

P203

Evaluation of the functional phenolic compounds as to various ripening phases of the reddish rice cultivar (*Oryza sativa*, Superhongmi)

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Abstract

Recently, consumer's demands are increasing for new natural functional and healthful food. These demands have encouraged a better understanding of the biochemical, chemical and nutritional composition of plant products. Superhongmi rice variety was derived from a cross between CG2-3-5-2-6-2 (Heugjinju/Suwon 425) having reddish brown color and Daeribbyeo 1 having a large grain size. Superhongmi rice headed on Sep. 5th and has 94.7 cm culm length. Taxifolin, a phenolic compound in superhongmi rice extract had high α -glucosidase inhibitory activity. The α -glucosidase inhibitory activity of the superhongmi rice extracts correlated to the taxifolin content and antioxidant activity of the extracts. A new method for quantitative determination of taxifolin in superhongmi rice variety by high performance liquid chromatography was established. A reversed-phase system with Tosoh TSK-gel C₁₈ column using 60% methanol in water (pH 2.4) as a mobile phase was developed. Taxifolin was detected at 280 nm and the analysis was successfully carried out within 40 min. In ripening phase, the amount of taxifolin showed a mild decreasing slope. The highest contents was 59.27mg in 100g seed on the 30 days after heading (DAH). The optimum harvesting time, considering taxifolin content, maturity rate and thousand seed weight (TSW) was DAH 50. These results suggest that superhongmi rice which has high taxifolin content has the potential to contribute as a dietary supplement for controlling hyperglycemia and oxidative stress-linked diabetes complications.

Keywords: Reddish Variety, Taxifolin, HPLC, Ripening Phase

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