

Assessment of Size Reduction and Extraction Methods on the Yield of Gallic Acid from *Labisia pumila* Leaf via Microstructures Analysis

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ABSTRACT

The effect of size reduction and extraction methods on the gallic acid (GA) extraction yield from *Labisia pumila* leaf is presented. The GA extraction from a dried powdered *L. pumila* leaves with particle size distribution ranging from 66.66 to 1055.18 μm was performed using 10 aqueous ethanol. Three different extraction methods such as microwave assisted extraction (MAE), ultrasonic assisted extraction (UAE) and maceration extraction (ME) were used for comparison. Scanning electron microscopy (SEM) was used for microstructures analysis of the untreated and treated plant. The SEM analysis showed that the MAE led to a stronger disruption on the epidermal cells and glandular trichomes of *L. pumila* compared to other extraction methods. The highest GA extraction yield at 0.32 mg/g DW was obtained using MAE method, followed by UAE (0.11 mg/g DW) and ME (0.08 mg/g DW). It was found that the particle size about 252.15 μm yielded a higher extraction yield of GA at 0.083 mg/g DW compared to the other particle size. The finding in this work may serve as a useful guide to obtain highest GA extraction yield from *L. pumila*.

KEYWORDS

Labisia pumila, gallic acid, microstructure, microwave assisted extraction, ultrasound assisted extraction, maceration extraction

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