

Microwave-assisted extraction for optimization of saponin content and antioxidant capacity from *Phyllanthus amarus*

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Phyllanthus amarus (*P. amarus*) has been used as a traditional herbal plant for the treatment of various diseases, such as hepatitis, diabetes and cancer. Interestingly, *P. amarus* is rich in phenolics and saponins, it therefore displays potent antioxidant capacity. The aim of this study was to determine optimal microwave-assisted extraction parameters for obtaining the highest saponin content and antioxidant capacity from *P. amarus* using response surface methodology. The results showed that the optimal microwave-assisted extraction parameters were 100% methanol, irradiation time of 4 s/min, extraction time of 50 min and ratio of solvent to sample of 50 mL/g. Saponin content, saponin extraction efficiency, total phenolic content, ABTS radical scavenging capacity, DPPH radical scavenging capacity and ferric reducing antioxidant power of the *P. amarus* achieved under these optimal parameters were 227.9 mg escin equivalents (EE)/g dried sample, 82.1%, 39.2 mg gallic acid equivalents (GAE)/g dried sample, 484.8, 297.3 and 226.6 mg trolox equivalents (TE)/g dried sample, respectively, which were found to be not significantly different with predicted values (229.5 mg EE/g dried sample, 82.8%, 40.7 mg GAE/g dried sample, 487.3, 330.6 and 233.5 mgTE/g dried sample, respectively). Therefore, the optimal microwave-assisted extraction parameters of 100% methanol, 4 s/min, 50 min and 50 mL/g are recommended for effective extraction of saponins from the *P. amarus* for potential application in the nutraceutical industry.

Biography

Van Tang Nguyen obtained Engineering degree in Food Technology from Hanoi University of Science and Technology. He then received Master's degree in Food Science from National Taiwan Ocean University, and is doing his PhD in Food Science at University of Newcastle, Australia. He is working as a Lecturer in Food Science and Technology at Nha Trang University and Demonstrator in Food Science at University of Newcastle. His research focuses on natural bioactive compounds, pharmacological activity and functional foods. He published 16 research papers in reputed journals and 3 books in the field of food science and technology.

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