

Valorization of bambangan (*Mangifera pajang*) by-product by extraction of mangiferin using ultrasonic assisted extraction

ABSTRACT

Bambangan (*Mangifera pajang*) is a fruit belonging to the Anacardiaceae family, which is a lesser-known member of the mango family. It is native to East Malaysia, namely in Sabah and Sarawak. This fruit possesses a significant amount of dietary fibre, is rich in juice, and emits a strong smell. Typically, around 35 – 40% of the fruit's total weight, which includes the peel and seed, is discarded as waste. Mangiferin, a xanthone Cglucoside possessing notable antioxidant and antibacterial characteristics, is predominantly present in the foliage of mango plants. This study employed ultrasonic assisted extraction (UAE) to extract mangiferin from bambangan peels and seeds. The study specifically investigated the impact of ethanol concentration (ranging from 40% to 60%), temperature (ranging from 40 °C to 60°C), extraction time (ranging from 5 to 15 minutes), and sample-solvent ratio (ranging from 1:10 to 1:30 w/v) on the concentration of mangiferin. Mangiferin was quantified using high-performance liquid chromatography (HPLC). The optimal conditions for extracting mangiferin using UAE were determined to be 50% ethanol concentration, temperature of 50°C, extraction time of 10 min, and a sample-solvent ratio of 1:20. The seeds of the bambangan fruit had the highest concentration of mangiferin at 264.89 ± 5.67 mg/mL, whereas the peels had a value of 94.82 ± 1.49 mg/mL. These findings indicate that the peels and seeds of bambangan have potential as alternate sources of mangiferin for the food and pharmaceutical industries.