



ISSN: 2230-9926

Available online at <http://www.journalijdr.com>

IJDR

International Journal of Development Research

Vol. 14, Issue, 04, pp. 65476-65478, April, 2024

<https://doi.org/10.37118/ijdr.28127.04.2024>



REVIEW ARTICLE

OPEN ACCESS

EXPLORING THE POTENTIAL HEALTH BENEFITS AND NATURAL REMEDY FOR SKIN DISORDER: A REVIEW ON MUSA PARADAISSICA (BANANA PEEL)

Saloni Jaiswal*, Shubhangi Choudhari and Sapna Pal

School of Pharmacy, G H Rasoni University Saikheda, Sausar, Chhindwara, M P

ARTICLE INFO

Article History:

Received 17th January, 2024

Received in revised form

15th February, 2024

Accepted 21st March, 2024

Published online 30th April, 2024

Key Words:

Antimicrobial, banana peel, Musa, Photochemistry, Pharmacological activity.

*Corresponding author: Saloni Jaiswal,

ABSTRACT

Banana plants, belonging to the genus *Musa*, family Musaceae, include *Musa paradaisica* and *Musa sapientum*, both cultivated globally for their ripe fruits or culinary uses, with banana peels also being utilized. Medicinal applications can be found in all parts of banana plants. It has a long history of using Indian Ayurvedic medicine to treat many illnesses. Banana is a good source of potassium, vitamin C & vitamin A. Bananas are everywhere in our home, that's why it is known as zero budget fruit for organic cosmetics. Botanically point of view, the *Musa* genus can be categorized into two groups: edible and wild species. There are various properties of whole the plant such as antioxidant, anti-diuretic, antimicrobial, antimalarial, wound healing, antiulcer genic, anti-allergic, hair growth promoting hypolipidemic, vasodilatory anti-snake venom etc. It is widely accepted that there are over, 1000 varieties of bananas globally, organised into approximately 50 distinct groups. The banana fruit is originated in the southern subtropical region and is listed as the second most produced fruit in the world after citrus fruits. Banana peels have anti-inflammatory properties and can be used in daily life as home first aid to control, reduce and treat illnesses and diseases. Additionally, it contains essential minerals including iron, calcium, sodium, phosphorus, and magnesium, along with significant levels of dietary fibre. Even fibre rich banana peels can be used to treat constipation problems. This review focuses on the phytochemistry, traditional usage & pharmacological prospective of the banana plant.

Copyright©2024, Saloni Jaiswal et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Saloni Jaiswal, Shubhangi Choudhari and Sapna Pal, 2024. "Exploring the potential health benefits and natural remedy for skin Disorder: A review on *musa paradaisica* (Banana peel)". *International Journal of Development Research*, 14, (04), 65476-65478.

INTRODUCTION

A banana is an elongated, edible fruit that are produced by various species of large herbaceous flowering plants within the *Musa* genus. Bananas, renowned for their soft, sweet and crusty nature, particularly the peel exhibit higher antioxidant capacity than the pulp, featuring over 40 phenolic compounds. In certain regions, bananas intended for cooking purpose might be referred to as "plantains". Typically curved and elongated, these fruits exhibit variability in size, colour, and firmness. Their soft, starchy flesh is enveloped by a rind which transition in colour from green to yellow, red, purple, or brown as the fruit ripens. Clusters of banana grow upward near the apex of the plant. Extensive research, including studies by Nagarajaiah and Prakash, has explored banana peels chemical components, nutritional contents, and antioxidant activity. It may contain flavonoid, carbohydrates, reducing sugar, tannins, saponins, anthroquinones, steroids, phenols, terpenoids etc. were detected from those extract. Most products are made from chemical compounds. Banana peel have recently found diversified industrial applications, including bio-fuel production, bio-sorbents, pulp and paper production, cosmetics, energy- related activities, organic fertilizers, environmental cleanup and biotechnology process. Compared to its pulp, the banana peel is richer in phytochemical compound. Its antifungal and antibiotic properties are harnessed effectively. Additionally, banana peel is utilized as a home remedy for treating various skin problems such as allergies and skin irritations.

However, the disposal of banana peel waste in municipal landfills exacerbates existing environmental issues. For cosmetic use, plants part should possess diverse properties such as antioxidant, anti-inflammatory, antiseptic, softening, and antibacterial activities. Skin ageing, characterized by wrinkles, uneven pigmentation, darkening, thinning, sagging, and roughening, results from intrinsic or extrinsic mechanism.

