

Phenolic Compounds and Antioxidant Capacity of Nine Genotypes of Thai Rice (*Oryza sativa* L.)

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Abstract : Rice (*Oryza sativa* L.) is a staple diet in Thailand. Rice cultivation is traditional occupation of Thailand which passed down through generations. The 1 Rai 1 san project is new agricultural theory according to sufficient economy using green technology without using chemical substances. This study was conducted to evaluate total phenolics using HPLC and colorimetric methods including total anthocyanin content of Thai rice extracting by simulated gastric and intestinal condition and to estimate antioxidant capacity using DPPH and thiocyanate methods. Color and visible spectrum of rice grains were also investigated. Rice grains were classified into three groups according to their color appearance. The light brown grain genotypes are Sin Lek, Jasmine 105, Lao Tek and Hawm Ubon. The red group is Sang Yod and Red Jasmine. Genotypes Kum, Hawm Kanya and Hawm Nil are black rice grains. Cyanidin-3-O-glucoside was found in only black rice genotypes, whereas chlorogenic acid was found in all rice grains. The black rice had higher phenolic content than red and light brown samples. Phenolic acids constitute a small portion of phenolic compounds after digestion in human and contribute to the antioxidant activity of Thai rice grains. Anthocyanin contents of all rice extracts ranged from 45.9 to 442.1 mg CGE/kg. All rice extracts showed the antioxidant efficiency lower than ferulic acid. Genotype Kum and Hawm nil exhibited the ability of antioxidant efficiency higher than α -tocopherol. Interestingly, the visible spectrum of only black rice genotypes showed the maximum peak at 530-540 nm. The results suggest that consumption of black rice gives more health benefits of grain to consumer.

Keywords : rice, phenolic, antioxidant, anthocyanin

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