

Response surface methodology optimization for extraction of phenolics and antioxidant capacity in defatted dabai parts

ABSTRACT

This study aimed to determine the total phenolics and antioxidant capacity of defatted dabai parts based on liquid extraction and optimized using response surface methodology (RSM). A two-level factorial design was applied to determine the effect of two independent variables (extraction time: X1 and % methanol: X2) on three response variables (total phenolic content: Y1, total flavonoid/anthocyanin content: Y2 and Trolox equivalent antioxidant capacity: Y3). The optimum conditions for extraction time and percent methanol were 36 min or 1 min and 62.25% or 53% for the defatted dabai pulp or peel, respectively. The RSM optimized extraction was compared with sonication-assisted extraction. Optimization results showed that defatted dabai parts had high total phenolic content and antioxidant capacity. Sonication-assisted extraction utilized the optimized extraction conditions had further increased the total phenolic content and antioxidant capacity of defatted dabai peel, but not in the pulp. Therefore, optimization of different extraction methods for the defatted fruit parts is recommended for future studies.

Keyword: Antioxidant capacity; *Canarium odontophyllum*; Response surface methodology; Sonication; Total phenolics