

BANANA: AS A COSMETIC PLANT

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ABSTRACTS

Many people do not know that the banana plant is actually one of our oldest, known to man medicinal plants and also internationally cultivated fruit crop used around the sound bio sphere,, to cure various infections or diseases. Introducing the review of this essay, hence now let's see another complementary section of the banana tree i.e.- nutraceutical properties. As per the nutritional The composition is an ideal source for plenty of vitamins, minerals and carbohydrates essential to human health. The banana plant contains a variety of bioactive compounds, including phenolic compounds. Phytosterols and carotenoids that are good for health preventing diseases. Therefore, this review paper Provision of Short information about banana nutrition, bioactives plant and uses of different parts of banana tree in cosmetics. Banana is one of the most eaten fruit around the globe and a very good providing to this war effort.

INTRODUCTION

Bananas are herbaceous plants belonging to the Musaceae family, encompassing three genera: Musa, Musella, and Ensete. The two main species producing edible bananas are Musa acuminata and Musa balbisiana.

As one of the most widely grown and consumed crops globally, bananas are available in over a thousand varieties, each with distinct tastes, colors, and chemical compositions. Commonly, bananas are referred to as dessert cultivars, while plantains are known as cooking cultivars. Bananas are primarily cultivated for their fruit, but their natural fibers and wine are also valuable. The various parts of the banana plant are multifunctional. For example, the

large, waxy leaves are ideal for shading and packaging food. Additionally, banana peels and leaves possess antioxidant properties and biological activities such as anti-diabetic, anti-diarrheal, anti-tumor anti-mutagenic, and anti-ulcerogenic effects. Bioactive compounds in bananas have been found to inhibit bacterial and fungal growth, underscoring the plant's broad-spectrum antimicrobial activity. Banana fruit is rich in phytonutrients, including vitamins, phenolic compounds, and essential minerals like phosphorus, potassium, magnesium, sodium, calcium, iron, zinc, copper, and manganese. The fruit also contains various bioactive substances, such as phenolics, carotenoids, flavonoids, and biogenic amines, which contribute to its high antioxidant capacity, particularly as the fruit ripens. This review highlights the nutritional composition and bioactive components of the banana plant. Bananas are a tropical fruit cultivated in over 122 countries. As of 2004, the global cultivated area was 3.8 million hectares, yielding 56.4 million metric tons, making it the fourth most significant crop after rice, corn, and milk. In recent decades, banana peel has been used in various industrial applications, including biofuel production, biosorbents, pulp and paper, cosmetics, energy-related activities, organic fertilizer, environmental cleanup, and biotechnology. The global production of bananas and plantains has surpassed 139 million tons, with India, China, Uganda, Ecuador, the Philippines, and Nigeria leading in production. Beyond food, bananas are utilized in daily life for various purposes. However, bananaplantations also pose environmental challenges, as the plants are often cut down and left to decompose after harvest, contributing to the spread of diseases like Sigatoka. Banana flowers, often discarded during cultivation, have been recognized for their high nutritional value and medicinal properties, similar to banana fruit. Traditionally used by tribal communities as food and medicine, banana flowers are rich in phenols and flavonoids, which offer antioxidant benefits. These flowers are consumed in various forms across Asia and have potential as nutraceuticals due to their content of saponins, terpenoids, and steroids. Studies suggest that proanthocyanidins in banana flowers can inhibit DHT production, which may help reduce hair loss, particularly in patients with enlarged prostates. Additionally, banana flowers are high in fiber and iron, which can lower blood sugar and increase hemoglobin, potentially alleviating menstrual and muscle cramps. A study investigating the effects of banana flower extract on hair loss found that the extract reduced DHT levels and promoted hair growth in human hair follicle dermal papilla cells and a test group of 50 subjects over 12 weeks. Banana fiber, a bast fiber derived from the plant's trunk, is composed mainly of cellulose (60–65%), hemicellulose (6–19%), and lignin (5–10%). This fiber has excellent mechanical properties, including a Young's modulus similar to Kevlar and

