoother Skin.
7) Improves The Texture Of Skin.
8) Better Absorption Of Skincare Products.

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B. Some Marketed Ayurvedic Face Scrub:

1) Medimix
2) Mamaearth
3) Himalaya
4) Apricot
5) Khadi
6) Kumkumadi
7) Nutriment
8) Unisex

Sr.No.	Name of Formulation	Constituents
1.	Medimix	Aloe barbadensis, Citrus limon, Glycerine
2.	Mamaearth coco scrub	Aqua, cross polymer, glyceryl stearate, cetylalcohol, Shea butter, isopropyl myristate
3.	Himalaya	Aqua, stearic acid, neem, orange peel, walnut, multani mitti
4.	Apricot	Caffiene, apricot granules, walnut powder, aqua
6.	Khadi	Rose, papaya, walnut, almond, honey, apricot
7.	Kumkumadi	Saffron, almond, green cardamom, sweet flag
8.	Nutriment	Coconut oil, coconut, Olive oil, olive, aloevera, caffeine
9.	Unisex	Liquid shea butter, scrubbing beads, olive oil, clove essential oil, camphor essential oil

Table no.5 Marketed ayurvedic face scrubs

C. Formula for Face Scrub (for 20 gm)

Sr.No.	Ingredients	Quantity (gm)	Category
1.	Banana leaf extract	4 gm	Antioxidant
2.	Multani mitti	1 gm	Cleansing agent
3.	Aloevera gel	3 gm	Moisturizer
4.	Rose water	5 ml	Flavouring agent
5.	Citric acid (lemon juice)	2 drops	Preservative
6.	Purified water	Quantity sufficient	Vehicle

Table no.6 Formulation of face scrub

D. Role of Ingredients as per their Category

1) Antioxidant: They protect the skin by reducing and counteracting free radicalproduction. It helps to reduce pigmentation and fine lines and wrinkles.
2) Cleansing Agents: They helps to remove dead skin cells, oils, sweat, dirt, andother type of pollutants from the skin.
3) Moisturizer: It protects skin from irritation and reduces the development ofdryness and makes it smooth and shiny.
4) Fragrance / Flavouring Agent: They helps to enhance fragrance of the productwhich helps to give freshness while applying the product.
5) Preservative: It helps to preserve the formulation from various changes due todifferent environmental conditions and other factors.
6) Vehicle: Vehicle itself have a cooling action which helps to protect skin fromdryness.

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E. Procedure

1) The banana leaves was shade dried and converted into fine powder.
2) Banana powder was passed from Sieve no. 60 for more finess.
3) From that 4 gm of powder was taken in a mortal and pestle.
4) 1 gm of multani mitti and 3 gm of aloevera gel was added and mixed properly.
5) 5 ml of rose water was added for fragrance.
6) 2 ml of Citric acid or natural lemon juice was added as preservative.
7) After adding all ingredients, the purified water (q.s.) was added for making asemisolid paste.
8) All the ingredients was mixed properly and semisolid paste or face scrub wasprepared.

F. Observation Table

Sr.No.	Storage Conditions	Observation	pH
1	At normal room temperature	Odour changed/Pungent Odour	9
2	In contact with sunlight	Colour changed	8
3	In cool condition/In refrigerator	No changed	6
From above observation we can conclude that the formulated face scrub should be “Store in cool condition”			

