Review On Phytochemical & Pharmacognostic Evaluation Of *Musa Paradisiaca*

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Abstract

Musa paradisiaca Linn., commonly known as plantain or banana, is a well-known plant with significant medicinal and nutritional value. Belonging to the family Musaceae, it is widely cultivated in tropical and subtropical regions across the world, especially in India. In the traditional Indian system of medicine, *Musa paradisiaca*—referred to as Kadali in Sanskrit—has been used for centuries to treat a variety of elements.

The plant is known not only for its edible fruit but also for its various parts—such as the pseudo stem, leaves, flowers, and roots—which have been traditionally utilized for their therapeutic properties. Its wide application in folk medicine includes the treatment of diarrhea, diabetes, ulcers, inflammation, and wound healing.

Given its extensive traditional use and emerging scientific evidence, this review aims to provide a comprehensive overview of the morphology, phytochemical constituents, ethnomedicinal uses, pharmacological activities, and toxicological profile of *Musa paradisiaca*, highlighting its potential as a valuable source of natural therapeutic agents.

Introduction of Skin

The skin is the largest organ of the human body, serving as a vital barrier and interface between the internal body and the external environment. It plays critical roles in protection, sensation, thermoregulation, and maintaining overall homeostasis. Understanding its anatomy and physiology is essential for fields like dermatology, cosmetology, and medicine.

PHYSIOLOGY OF SKIN

Protection:

The skin forms a primary barrier against the environment, shielding the body from microorganisms, UV radiation, mechanical damage, and preventing dehydration.

Sensation:

Nerve receptors in the skin detect various stimuli, including pressure, temperature, pain, and touch, allowing interaction with the external environment

Thermoregulation:

sweat glands in the skin help regulate body temperature by releasing or conserving heat, ensuring the body's internal temperature remains stable.

Vitamin D Synthesis:

When exposed to sunlight, the skin converts 7-dehydrocholesterol into a precursor for Vitamin D, which is essential for calcium absorption and bone health.

Absorption:

While primarily a barrier, the skin can absorb certain substances, particularly lipophilic (fat-soluble) compounds.

Excretion:

The skin excretes waste products and excess water through sweat, including urea, ammonia, and salts, contributing to electrolyte balance.

Immune Function:

The skin contains immune cells like Langerhans cells that contribute to the body's defense against pathogens.

Storage:

The skin stores lipids (fats) and acts as a reservoir for water.

Communication:

Skin can also serve as a means of communication, with changes in blood flow and hair position influencing emotional expression.

