

OB-06

Enhancement of Amino Acid Contents by Germination in a Korea-native Sharei-rice Germplasm

Ei Ei Cho¹, Pil-Mo Sung¹, Eun-ji Song¹, Nam-Jin Chung^{1,2*}

¹Department of Crop Science and Biotechnology, Chonbuk National University, Jeonju, Republic of Korea

²Research Center of Bioactive Materials, Chonbuk National University, Jeonju, Republic of Korea

[Introduction]

Recently, the interest in the utilization of nutritional foods has enormously increased as nutrition plays a crucial role in the prevention of chronic diseases. Accordingly, the nutrient quality of rice becomes important for health of consumers because rice is the major staple crops used directly as a food source or incorporated into other food products around the world, especially developing countries. The colored rice, WD3 is a Korea-native Sharei-rice germplasm showed the highest antioxidant activity in the screening stage. Thus, it was expected that WD3 might contain the higher functional and nutritional compounds. Moreover, germination can improve the nutritional value of cereals. Therefore, the aim of this study is to examine the GABA and amino acid contents of WD3 and SDJ in germinated and non-germinated seeds.

[Materials and Methods]

Sharei-rice, WD3 and a check variety (Sindongjin: SDJ) were used in this experiment. GABA and twenty amino acid contents were measured by using Ultra-Performance Liquid Chromatography (UPLC) coupled with tandem mass spectrometry (MS/MS). The amino acids were grouped by using the procedure of Ibegbulem and Belonwu (2014).

[Results and Discussions]

The contents of all kind of free amino acids were increased by germination in both WD3 and SDJ, but the increased contents of almost amino acids in WD3 were more than 2 times higher than those in SDJ. In case of GABA content, it was higher in SDJ than WD3, but all the essential amino acids (EAAs) and the non-essential amino acids (NEAAs) except asparagine and glutamic acid were higher in WD3. Additionally, germinated WD3 was well balanced between EAAs and NEAAs. The ratio of NEAAs to EAAs of WD3 were changed from 4.0 to 1.1 after germination. Therefore, the nutritional value of germinated WD3 is much better than that of SDJ. Thus, WD3 could be used as a potential functional and nutritional food source for health benefits.

*Corresponding author: Tel. +82-63-270-2512, E-mail. njchung@jbnu.ac.kr