potentially stronger than steel. Banana fibers have been explored as a sustainable alternative to synthetic fibers in various industries, such as construction, automotive, and aerospace, due to their mechanical strength, light weight, and cost-effectiveness. These natural fibers are used in applications ranging from packaging and textiles to automotive components like dashboards, bumpers, and door trims. The potential for using banana fiber composites in aerospace engineering is particularly promising due to their low cost and lightweight properties. Although banana fibers have some limitations, such as inconsistent mechanical properties and water uptake, these issues can be addressed through physical and chemical surface modification techniques. Starch, another valuable component of bananas, is a natural polysaccharide composed of amylose and amylopectin. Starch extracted from green bananas, particularly *Musa acuminata* (AAA group), can be utilized in various industries, including food, pharmaceuticals, and cosmetics. In cosmetics, starch serves as a thickening, gelling, and stabilizing agent, offering smoothness and stability to products. The potential of banana starch as an alternative to talcum in cosmetic formulations is currently being explored, with promising results for its use in products like face and body powders. In conclusion, banana plants offer a wide range of applications beyond their fruit, including the use of their fibers, flowers, and starch in various industries. The plant's bioactive compounds provide significant health benefits, while its fibers and starch offer sustainable alternatives to synthetic materials in industrial applications. Further research and development could unlock even more potential uses for this versatile plant.

DISTRIBUTION

There are hot and tropical places in Southeast Asia where the species of *Musaceae*, *M. acuminata* is found. The distribution range of *M. acuminata* is extensive with Malaysia being regarded as the main source of *M. acuminata*. It then spread to India and Burma which is home for the endemic species such as *M. balbisiana*. In addition, natural crossing occurred between both *M. acuminata* and *M. balbisiana* at the Indo-Burman periphery zone leading to triploid AAA banana cultivars, hence India serves as the major center of diversity among over 300 varieties of bananas out of total 600 types of *Musa* germplasm. Thus, India has been cultivating bananas for a long time as indicated by references to this fruit in the ancient treatises like *Ramayana* (2000 BC), *Arthashastra* (250 BC) and *Chilappthikaram* (500 AD) written on an Indian soil. The generic name was chosen in honor Antonius Musa, a Roman physician and botanist that lived between 63 B.C. to 14 A.D., and the specific epithet “*acuminata*” means tapering pointed apex which characterizes its fruits. It can be observed

that *M. acuminata* thrives in their natural habitats in Kaziranga forest range in Assam, Khasi hill ranges for Meghalaya, Southern and Middle Andamans and Western Ghats region in Karnataka state. The highest producers of bananas include Brazil, China, Columbia, Ecuador, India, and Venezuela. They are also grown in several other countries globally including *M. acuminata*.

CULTIVATION

How to Grow Tropical Banana Plants?

Banana plants grow naturally in tropical humid climates on deep, sandy and well-drained soils, and they are successfully cultivated under irrigation in semi-arid regions such as the southern parts of Jamaica. Suckers and divisions from the rhizome are used for planting; the first crop matures between 10 and 15 months after planting, thereafter fruiting is more or less continuous. For a healthy banana farm, regular cutting of excess growth is required to prevent overcrowding. Commercially acceptable bunches of bananas should have at least nine hands each and weight ranges from 22 to 65 kg (49-143 lbs). In a year, an acre can yield over three hundred such bunches that are picked before full ripening. The timing of harvest for shipping depends on the degree of maturity desired at market entry, proximity to market and type of transport while subsequent ripening may be induced by treatment with ethylene gas upon arrival.

PHYTOCONSTITUENTS

Constituent	Amount µg,mg,g, or percent daily value
Energy	371 kJ (89 kcal)
Water	74.91 g
Carbohydrates	22.84 g
Sugars	12.23 g
Dietary fibre	2.6 g
Pantothenic acid(B5)	0.334 mg, (7%)
Pyridoxine(B6)	0.4 mg, (31%)
Choline	9.8 mg, (2%)
VitaminCMinerals	8.7 mg, (10%)
Magnesium	27 mg, (8%)
Phosphorus	22 mg, (3%)
Potassium	358 mg, (8%)
Sodium	1 mg, (0%)
Zinc	0.15 mg, (2%)

