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INCORPORATION OF NATURAL PRODUCTS INTO AN ANTI-AGING COSMETIC FORMULATION

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The leaves of *Syzygium malaccense* (Red Jambo) are a rich source of phenolic compounds with antioxidant potential, contributing to the prevention of premature skin aging. This study aimed to incorporate both the crude extract and a purified fraction obtained from the leaves into a cosmetic formulation with antioxidant properties. The hydroalcoholic extract (HE) was prepared using 40% ethanol via exhaustive solid–liquid extraction, with solvent renewal every 24 h for six days, and subsequently purified through solvent partitioning with hexane, dichloromethane, ethyl acetate, and acetone, yielding an acetone fraction (Fr-Ace) with the highest concentration of bioactive compounds. Antioxidant activity of HE and Fr-Ace was evaluated by DPPH and ABTS radical scavenging assays, ferric reducing antioxidant power (FRAP), and the Folin–Ciocalteu method (RFC), while phenolic composition was determined by high-performance liquid chromatography. Both samples were incorporated into cosmetic formulations at 0.5% (w/w) and subjected to centrifuge stability testing (6,000 rpm for 20 min) and antioxidant activity analysis (DPPH assay). HE and Fr-Ace exhibited high antioxidant activity, with IC_{50} values for DPPH scavenging of 27.82 mg L^{-1} and 18.51 mg L^{-1}, 349.34 and 316.90 mg GAE g^{-1} for RFC, 3892 and 3204 µmol TE g^{-1} for ABTS, 8509 and 6261 µmol FeSO4 g^{-1} for FRAP, respectively, values of likely due to the presence of phenolic compounds such as myricitrin and mearnsitrin, chemical markers of the species and more abundant in Fr-Ace. The formulation containing HE showed particle sedimentation after centrifugation, suggesting incomplete solubilization of the extract, whereas the Fr-Ace formulation remained stable and exhibited antioxidant activity with an IC_{50} of 8562 mg L^{-1}. These results demonstrate that incorporating *S. malaccense* extracts enables the development of antioxidant-rich cosmetic products, with the purified fraction showing superior antioxidant activity, higher phenolic content, and greater solubility within the formulation, confirming the efficiency of the purification process and its potential for applying plant-derived matrices in the development of bioactive-rich products. The authors acknowledge UTFPR, the Central Analysis Laboratory, and CNPq (304982/2024-5).

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