

OPTIMISATION OF MICROWAVE ASSISTED EXTRACTION OF ANTIOXIDANT COMPOUNDS FROM RICE BRAN

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Abstract

A microwave-assisted extraction (MAE) system was used to extract phenolic antioxidants from rice bran. To find the optimum extraction condition, the effects of microwave power (45, 135 and 225 W), extraction time (30, 90, 150 s) and sample mass (2.5, 5.0, 7.5 g) were study on total phenolic content (TPC) and DPPH radical scavenging activity of rice bran (DPPH-SA) by using full-factorial design. The bran was extracted with 50 ml of 50% ethanol (EtOH) in water. A response surface method was used to estimate optimum extraction conditions. Second order equation was fit reasonably to predict TPC and DPPH-SA level. The maximum predicted TPC, under the optimised conditions (135 W, 80 s and 4.4 g of rice bran) was 9.19 mg GAE/g dw. The highest DPPH-SA value was 78%, which occurred at 135 W, 84 s and 4.3 g of rice bran.

Keywords: rice bran, phenolic antioxidant, microwave extraction, total phenolic content, DPPH radical scavenging effect