

**PHYTOCHEMICAL AND ANTIOXIDANT ACTIVITY OF *Rosmarinus officinalis* EXTRACT AND ITS POTENTIAL FOR HAIR OIL FORMULATION**

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## ABSTRACT

### PHYTOCHEMICAL AND ANTIOXIDANT ACTIVITY OF *Rosmarinus officinalis* EXTRACT AND ITS POTENTIAL FOR HAIR OIL FORMULATION

Hair loss became a prevalent issue nowadays, affecting individuals of all genders. It had significant psychological impacts, causing low self-esteem and inhibiting interactions with others due to concerns about judgment based on appearance. There were two types of hair loss disorders known as alopecia androgenetic and alopecia areata. While treatments for alopecia, such as topical Minoxidil and oral Finasteride, were available, research showed that long-term use of these drugs could cause adverse effects on health. Therefore, it was recommended to explore natural remedies over synthetic drugs. Furthermore, studies demonstrated the effectiveness of rosemary extract in treating hair loss and promoting hair growth. Hence, the objective of this study was to evaluate the antioxidant properties of *Rosmarinus officinalis* extract and its potential as a hair oil. The rosemary extract was obtained using the Soxhlet extraction method, and the bioactive compounds were analysed through phytochemical screening test. The Soxhlet extraction process yielded 18 % for the rosemary extract, employing ethanol as the solvent. The phytochemical screening analysis confirmed the presence of alkaloids, flavonoids, tannins, phenols, and saponins in the rosemary extract. To assess the antioxidant properties, DPPH free radical scavenging activity was measured, revealing that the rosemary extract exhibited an IC<sub>50</sub> value of 142 µg/mL, while ascorbic acid demonstrated 9 µg/mL. Notably, the formulated hair oil had a yellow colour, smooth texture, and emitted a pleasing aroma suitable for hair application. Consequently, *Rosmarinus officinalis* extract showcased its potential as a natural product, making it a valuable addition to the personal care industry. Due to its ready availability and non-toxic nature, this natural product offered economic benefits, environmental friendliness, and enhanced safety. Therefore, it became a possibility to reduce reliance on synthetic elements in hair oil products.

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