The advantages of peeling Bananas: Banana peels aid in moisturizing the skin, reducing puffiness and redness. By providing hair with moisture and shine, as well as fighting dental infections to reduce pimples caused by acne, it also promotes healthier skin. Besides, it can help to eliminate wrinkles caused by acne. They contain antioxidants such as polyphenols, carotenoids, and other compounds that can combat cancer-causing free radicals in our body. The skin-friendly benefits of bananas include antioxidants such as vitamin C, vitamins B and K, magnesium (vitamin A and potassium), and calcium. Moisture, brightness, and elasticity can be achieved by adding lutein to the skin's interior.

Ideal properties of banana peel: The high water retention, oil retention and swelling properties of these substances make them suitable for various applications. The antioxidant and antimicrobial activities of catecholamine's, along with phenolic compounds, alkaloids, flavonoids like tannins as well as other natural antioxidants such as cellulose, are found in banana peels.

Applications: Antiallergic, antiseptic, skin softening, smoothing, moisturizing, cooling, Antiacne, Antifungal, Germicide, Antiaging, antiwrinkle, fairness etc.

Plant profile

Musa paradisiaca (Banana peel)



Pharmaceutical activities

Antioxidant
Antimicrobial
Anticancer

Anti- Nutrient composition

Phytate
Alkaloid
Oxalate
Glucosides

Food applications

Food product
Food ingredients
Food packaging

Nutritional composition

Chemical composition
Fatty acids
Amino acids
Dietary fibre

Synonyms: *Musa sapientum*, Japanese banana.

Biological source: It is rich source of many bioactive compounds like carotenoids, biogenic amines, polyphenols, phytosterols and antioxidant.

Chemical constituent: phenolic compound, alkaloids, flavonoids, tannins, saponins, glycosides, carotenoids, sterols, triterpenes, and catecholamines.

Family: Musaceae.

Uses: antioxidant, anti-inflammatory, antibacterial, antifungal or astringent activity etc.

The two primary species of edible banana fruits are *Musa acuminata* Colla and *Musa balbisiana* Colla. *Musa paradisiaca* L., a hybrid of these two species, is also commercially available. All edible banana fruits are seedless. The countries of Asia, particularly Malaysia, South America, Central and North America, Africa, and Europe are the ones where bananas are most frequently farmed.

Taxonomical classification of banana

Kingdom : Plantae
Division : Magnoliophyta
Class : Liliopsida
Order : Zingiberales
Family : Musaceae
Genus : Musa
Species : Musa paradisiacal

Vernacular Names:

English : Plantain or banana
Sanskrit : Vanalaxmi, kadali, Rambha
Hindi : Kela

Marathi : Kela
Gujarati : Keda
Sindhi : Kewiro
Telugu : Kalamu, Ariti
Tamil : Kadali

Active constituents

Carbohydrates: starch, sugar, fibre, cellulose.

Minerals: calcium, copper, zinc, magnesium, potassium, manganese, phosphorus, sodium.

Vitamins: vitamin B1 (thiamine), vitamin B2 (riboflavin), vitamin B3 (niacin), vitamin B6 (pyridoxine), vitamin B7, vitamin B9, vitamin B12, vitamin C (ascorbic acid), vitamin D (calciferol), vitamin E (tocopherol and tocotrienols), vitamin K.

Flavonoids:

1. Anthocyanins- Delphinidin, pelargonidin, malvidin.
2. Isoflavonoids- 2'- Hydroxyformononetin
3. Flavanols- (+)-Gallicocatechin 3-O- gallate
4. Flavones- Apigenin 7-O-apiosyl-glucoside Chrysoeriol 7-O-glucoside
5. Flavanones- Neeroiocitrin
6. Flavonols- 7-O-rhamnoside, glucuronid
7. Other polyphenols Hydroxycoumarins- Scopoletin, Urolithin A, Umbelliferone.

Phenolic compound: Gallic acid, catechin, tannins, epicatechin, anthocyanins, gallicocatechin, salicylic, sinapic, ferulic, gallic, epigallocatechin, quercetin, p-hydroxybenzoic, vanillic etc.

Protein and amino acids: starch phosphorylase, malate dehydrogenase, dopamine, linoleic acid etc.

