

Title : Development of Anti-inflammatory and Antioxidant Cosmeceutical Products from Herbal Plant

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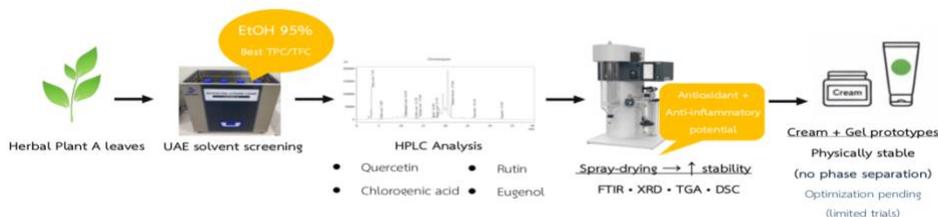
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This study developed a cosmeceutical product with anti-inflammatory and antioxidant properties derived from the leaves of Herbal Plant A, as part of a cooperative education project conducted at the Chulabhorn Royal Pharmaceutical Manufacturing Facility. In this study, ultrasound-assisted extraction was evaluated using different solvents (i.e., Methanol, Ethanol95%, Ethanol75% and Ethanol50%) followed by spray-drying encapsulation to improve stability and formulation into cream and gel prototypes. Among the tested conditions, 95% ethanol yielded the highest total phenolic and flavonoid contents, which were associated with strong antioxidant activity. High-performance liquid chromatography (HPLC) analysis identified major bioactive compounds, including quercetin, chlorogenic acid, rutin, and eugenol, which are recognized for their roles in free radical scavenging and anti-inflammatory activity. Encapsulation via spray drying improved extract stability, as characterized by Fourier-transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), thermogravimetric analysis (TGA), and differential scanning calorimetry (DSC). The developed cream and gel formulations demonstrated good physical stability without observable phase separation or significant color change. However, due to the limited number of experimental trials and optimization parameters investigated in this study, the optimal processing conditions could not yet be conclusively determined. Nevertheless, the findings provide a valuable foundation for further research and development, supporting continued optimization and the potential application of Herbal Plant A extracts in cosmeceutical products.



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