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Effects of Microwave Power and Carrier Materials on Anthocyanins, Antioxidants, and Total Phenolic Content of Encapsulated Clitoria ternatea Flower Extract

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Abstract

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Abstract

Clitoria ternatea, also famously known as the blue pea flower (local name: bunga telang), has attracted interest among researchers due to its plethora of biological and pharmacological properties. It is rich in anthocyanin and widely used as a natural food colourant. However, the poor stability of active compounds may affect the therapeutic benefits and limit their application in the pharmaceutical and food industries. Hence, this work aims to study the effects of microwave encapsulation on the anthocyanins, antioxidants, and total phenolic content of Clitoria ternatea flower extract (CTFE). Microwave-assisted encapsulation (MAEC) was carried out at three different powers (300, 450, and 600 W) with different formulations of Gum Arabic (GA) and Maltodextrin Dextrose (MD) as carrier materials from 40% to 70% w/v. The total phenolic content (TPC), antioxidant activity, and anthocyanins in encapsulates were analysed for the formulations. The findings showed that increased microwave power increased TPC and antioxidant activity ($P<0.05$). However, adding carrier materials concentration above 60% reduced TPC and the antioxidant activity of microwave-encapsulated anthocyanin from CTFE. The best microwave-assisted encapsulation conditions of CTFE were found at 600 W microwave power with 50% w/v carrier materials GA/MD (ratio 1:1) concentration. The retention of anthocyanins, antioxidant activity, and TPC increased significantly (P[removed]

Author keywords

Active compounds; anthocyanins; blue pea flower; microwave encapsulation; total phenolic content

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