Table no.7 Observation Table

G. pH of Scrub In Different Storage Conditions

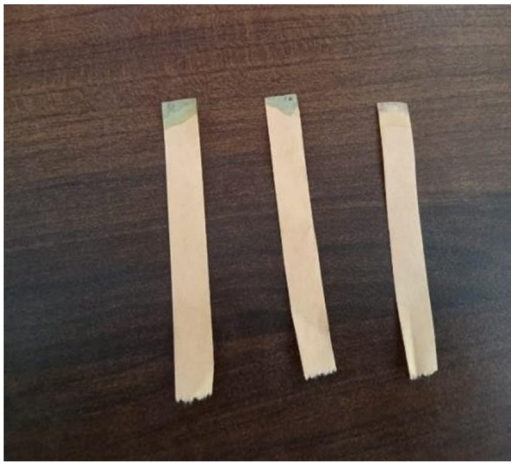


Figure No. 13 PH of Scrub

IX. CONCLUSION

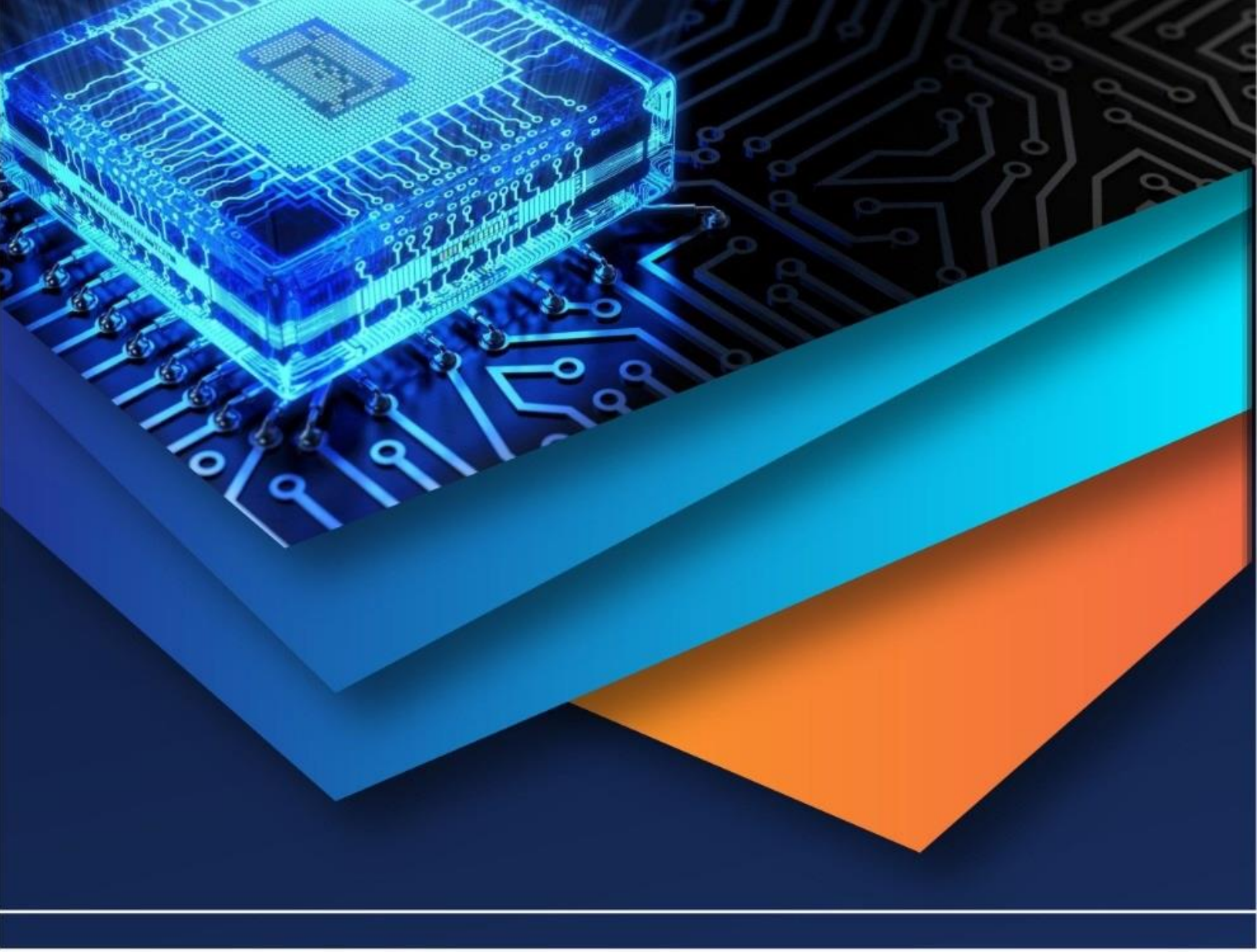
The present study was about to prepare and evaluate herbal face pack and face scrub . for this the banana leaves were dried and converted into fine powder . Further it was mixed and triturated with other ingredients by using mortar and pestle . The evaluation parameters like storage conditions pH and spreadiability were studied which shows confirmatory results . On the basis of this study , it is concluded that the prepared herbal face pack and face scrub helps skin for cleansing and smoothening andremoving tan. It was a small attempt to formulate such herbal cosmetics which is more beneficial that other cosmetics which has chemicals. Chemical Cosmetic may give good results but it decreases the age of skin.

Herbal or Ayurvedic formulation are used from ancient time in India and has lots of advantages. Banana is a fruit which is consumed by every individual and it also has ayurvedic importance. In this research we have focused on the leaves of banana which are still less used in herbal cosmetics. This may increased the area of research for banana leaves in ayurvedic formulation.

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