ANTIOXIDANT ACTIVITY OF *Phoenix dactylifera* SEED AND *Punica granatum* PEEL EXTRACTS AND THEIR POTENTIAL AS COSMETIC CREAM'S ADDITIVE

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ABSTRACT

ANTIOXIDANT ACTIVITY OF *Phoenix dactylifera* SEED AND *Punica granatum* PEEL EXTRACTS AND THEIR POTENTIAL AS COSMETIC CREAM'S ADDITIVE

The widely reported food waste such as *Phoenix dactylifera* seeds and *Punica granatum* peels have contributed to the development of cosmeceutical products using natural ingredients extracted from them. The combination of *Phoenix dactylifera* seeds and *Punica granatum* peels as antioxidant agent in cosmetic cream is yet to be discovered though they are well-known for its high antioxidant activity, rich in phenolic compounds and other active ingredients. Thus, this study aimed to evaluate the antioxidant activity of date seeds and pomegranate peels extracts and its potential as additive in cosmetic creams. Date seeds and pomegranate peels were extracted using Soxhlet extraction. The crude extracts obtained were further characterized using phytochemical screening and FTIR analysis. The antioxidant activities of both crude extracts were evaluated using DPPH radical scavenging activity and evaluation of formulated creams were conducted through pH, organoleptic, spreadability, centrifugation, and irritancy test. Soxhlet extraction has yielded 37.33% and 56.83% of methanolic date seeds extract and pomegranate peels extract, respectively. The chemical composition of extracted date seeds and pomegranate peels were analysed using Fourier Transform Infrared Spectroscopy (FTIR) and phytochemical screening analysis, which revealed the presence of tannins, phenols, flavonoids, saponins and alkaloids in date seeds and pomegranate peels. DPPH radical scavenging assay was conducted to evaluate their antioxidant activities, pomegranate peels extract has the highest antioxidant activity (IC_{50} = 1.66 μg/mL), followed by ascorbic acid (IC_{50} = 2.05 μg/mL) and date seeds extract (IC_{50} = 2.27 μg/mL). The creams were formulated towards green cosmeceuticals with no parabens, SLS, fragrance, and sulfides that can cause skin irritation. The creams appeared yellowish brown, homogenous without phase separation, acceptable smell, smooth texture, little greasiness, and no coarse particles. The creams are in the normal pH range of skin with values between 5.08 - 5.43. Hence, the formulation with the addition of date seeds and pomegranate peel extracts has a great potential to be commercialized as a potent antioxidant cosmetic cream.

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