IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 1, March 2026
Impact Factor: 8.2

Mechanism of Action of Banana Peel-Derived Bioactive Compound in Herbal Cosmetics Formulation

Vishav Singh[1], Yuvraj M Katu[2], Priyanka P Pawar[1], Yadav Aditya[1] and Jadhav Gayatri[1]
[1] Student, Shivlingeshwar College of Pharmacy, Almala, Latur, Maharashtra, India
[2] Assistant professor, Shivlingeshwar College of Pharmacy, Almala, Latur, Maharashtra, India
* Corresponding Author: Vishav Singh[1]
vishavsingh487@gmail.com

Abstract: *Banana peel, a major agro-waste generated during the consumption and industrial processing of Musa species, constitutes approximately 30–40% of the total fruit weight and poses significant environmental disposal challenges. Recent scientific investigations have highlighted banana peel as a rich reservoir of bioactive phytochemicals, including phenolic acids, flavonoids, tannins, carotenoids, vitamins, and essential minerals, which collectively exhibit notable pharmacological and cosmetic benefits. The present work provides a comprehensive overview of the chemical composition, biological activities, extraction methodologies, and cosmetic formulation potential of banana peel-derived bioactive. Literature evidence demonstrates that banana peel extracts possess strong antioxidant activity through effective free radical scavenging, along with antimicrobial, anti-inflammatory, and wound-healing properties relevant to skin and hair care applications. Standard solvent extraction techniques using ethanol, methanol, or hydroethanolic systems have been shown to efficiently recover phenolics and flavonoids responsible for these effects. Furthermore, banana peel extracts have been successfully incorporated into topical cosmetic formulations such as creams, gels, face masks, and shampoos, exhibiting acceptable physicochemical stability, skin-compatible pH, and favourable user acceptability. The multifunctional nature of banana peel bioactive makes them suitable for anti-aging, anti-acne, moisturizing, and skin-protective formulations. Beyond therapeutic efficacy, the utilization of banana peel in cosmetics supports waste valorisation, sustainability, and green chemistry principles. Overall, banana peel represents a cost-effective, eco-friendly, and scientifically validated natural ingredient with significant potential for development in modern herbal cosmetics and cosmeceutical industries.*

Keywords: Banana peel; Musa spp.; Bioactive compounds; Herbal cosmetics; Antioxidant activity; Agro-waste valorisation; Sustainable skincare

DOI: 10.48175/568