10th Brazilian Conference on Natural Products
XXXVI RESEM
4-7 November 2025, Belo Horizonte, MG, Brazil

Section: 05

BURITI OIL MICROEMULSION: A NANOTECHNOLOGICAL APPROACH FOR NATURAL COSMETIC FORMULATIONS

Catarina Silva Guimarães[1*], Paulinne Moreira Lima[1], Caroline Vieira Gonçalves[1], Robson Amaro Augusto da Silva[1], Gabriel Azevedo de Brito Damasceno[1], Juliano Geraldo Amaral[1]

*catarinasguimaraes@hotmail.com

[1]*Universidade Federal da Bahia, CAT- IMS, Rua Hormindo Barros, 58, Candeias, Vitória da Conquista, 45029094, Bahia, Brazil.*

Buriti (*Mauritia flexuosa*) is a palm native to Latin America, widely distributed in the Amazon region. It has ecological importance as an indicator of water presence in poorly drained soils, and economic relevance due to its applications in the food, cosmetic, fuel, and folk medicine industries. Buriti oil exhibits reported biological activities, including moisturizing, photoprotective, antibacterial, and wound-healing effects. Nanotechnology, particularly microemulsions, has been employed to enhance the solubility, absorption, and stability of bioactive compounds, offering advantages such as nanometric droplet size and thermodynamic stability. This study aimed to develop and evaluate the stability of a buriti oil-based microemulsion with moisturizing and photoprotective potential. The oil was obtained by cold pressing. A pseudoternary phase diagram was constructed using PEG-40 Hydrogenated Castor Oil, Sorbitan Oleate, and Propylene Glycol as surfactants, buriti oil as the oil phase, and ultrapure water as the aqueous phase. The selected formulation underwent centrifugation, pH, rheology, preliminary stability (5 days at 45 °C), and accelerated stability (60 days at 4 °C, 25 °C, and 45 °C) tests. Macroscopic characteristics, droplet size, polydispersity index (PDI), zeta potential, and conductivity were evaluated. The formulation was transparent and fluid, with an initial droplet size of 66.48 nm, PDI approximately of 0.2, and zeta potential of |22.3| mV, remaining stable after centrifugation. The pH (5.82) was suitable for topical application, and rheology indicated a Newtonian fluid with low viscosity (30 cP). After accelerated stability testing, all parameters remained within the ideal range for microemulsions (<100 nm), with a slight droplet size increase at 45 °C (72.07 nm) and reduced zeta potential, but still far from zero, indicating stability. PDI and conductivity showed no significant changes, with low conductivity suggesting an oil-in-water microemulsion. The developed microemulsion displayed stable physicochemical characteristics, indicating its potential as a nanotechnological delivery system for buriti oil in cosmetic formulations.

Keywords: *Mauritia flexuosa; Nanotechnology; Topical delivery; Natural products; Physicochemical stability.*