PREPARATION OF ANTIOXIDANT FACIAL TONER FROM *Piper betle* LEAVES EXTRACT

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UNIVERSITI TEKNOLOGI MARA

AUGUST 2024

UNIVERSITI TEKNOLOGI MARA | Fakulti Sains Gunaan

SUBMISSION FOR EVALUATION
FINAL YEAR PROJECT 2 - RESEARCH PROJECT

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Final Year Project Report Submitted in
Partial Fulfilment of the Requirement for the
Degree of Bachelor of Science (Hons.) Applied Chemistry
in the Faculty of Applied Sciences
Universiti Teknologi MARA

AUGUST 2024

ABSTRACT

PREPARATION OF ANTIOXIDANT FACIAL TONER FROM *Piper betle* LEAVES EXTRACT

Piper betle, also known as the betel vine, is extensively used in traditional medicine and is known to have numerous medicinal characteristics, including antioxidant effects. Extensive research shows that using synthetic antioxidants in cosmetics in excess offers health hazards, driving the desire for natural alternatives. While *P. betle* has been a common ingredient in cosmetics like facial cleansers and moisturizers, there are limited studies, and currently no commercially available facial toner utilizing its antioxidant properties. This study aims to identify the chemical constituents of leaves extracts of *P. betle* using phytochemical screening, to determine the total phenolic content of leaf extracts of *P. betle* using Folin-Ciocalteu method, to prepare a facial toner from *P. betle* leaf extract and to evaluate the physical properties of *P. betle* toner such as colour, odour, pH test, feel on applications, patch test, and its removal efficiency, and to determine the antioxidant activity of *P. betle* leaves extract and the prepared facial toner using DPPH free radical scavenging assay. The dried leaves of *P.betle* were subjected to Soxhlet extraction using ethanol (95%) for 7 hours, resulting in a 13.73% extract yield. The phytochemical screening confirmed the existence of phenolics, flavonoids, and steroids. The concentration of phenolic components in the leaves extract was 205.2325 mg GAE/g. The toner formulation,comprising deionized water, glycerin, rose water, and argan oil, exhibited desirable physical characteristics, such as a light green colour, floral scent, pH of 5.78, non-irritateability, and easy to remove. The antioxidant activity of the extract and toner was evaluated using the DPPH free radical scavenging assay, which results in an IC_{50} value of 3.33 µg/ml for the extract and 6.77 µg/ml for the toner. The findings imply that *P. betle* leaf extract is a promising natural antioxidant for skincare, providing more environmentally friendly alternative to synthetic antioxidants found in commercial facial toners.

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