Phytochemical constituents: The growing portion of the plants contains tannin and gallic acid. Along with carbohydrates, the fruit also contains 2.2% sugar, 4.8% aluminoids, 1.0% fat, and 6.8% to 13.3% non-nitrogenous extractives. In addition to a tiny amount of vitamin B, it contains vitamin C. The peel and pulp of bananas have been shown to contain a variety of flavonols and phenolic acids, such as hydroxycinnamic acid, quercetin-deoxyhexose, epicatechin, rutin, ferulic acid, sinapic acid, ferulic acid-hexoside, caffeic acid-hexoside, and many other unknown combinations that are thought to have health-promoting qualities. Fruits are very nutrient-dense, both at the macro and micro levels. Unripe fruit has a higher concentration of calcium and selenium, while ripe fruit has higher levels of manganese and phosphorus. Aspartic acid, glutamic acid, and leucine are the three main amino acids found in ripe fruit. Ripe fruit husks contain silica from limes, potassium and soda carbonates, potassium chloride, and alkaline phosphates. Plantains that are green have a high tannin content. Potash, sodalime, magnesia, alumina, chlorides, sulphuric anhydride, phosphoric anhydride, silica, and carbon anhydride are the ingredients of plantain flower stem juice.

Pharmacological activities of Banana: The pharmacological effects of bananas are varied, and the entire fruit has both traditional therapeutic uses and nutritional benefits. Several in vitro animal model studies and clinical trials have demonstrated the medicinal potential of various components of bananas in the treatment of conditions like ulcers, diabetes, cancer, diarrhea, and infections. The subsequent sections address significant concerns pertaining to treatment.

Anti-Diuretic activity: The banana fruit has numerous pharmacological properties and is used in traditional medicine and nutrition in all portions of the fruit. When compared to the study's standard saline administration, the ethanol extract from the peel of *M. sapientum* showed a diuretic effect, increasing the excretion of potassium and other electrolytes as well as urine volume.

Antioxidant activities: When it came to antioxidant activity, the ethanol extract outperformed the ethyl acetate extract. Furthermore, phenolic components, flavonoids, and tannins were present in greater amounts in the ethanol extract than in the ethyl acetate extract. Therefore, the ethanol extract of bananas has a stronger antioxidant activity than the ethyl acetate extract.

Antilipidemic activity: Flavonoids found in bananas (*Musa paradisiaca*) when taken orally offer a number of health advantages. The male rat's effective dose of flavonoids extracted from banana fruit is 1 mg/100g body weight/day, which significantly reduces cholesterol. Triglycerides, free fatty acids, cholesterol, phospholipids, and other constituents are slightly reduced in the serum, liver, kidney, and brain of experimental animals. greater quantities of hepatic and fecal bile acid, as well as fecal neutral sterols, together with increased activity of lipoprotein lipase and LCAT suggested a greater rate of cholesterol breakdown. The hypolipidemic impact of flavonoids showed that the rate at which cholesterol is broken down is faster than it is synthesised.

Hair growth promoting activities: In rats given vehicle control, 2% minoxidil, and extract, the study measured hair length and examined follicles under a microscope to see whether unripe *Musa paradisiaca* fruit extract may promote hair development. The outcome implied that *Musa paradisiaca*'s unripe could be able to encourage hair growth.

CONCLUSION

Linn's *Musa paradisiaca*. It can be found widely throughout many tropical climates. *Musa paradisiaca* Linn. fruit. It is among the most expensive and extensively consumed foods on the planet. This fruit seems to have wide anti-microbial pharmacological action. The fruit's potential as an antioxidant, antilipidemic, antidiuretic, hair-growth-promoting, and for many other purposes has been studied. Proteins, amino acids, carbohydrates, minerals, vitamins, phenolic compounds, carotenoids, flavonoids, and so forth. How much preclinical testing has been done on the plant.

