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Antioxidant Properties, β-Carotene and Vitamin E of Rice Varieties in Types of Brown and White Rice

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A total of 15 rice (*Oryza sativa* L.) varieties classified into waxy-, medium waxy-, and non-waxy varieties were analyzed for its antioxidant compounds, antioxidant activities, β-carotene, and vitamin E contents. Brown rice varieties showed a 2~4 times higher levels in those all functional compositions than white rice. Black pigmented brown rice showed the highest values for phenols and flavonoids, ranging in 429.2~486.8 and 136.4~157.5 (mg GAE/100 g), respectively, followed by a giant embryo rice of Nunkeunheugchal (NKHC) and Keunnun (KN), then the other ordinary rice varieties. The least was found in tongil type and indica varieties, ranging in 76.3~95.4 and 12.4~25.9 (mg GAE/100 g) for phenols and flavonoid, respectively. It was found that rice with higher antioxidant compounds showed higher antioxidant activities measured by DPPH and ABTS radical scavenging capacities. β-carotene, as a precursor of vitamin A, was detected in all brown rice varieties except Dasan1, which was one of tongil type. But, among white rice varieties, only 4 varieties including black and giant embryo rice cultivar contained β-carotene. Among the rice samples, α-tocopherol (α-T), α-tocotrienol (α-T3) and γ-tocotrienol (α-T3) were the most predominant homologs of vitamin E. The α-tocotrienol equivalent (α-TE) levels of brown rice was in the order of black pigmented and giant embry rice (2.71~3.45 α-TE/100 g), normal rice (1.74~2.71 α-TE/100 g), and tongil type and indica varieties (0.39~0.72 α-TE/100 g).

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