

**PC-010**

**Change of Fatty acids, Vitamin E, Phenolic compounds and Antioxidant Activity in Organic, Pesticide-Free, Conventional Rice (*Oryza sativa* L.) depending on Degree of Milling**

Yoo-jin Yang<sup>1</sup>, Yun-ju Kim<sup>1</sup>, Seung-Hyun Kim<sup>1</sup>, Ill-Min Chung<sup>1\*</sup>

<sup>1</sup>Department of Crop Science, College of Sanghuh Life Science, Konkuk University, Seoul 05029, Korea

**[Introduction]**

Rice (*Oryza sativa* L.) is one of the staple food and it contains not only source of calories like carbohydrates but also antioxidant component such as phenolic compounds, fatty acid and vitamin E. Brown rice consists of husk, bran, endosperm and embryo but used to fully milled to white rice, containing endosperm only, for mild texture. Nowadays demands of less milled rice and organic rice increased because of their functional nutrients. This study aimed to compare the composition of nutrients and antioxidant activity among different farming system (organic, pesticide-free and conventional rice) and degree of milling (DOM).

**[Materials and Methods]**

Fatty acid and vitamin E were analyzed by GC-FID. Capillary column HP-INNOWAX (30m × 0.25mm, 0.25μm, Agilent Technologies) for fatty acid and CP-SIL 8 CB (50m × 0.32mm, 0.25μm, Agilent Technologies) for vitamin E were used. Phenolic compound was analyzed by LC-ESI-MS/MS and C18 column (150 × 4.6mm, 5μm, Thermo Syncronis) was used. Antioxidant activity was measured by DPPH-UV spectrophotometer at 517nm.

**[Results and Discussion]**

In this study, total fatty acid, total vitamin E and total phenolic contents in rice had a difference in degree of milling and rice type by farming system. All contents have high amount in low degree of milling and there was a large reduction from 7 DOM to white rice. Fatty acid was rich in conventional rice, vitamin E was rich in pesticide-free rice and sum of phenolic contents was rich in organic rice. Antioxidant activity was higher in brown rice than white rice. In white rice, organic rice had higher antioxidant activity than conventional rice. DPPH free radical scavenging activity had correlation with phenolic compounds and vitamin E as known as potent antioxidant. However, amount of metabolites is affected by various factors such as region, variety, cultivation, condition and storage. Therefore, it needs to consider other factors.

**[Acknowledgement]**

This work was supported by a grant from the R&D project (No.PJ014336012020) of the National Institute of Crop Science, Rural Development Administration, Republic of Korea.

\*Corresponding author: Tel. +82-2-450-3730, E-mail. imcim@konkuk.ac.kr