COSMETIC_USE



Banana peels-The most effective employment of banana peels in cosmetics industry .A yellow-colored peel that contains flavonoids and phenolics is one of the main ingredients used to make an antioxidant lotion, which is made with banana peels (Banana peels' effective usage in cosmetic industry) and watermelon rind. This occurs as a result of the hydrophilicity nature of the components found in the skin of banana peels and watermelon rinds. The radical sare usually responsible for cell damage by inflammation, increasing the probability of UV induced harm while at times they may lead to cancerous effects on skin; these effects can always be minimized by applying this type of lotion to increase our skin protection. Designed for working at the cellular level, this lotion is supple, smooth but not sticky. The pH value was between 5.0 and 5.5 making it lie within human acid mantle range (4.5-6.5); so it does not affect or disrupt your acid mantle. Moisturizer was made through banana peels that being organic had never been reported any side effects on human skin. It was an oil-in-water type of emulsion with 4-5 months of shelf life. This moisturizer that is made from banana peels proved to be very effective in avoiding xerosis (skin dryness).

Herbal face packs and masks were prepared by using either ground banana peel powders or by peeling them directly. In the herbal facepack, other organic products were included to improve the smoothness and softness on the face.

Banana flower- Hair root diameter was measured using a digital outer diameter measuring instrument, where a higher reading indicated a thicker hair root. Three hairs were sampled from each participant, and the thickness of the roots was observed under a microscope at 100x magnification. The diameter of the hair was measured from the root upwards to evaluate overall hair thickness. For assessing hair robustness, hairs were pulled from the

frontal, temporal, and occipital regions to measure hair loss volume. Hair was collected from the drainage hole both after washing and blow-drying. Participants were instructed to inspect and clean the drainage hole before washing their hair. After washing, they gathered the hair from the drainage hole and placed it in zipper bags labeled for the 1st, 4th, and 11th weeks. These hair samples were then photographed, documented, and weighed. To determine hair density, photographs were taken of areas with thinning hair. Scalp health was assessed using a Soft Plus analyzer and the scalp and hair root conditions were examined under a microscope.



Banana fibres-Banana paper is a type of paper made from the fibers of banana plant bark or banana peels. Compared to traditional paper, banana paper is less dense, more rigid, more easily disposable, more renewable, and has greater tensile strength. These characteristics are attributed to the cellular structure of banana fibers, which are composed of cellulose, hemicellulose, and lignin.



Banana leaves- Banana leaves are commonly used as an ingredient in cosmetics, including lotions, gels, face packs, and scrubs. They are abundant in antioxidants, magnesium, calcium

,and zinc, and contain valuable compounds like corosolic acid, allantoin, flavonoids, polyphenols, lignin, hemicellulose, tannins, rutin, and anthocyanin. These components contribute to various cosmetic benefits.



Such as:

- Skincare-Banana leaves are effective in treating skin irritations, pimples, darkspots, and severe dryness. They also help combat signs of aging, photoaging, skin atrophy, and conditions caused by retinoid use.
- Anti-aging: -Banana leaves improve skin elasticity, reduce wrinkles, and enhance the expression of procollagen and the COL1A1 gene.
- Hair care: -They are useful in treating dandruff, dryness, and improving hair's shine, strength, and natural black color.
- Sunscreen:-Banana leaves may also possess properties that provide protection against the sun.

MARKETED FORMULATION

A] Face Pack From Banana Leaf

Sr. No	Ingredient	Quantity	Category
1	Banana leaf extract	3gm	Antioxidant
2	Multani mitti	2.5gm	Cleansing agent
3	Gramflour	2gm	Cleanser
4	Gramflour	2.5gm	Flavouring Agent

Procedure

- 1) 3gm of fine banana leaf powder was taken in mortal and pestle.
- 2) Multani mitti 2.5gm and gram flour 2gm was added to it and mixed properly for uniform mixing

- 3) The fragrance powder 2.5gm was added in above mixture.
- 4) All the contents was mix thoroughly in mortal. The prepared facepack powder was packed and labelled.

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.

Some Marketed Ayurvedic Facepack

Roopmantra, Patanjali, Mother's Sparsh, Petal Soft, Jeev Kanthi, Himalaya, Dabur, DR. Vaidya's Face pack, Instaglow, Deyga, Oshea.

