

Effect of Ultrasound on the Extraction of *Ficus deltoidea* Leaves

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Ficus deltoidea or Mas cotek is one of the most popular plant herbs that have been widely used traditionally as postpartum treatment and health tonic. Preliminary or existing extraction method that was used to extract the plant herbs has low productivity range. This method however can still produce the desired products, but the work can be laborious and not efficient in large scale processing. Besides, the sample preparation has not seen in advances because obtaining such extraction products at sufficient concentrations usually involves extraction with large amounts of organic solvents and toxic, followed by evaporation. In an attempt to elucidate the effect of ultrasound-assisted on the extraction of *Ficus deltoidea* var. *deltoidea* leaves, three duty cycle regimes were used: 10%, 20% and 40% at an intensity of 8.66 W/cm². The extracts were compared with those obtained by conventional boiling extraction, in terms of bioactive constituents yield and chemical composition. In the extracts, the actual percentage weight of vitexin and isovitexin varied in the range 0.35 ± 0.001 – 0.53 ± 0.001 (%w/w) and 0.23 ± 0.000 – 0.25 ± 0.004 (%w/w), respectively compared to sonicated extracts with 1.05 fold increase at a range of 0.32 ± 0.0000 – 0.68 ± 0.0015 (%w/w) and 0.24 ± 0.001 – 0.25 ± 0.007 (%w/w) respectively after 8 hours of extraction with sample-to-water ratio of 10:1 at 50°C. Both ultrasound-assisted and aqueous extracts were characterized and standardized by HPLC-photodiode array detection and LC-MS-QTOF using two pharmacologically active markers, vitexin and isovitexin. The morphological characterization of the extracted leaves particles was performed using FE-SEM. The experimental values under best conditions were in good consistent with the predicted values, which suggested that ultrasonic-assisted extraction (UAE) is more efficient process as compared to conventional boiling extraction. It recommends that ultrasound extraction of *Ficus deltoidea* leaves is feasible to replace the traditional time-consuming and low efficiency preparation procedure in the future modernized and commercialized manufacture of this highly valuable herbal medicine.

Keywords: *Ficus deltoidea*, ultrasound, vitexin, isovitexin