Plant Profile

Synonyms: - Banana plantain

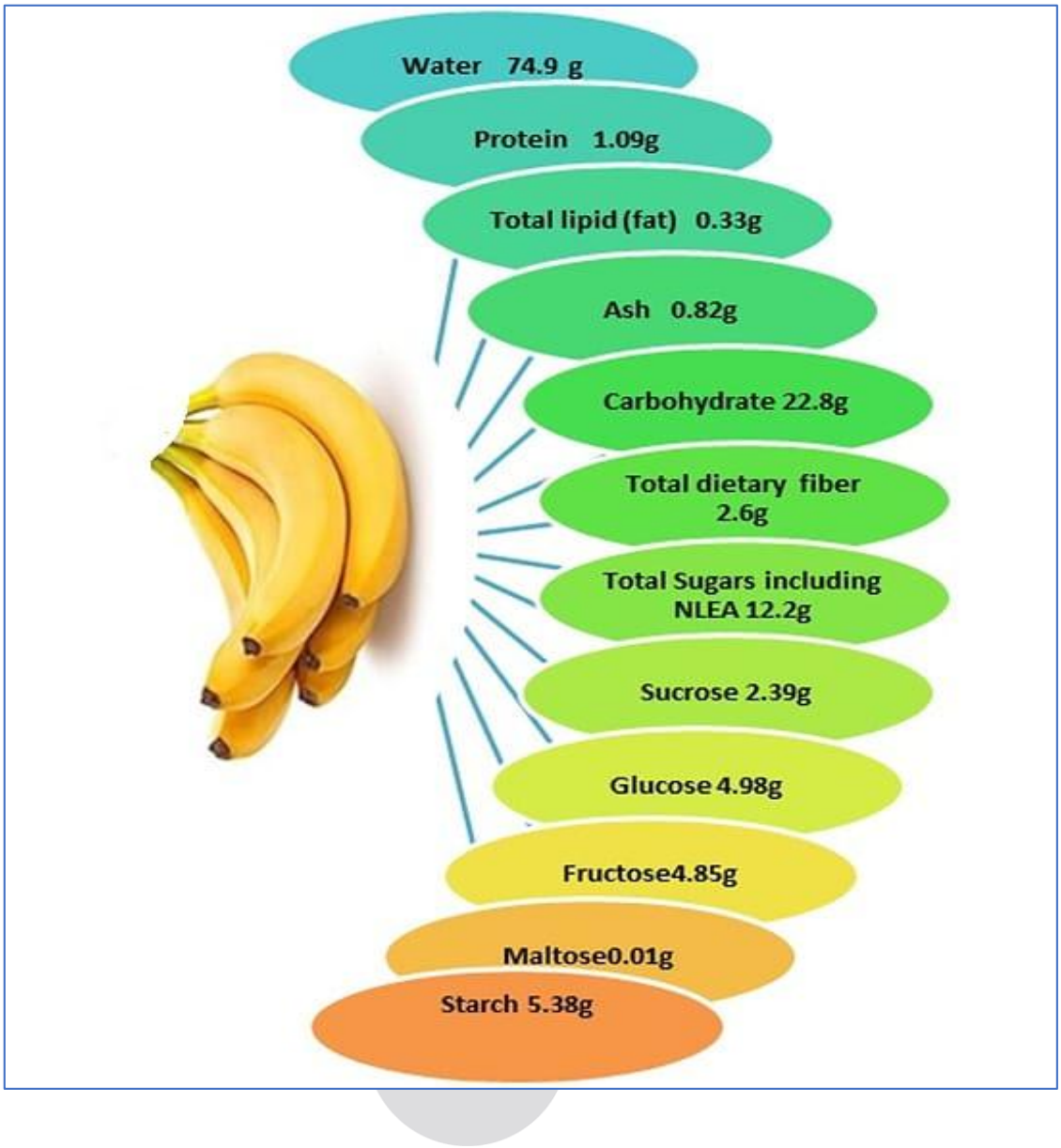
Biological source: - It is obtained from fruit (ripe and unripe) flowers stem, root and leaves. It is a monocotyledonous herbaceous plant cultivated primarily for its edible fruit.

