Effect of extraction conditions on total phenolic content, total flavonoid content, and antioxidant activities of two Thai domestic brown rices

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Abstract

Rice (*Oryza sativa*), a dietary staple foods, is one of the most important cereal crops in Asia. The nutrient contents of rice vary depending on the variety of rice, soil, and the growth conditions. Recently, domestic rice cultivars are of great interested owing to their high nutritional values. This research aimed to investigate the effect of extraction conditions (25°C for 2 h, 60°C for 2 h and 100°C for 10 min) on the total phenolic content, total flavonoid content and antioxidant activities of two Thai domestic brown rices (*Nuaykuea* and *Sungyod*) in comparison with jasmine brown rice, an authentic Thai rice. Ground brown rice was mixed with distilled water (1:10, w/v) and subjected to extract under various conditions. The extraction condition to produce the highest total phenolic content was at 60°C for 2 h in all rice varieties ($p<0.05$). However, extraction at 100°C for 10 min showed the highest total flavonoid content among the tested conditions ($p<0.05$). The total phenolic and flavonoid contents of the rice extracts were varied depending on rice verity and extraction condition. The superior $DPPH^{\bullet}$ and $ABTS^{\bullet}$ scavenging activities and ferric reducing antioxidant power (FRAP) were noticed at 60°C for 2 h of all rice verities. *Sungyod* extract had the highest antioxidative properties ($p<0.05$). However, higher $DPPH^{\bullet}$ and $ABTS^{\bullet}$ scavenging activities with lower FRAP were observed in *Nuaykuea* extract when compared to jasmine rice extract. This study demonstrated a potential function of domestic brown rice as for food applications.

Keywords: Domestic brown rice, total phenolic content, flavonoid content, antioxidant activities

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