QUALITY VALIDATION METHOD OF TESTING FOR *Caulerpa Lentillifera (Laktud)*-BASED COSMETIC PRODUCTS

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ABSTRACT

QUALITY VALIDATION METHOD OF TESTING FOR *Caulerpa lentillifera (Laktud)*-BASED COSMETIC PRODUCTS

In recent decades, the allure of having flawless and good complexion skin in recent days has caused a noticeable emergence in the cosmetic product manufacturing industry. However, cosmetic products in recent days probably contain harmful synthetic ingredients. Consumers are likely to purchase cosmetic products that is claimed for having instant effects without considering ingredients used. Hence, naturally-based cosmetic products that often produced by using natural substances derived from plants such as from the roots, flowers, leaves or fruits are more preferable due to its reliable safety and promising efficacy. *Caulerpa lentillifera* or also known as sea grapes or *laktud*, was found to be beneficial in improving skin conditions. In this study, the bioactive compounds present in *caulerpa lentillifera* were quantified through chemical and biological analysis to be assessed as potential natural ingredients in cosmetic products development. *Caulerpa lentillifera* was formulated together with other plant extracts such as turmeric, green tea and kaffir lime leaves to enhance the efficacy of developed whitening, firming and night creams. Maceration extraction technique was carried out to extract pure crude from plant sample. The percentage yields recovered were 45.10%, 34.82%, 36.59% and 38.62% for *caulerpa lentillifera*, turmeric, green tea and kaffir lime leaves respectively. Heavy metal analysis using ICP-OES proved that the concentration of metal elements present in plant extracts were below the maximum permissible limits for cosmetic products. Through HPLC and FTIR analysis, the significant constituents present in plant samples were determined. The antioxidant properties were quantified by using IC_{50} value. Lower IC_{50} value indicates higher antioxidant properties. For anti-bacterial assay, *S. aureus*, *E. coli* and *B. lichen* were used for determining the ability of plant extracts to inhibit bacterial growth. The inhibition zone value was between 7 mm to 14 mm in diameter. Three type of plant-based cosmetic creams such as whitening, firming and night cream were formulated. The cosmetic creams were subjected to physical evaluations. Skin patch test was also conducted to 12 respondents at different age groups. The developed cosmetic creams were tested negative for any skin irritancy or allergies and safe for human skin application when use as intended.

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