Botanical Name: - *Musa paradisiaca*

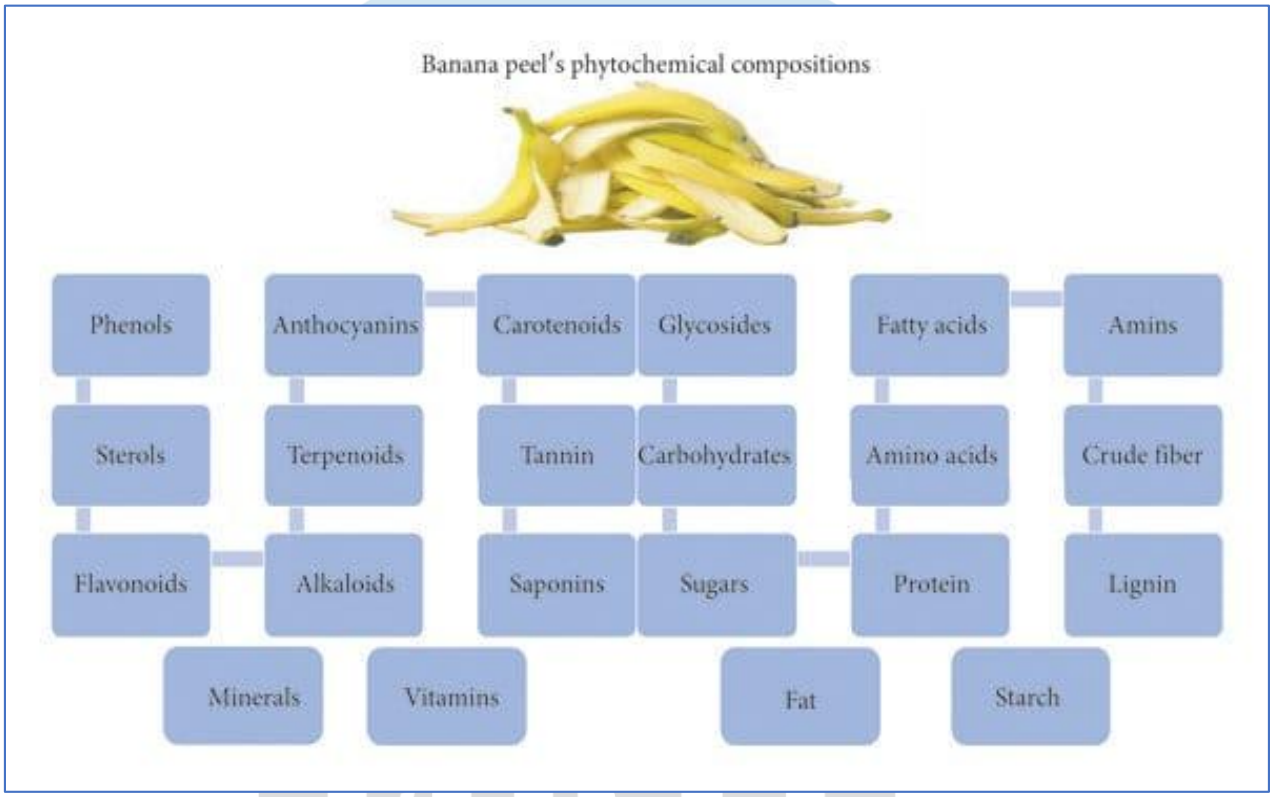
Family: - *Musaceae*

Part Used: - Fruit (ripe and unripe), flower, stem, root, and leaves

- **PHYTOCHEMICAL CONSTITUENT IN FRUIT**



PHYTOCHEMICAL CONSTITUENT IN PEEL



Taxonomical Classification of *Musa paradisiaca* (Plantain)

Kingdom: - Plantae

Subkingdom: - Tracheobionta (Vascular plants)

Super division: - Spermatophyta (Seed plants)

Division: - Magnoliophyta (Flowering plants)

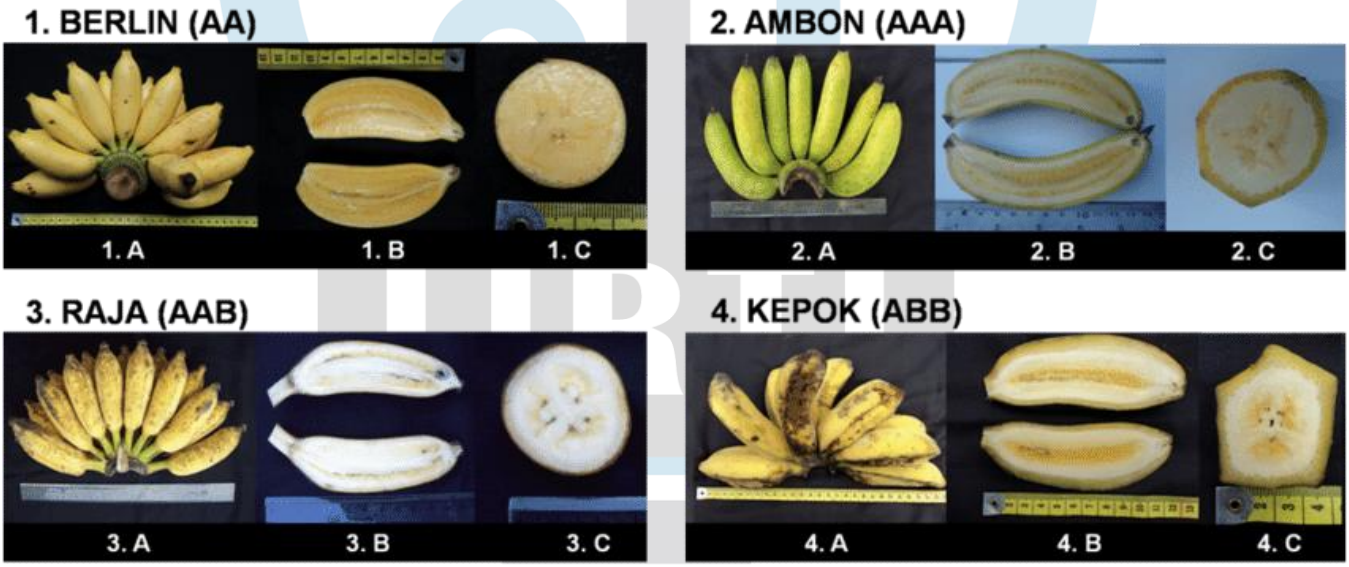
Class: - Liliopsida (Monocotyledons)

Order: - Zingiberales

Family: - *Musaceae* (Banana family)

Genus: - Musa

Species: - *Musa paradisiaca*



Advantages: -

- Glowing skin
- Reduce wrinkles
- Acts as a moisturizer
- Hydrating the skin
- Helps in collagen production
- Treat sun damage
- Treat acne
- Reduce under eye dark circles