B) FACESCRUB

Sr. No.	Ingredients	Quantity (gm)	Category
1	Banana leaf extract	4gm	Antioxidant
2	Multani mitti	1gm	Cleansing agent
3	Aloevera gel	3gm	moisturizer
4	Rosewater	5gm	Flavouring agents
5	Citric acid(lemon juice)	2 drops	Preservative
6	Purifiedwater	Quantity sufficient	Vehicle

Procedure

- 1) The banana leaves was shaded 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) 1gm of multani mitti and 3 gm of aloevera gel was added and mixed properly.
- 5) 5ml of rosewater was added for fragrance.
- 6) 2ml 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 a semisolid paste.
- 8) All the ingredients was mixed properly and semisolid paste or face scrub was prepared flavouring agent.

USES OF FACE SCRUB

- 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.

HOMEMADE USES

1. Under-eye patches

Banana peel can act as a tool that will provide much-needed coolness and freshness to your under-eye area. In fact, the antioxidant and vitamin C content of banana peel can help reduce the appearance of wrinkles and can brighten the skin.

Method to use it:

Step1: Cut banana peel into two small pieces and store the min side your fridge.

Step 2: Place the peel's soft side under your eye area.

Step3: Close your eyes and relax for 15-20 minutes.

Step 4: Remove the peel, rinse off and apply an under-eye cream. So next time you eat the fruit, don't toss the banana peel in the garbage, instead use it for your skin care.

2. Banana peel mask

Bananas are very nutritious for the body, but when it comes to skin, bananas are also rich in skin friendly nutrients such as vitamin B6, B12, antioxidants, and zinc which all can help combat several skin problems without any side effects.

Method to use it:

Step1: Take half banana and chopit up into tiny pieces and do the same with the whole peel.

Step2: Grind the banana peel with the help of a mixer and add two pieces of banana and rest you can eat. Mix it well until it becomes a smooth paste.

Step3: Add at a spoon of honey and curd. Stir the concoction well. You can also add some rosewater to this face mask to turn it into a paste.

Step4: Apply the paste to your face and neck region.

Step5: Let it dry for a few minutes and then wash your face with lukewarm water.

2. Banana soap

Bananas are also natural ingredients that add texture and color to soap. We can use a very soft, very ripe banana with a high concentration of sugars for preparation of banana soaps.

Method

1. If you want to reuse a juice or milk box, clean it and let it dry. When the box is dry, cut the upper part of the box.
2. Weigh the banana in a container, and set aside.
3. Add distilled water to a heat-resistance bowl.
4. Add the lye(sodium hydroxide) to the water and mix to dissolve. Set aside.
5. In a pan, weigh the coconut oil and the butters. Place on the stove on low-medium heat to melt.
6. In another container, weight he liquid oils.
7. Add the banana to the oil sand use an immersion blender to mix the banana with the oils.
8. Add the melted coconut oil and the butters to the liquid oils.
9. Prepare a container with clay mixed with some water. Set aside. If you are not using clay, skip this step.
10. check the temperature of the lye solution and the oils. I recommend mixing the lye into the oils at a temperature of 35-45 degrees celsius (120 fahrenheit), the lye solution and the oils should be more or less at the same temperature.
11. Add the lye solution to the oils. Use an immersion blender to emulsify. Don't over-blend. Once you reach a light trace, stop blending.
12. Pour a little soap batter into the container with the clay mix and stir to combine. Set aside.
13. Add the essential oil blend to the soap batter and mix. Pour the soap batter into the box.
14. Add the essential oil blend to the colored clay soap batter and mix.
15. Pour the soap batter with the clay on top.
16. Leave the soap to solidify for 24-48 hours unmold the soap. If you use a box, you can cut it from the sides to release the soap.
17. Cut the soap into bars.
18. Leave the soap bars to cure for 3-6 weeks before using.
19. If you trim the soap edges, place them in a box or a bag and make the whipped sugar scrub from soap scraps with them.

CONCLUSION

Bananas, known for their high nutritional and medicinal value, are consumed both raw and cooked globally. Research reveals that bananas are rich in a diverse range of bioactive compounds that significantly contribute to health. These beneficial compounds are present in quantities that effectively support health promotion. Numerous studies have confirmed the antioxidant properties of these bioactive substances, making bananas effective in disease prevention and health promotion. In breeding programs aimed at developing bio-fortified banana varieties, identifying and utilizing cultivars with high levels of these bioactive compounds is essential. These cultivars represent valuable resources.

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