REFERENCES

- Ramakrishna.S*, Anjana K.H, Bhavana M,P, Review on All about Banana Fruit, September 2022|JSDR | Volume 7 Issue 9.
- Prashanthi D*, Chaitanya M, "A Review on multiple uses of Banana peel", March 2020 IJSDR | Volume 5, Issue 3.
- Asif Ahmed Kibria, Kamrunnessa, Md. Mahmudur Rahman, Annanya Kar, "Extraction and Evaluation of Phytochemicals from Banana peels (*Musa sapientum*) and banana plants (*Musa paradisiaca*). *Malaysian Journal of Halal Research Journal* (MJHR), 2019, Volume 2, issue 1.
- Singh HP: Harnessing the Potential of banana and plantain in asia and the pacific for inclusive growth. *International Society for Horticultural sciences* 2011; 495-06
- F. Uckaya*1, 3 and M. Uckaya, "Formulation and Evaluation of Anti-Aging Cream Using Banana peel extract", *Faith and Uckaya, IJPSR*, 2022; Volume 13, issue 1.
- Krisyanella*, Resva Meinisasti, Silvi Elvianita, "Formulation of Lotion of gerga orange peel ethanol extract with variation of extract concentration" presented at The 2nd Bengkulu, International Conference on Health (B-ICON) Bengkulu-Indonesia 15-17 November, 2022
- Nitika M. Rath, Shital V. Sirsat, Surekha S. Tayade, Abhijit S. Khot; Akshay C. Deshmukh, a review on Formulation and Standardization of Herbal Lotion , Volume 7, Issue 4 April 2022.
- Ms. Kalyani G. Dubhashe, Ms. Bhavana D. Tambe, "Formulation and evaluation of Herbal Lotion" *International Journal of Research Publication and Reviews*, Vol. 4, no 5, pp 6543-6547 May 2023.
- Mr. salunke Saurabh Pandit, Mr Hingana L.D "Preparation and Evaluation of Herbal Body Lotion", *International Journal of Advances in Engineering and Management*, vol. 4, Issue 6 June 2022, pp 2766-2772.
- Banerjee, D., Kumar, M., & Mukopadaya, S. (2022). Formulation and evaluation of herbal body lotion: A review. *International Journal of Health Sciences*, 6(S2), 13342-13349.
- Varsha Patil, Dr. Nandu Kayande, Rekha Birlle, Kavita Savukare "Formulation and evaluation of Herbal Lotion", *IJAR SCT*, volume 3, issue 4, April 2023.
- Saudagar R. B.* AND Sisodiya M. H. Review on Herbal Cosmetics, volume 7, Issue 7, 573-591.
- Kaur M, Mehta A, Bhardwaj KK and Gupta R, "Phytochemical analysis, Antimicrobial and antioxidant activity assessment of orange peels", *Journal of Global Biosciences, ISSN 2320-1355 Volume8, Number 3, 2019, pp. 6062-6072.*
- Saudagar R. B.* 1 and Sisodiya M. H., Review on herbal cosmetics, *World Journal of Pharmaceutical Research Krisyanella**, Volume7, Issue 7, 573-591.
- S. Singh, G. Garg, V. K. Garg, and P.K. Sharma, "Review on herbal plants having sunscreen and antioxidant activity," *Pharmacologyonline.*, 2009, 3, pp. 244-267.
- Prajakta Jejurkar, S.D. Mankar, Jadhav Harshada, A Review on orange peel powder, *Research Journal of Pharmacognosy and Phytochemistry*. 12(4): October – December, 2020.
- Maligi Bhavani, Sonia Morya, Deepika Saxena & Chinaza Godswill Awuchi, "Bioactive, antioxidant, industrial, and nutraceutical applications of banana peel. *International Journal of food properties* 2023, Vol. 26, NO.1, 1277-1289.
- A.E. Hegazy and M.I. Ibrahim, "Antioxidant Activities of Orange Peel Extracts", *World Applied Sciences Journal* 18 (5): 684-668, 2012. IDOSI Publications, 2012.
- Sunil Mishra, Dr. Shashank Tiwari, Kartikay Prakash, Prachi Jaiswal and Harsh Rajpoot, "Pharmaceutical assessment of body lotion: A herbal formulation and its potential benefits". *International Journal of Pharmacy and Pharmaceutical Science* 2023; 5(2): 32-38.
- Cory Linda Putri Harahap, Ayus Diningsih, and Ervina Silvia. S.H. Ritonga et al. (Eds): *TIHC 2022, AHSR 50*, pp. 27-37, 2023. https://doi.org/10.2991/978-94-6463-032-9_6.
- Atul Rana, Ashu Goel, Sonal Yadav, Sabiya Praveen, Tinku Kumar, "A Review on pharmacological activity of Banana (*Musa Paradisiaca*), *International Journal of Pharmaceutical Research and Applications*, volume 8, Issue 3 May-June, pp: 2901-2910.
