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Optimization of ultrasound assisted extraction of total phenolic compounds and antioxidant activity from *Helicteres hirsuta* Lour

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Helicteres hirsuta Lour (*H. hirsuta* L) is widely distributed in Southeast Asian countries and has been used as a traditional medicine for the treatment of various ailments such as malaria and diabetes. This study aimed to optimize ultrasound assisted extraction conditions for retaining maximum yield of bioactive compounds and antioxidant capacity from *H. hirsuta* L. Response surface methodology (RSM) with central composite design (CCD) was employed to design experiments for assessing the effect of ultrasonic temperature (40-60°C), ultrasonic time (15-35 min), ultrasonic power (60-100% or 150-250 W), sample-to-solvent ratio (1-6 g/100 mL) and methanol concentration (0-50%) on the yields of total phenolic content, total flavonoid content and antioxidant activity of *H. hirsuta* L extract. The results showed that ultrasonic temperature, sample-to-solvent ratio and methanol concentration had a significant influence on the extraction efficiency of phenolics, flavonoids and antioxidant capacity. The optimal extraction conditions were ultrasonic temperature of 60°C, ultrasonic time of 25 min, ultrasonic power of 150W, sample-to-solvent ratio of 3:100 g/mL, with the solvent being 40% (v/v) methanol. The actual values obtained under these conditions were 15.97 mg GAE/g of phenolics, 16.42 mg CE/g of flavonoids and 13.34 g/100 g of extractable solids. The highest values of the antioxidant assays (DPPH, ABTS and FRAP) were also observed under these conditions, with the exception of CUPRAC (obtaining 87% maximum value). These optimal extraction conditions can be applied to produce powdered crude extract for further isolation and purification of individual bioactive compounds for their potential use in the nutraceutical and pharmaceutical industries.

Biography

Hong Ngoc Thuy Pham has completed her BSc in Food Technology in 2004 and completed her Master's degree in Post-harvest Technology from Nha Trang University, Vietnam in 2009. She is currently a Lecturer of Nha Trang University, Vietnam and a PhD student at the University of Newcastle, Australia. She has published 7 papers in domestic and international journals. She is presently working on the research project entitled: "Extraction of anticancer compounds from selected medicinal plants as novel agents against pancreatic cancer cells" at the University of Newcastle, Australia.

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