Morphology: -

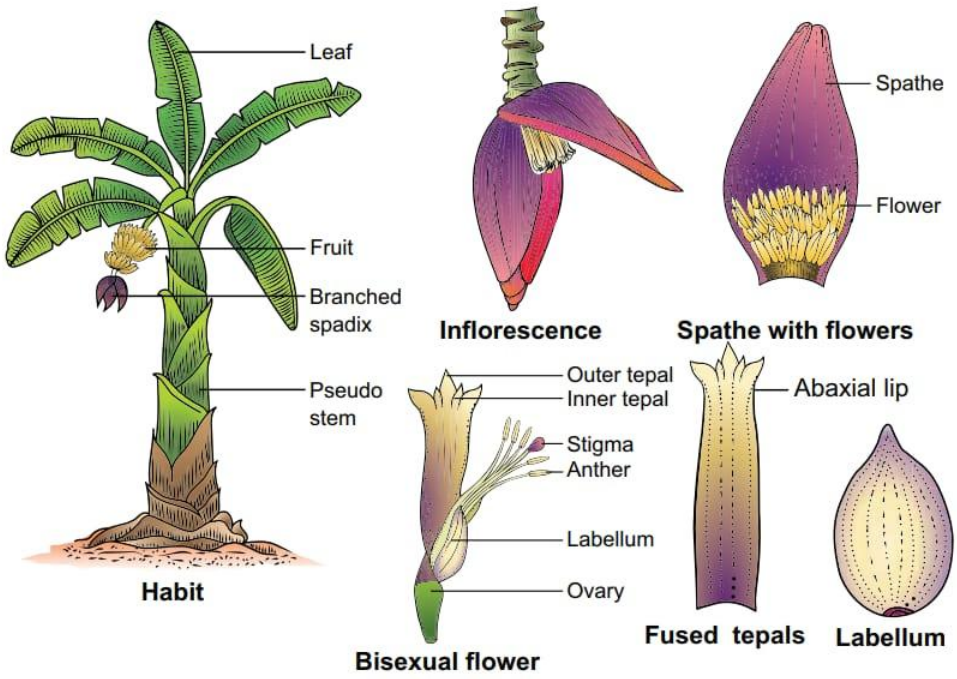
Habit: - *Musa paradisiaca* is one of the tallest herbaceous plants (up to 9 m long) with thick rhizome, pseudo stem fleshy, succulent formed by the imbricate leaf sheaths.

Leaves: - Large, oblong, petioles long channeled, bright glossy green.

Inflorescence: - Spadix

Flowers: - Flowers on recurved large, spadix drooping, the lower flowers all female, the upper all male, clustered and enclosed in the axils of large, reddish-purple caduceus, boat-shaped spathes or bracts.

Fruit: - Berry, fleshy, narrow at both ends, seeds rarely present in cultivated variety. Outer region of fresh fruits is greenish, shiny and mucilaginous; rough and black when dry and inner region white, hard, powdery with less or without seeds.



Pharmacological Effect

☑ 1. Antidiabetic Activity Plantain fruit and peel extracts can lower blood glucose levels. Mechanism: Improve insulin sensitivity, enhance glucose uptake, and inhibit α-amylase and α-glucosidase enzymes

☑ 2. Antioxidant Activity Rich in phenolics and flavonoids. Scavenges free radicals and protects against oxidative stress. Helps prevent diseases related to oxidative damage (e.g., neurodegenerative diseases, cancer).

☑ 3. Anti-inflammatory Activity Leaf and fruit extracts show significant anti-inflammatory effects in animal models. Useful in conditions like arthritis and other inflammatory disorders

☑ 4. Antimicrobial Activity Extracts of various parts (especially peel and root) exhibit antibacterial and antifungal activity. Effective against E. coli, Staphylococcus aureus, Candida albicans, etc.

☑ 5. Wound Healing The sap, leaves, and peel are traditionally used for treating wounds. Promotes faster healing and tissue regeneration

☑ 6. Anti-ulcer Activity Fruit pulp and extract help protect the gastric mucosa. Increases mucus secretion and reduces gastric acid production.

☑ 7. Antidiarrheal Activity Traditional use of unripe fruit or root to manage diarrhea. Tannins present may reduce gut motility and fluid secretion.

☑ 8. Antihypertensive and Cardio protective Rich in potassium and other heart-friendly nutrients. May help lower blood pressure and reduce the risk of cardiovascular diseases.

☑ 9. Anticancer Activity Some studies suggest cytotoxic effects on cancer cell lines. Likely due to antioxidant and anti-inflammatory phytochemicals.

☑ 10. Neuroprotective Effects Antioxidant compounds in Musa paradisiaca protect neurons from oxidative damage. Studied in models of Alzheimer's and Parkinson's disease.