

Comparative Analysis of Physicochemical and Antioxidative Properties in New Giant Embryo Mutant Rice (*Oryza sativa* L.)

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새로운 거대배아미의 물리화학적 특성 및 항산화 효과 검정

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실험목적 (Objectives)

In this study, we are to analyze and to report the nutritional and the physicochemical properties of new giant embryo mutant (YR23517Acp79, YR).

재료 및 방법 (Materials and Methods)

○ 실험재료 및 방법

The grains of giant and normal embryo brown rice were pulverized (100 mesh) by a grinder, and powdered sample (1 kg) of each was extracted with 70% ethanol (5 L) for 5 days at room temperature. The solution was filtered, concentrated *in vacuo* to yield brown extract (each above 25g). The ethanol extract was dissolved in 500mL of water and partitioned with EtOAc, 70% EtOH and MeOH extracts, respectively. All solvent extracts were calculated in mg/mL (ppm) and used in this experiments.

실험결과 (Results)

YR was exhibited the highest total protein (9.3 ± 0.3 %), lipid (3.7 ± 1.1 %), total free sugar contents (9613.1 ± 4.5 %), amino acids content (373.28 ± 11.8 mg/g), and mineral contents (Ca = 284.0 ± 10.2 Mg = 1417.5 ± 28.8). Furthermore, YR brown rice were enhanced the five major physicochemicals including GABA (brown rice = 0.46 ± 0.02), γ -oryzanol (0.43 ± 0.021), vitamin B₁ (6.42 ± 0.3), tocopherols ($\alpha = 2.68 \pm 0.08$, $\beta = 0.11 \pm 0.01$, $\gamma = 0.05 \pm 0.01$) in comparison to reported giant embryo (Keunnunbye, KB) and normal embryo rice (Ilmibye, IB). The YR also not only showed higher radical scavenging activities against DPPH (0.2 mg/mL = 57.1 %) and ABTS (0.2 mg/mL = 50.2 %) but also inhibited LPS-induced nitric oxide (NO) production without cytotoxicity. In these result, YR was evaluated the high quality functional rice due to its high nutrition and anti-oxidant effect by physicochemicals

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