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Research article

Improvement of Thanaka Powder by Gamma Radiation: Microbial and Chemical Properties

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Abstract Thanaka powder is made from the stem bark of the *Hesperethusa crenulata* plant. Most Burmese women use it on the skin of the face as sun protection, a moisturizing agent and acne treatment. For a hygiene purpose, gamma radiation is currently used to control microorganisms and insect contamination in many products. In this experiment, the the effects of gamma radiation on the microbial numeration, total phenolic content, antioxidant activity, and chemical constituent alterations in Thanaka powder were investigated. Gamma irradiation was applied to powder samples at 5, 10, 15 and 20 kGy. The total bacterial count and total yeast and mold count were decreased with increasing irradiation dose. Gamma irradiation at a dose of 5 kGy was sufficient to reduce the microbial load in the powder to meet the standards of microbial quality for cosmetic products in Thailand. No significant change in the DPPH activity of the Thanaka powder was observed after irradiation. Additionally, the radiation process caused significant increases in total phenolic content, FRAP value and arbutin content. At a dose of 20 kGy, the total phenolic content, FRAP value and arbutin content were significantly higher than the non-irradiated Thanaka powder at 7.45, 9.59 and 16.04%, respectively.

Keywords: Antioxidant activity, Arbutin, Gamma irradiation, Thanaka

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