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The Comparative Study on Metabolomic Profiling and Antioxidant Activity in Rice (*Oryza sativa* L.) derived to OsCOP1 MutagenesisYun Ju Kim¹, Hee Jong Koh², Back Ki Kim², Hee Sung Moon¹, Seung Hyun Kim¹, Ill Min Chung^{1*}¹Dep. of Crop Science, Konkuk Univ., Seoul 05029, Korea²Dep. of Plant Science, Seoul National Univ., Seoul 08826, Korea**[Introduction]**

For plants, light is not only a sign of photosynthesis, but also a cue of physiological, circadian activities including photomorphogenesis. CONSTITUTIVELY PHOTOMORPHOGENIC 1 (COP1), one of light signal regulators, is a negative regulator that inhibits photomorphogenesis under dark condition. Recently, the effect of COP1 on seed development has been researched in *Oryza sativa* L. by analysis of derived COP1 mutation. In this study, by comparing COP1 mutant type rice grain with normal wild type for functional materials (fatty acids, vitamin E, phytosterols, phenolics) and antioxidant activity, the effect of COP1 on rice metabolism is analyzed in terms of its deficiency.

[Materials and Methods]

Yellowish-pericarp (*yel*) mutants and purple-pericarp (*pur*) mutants were derived from Chucheong (cc) and Samkwang (sk) rice cultivars as follows: *yel-cc*, *pur-cc*, *yel-sk*, and *pur-sk*. The metabolomic profiling including 37 fatty acids, 8 vitamin E, 5 phytosterols, 58 phenolic compounds, total phenolic/flavonoid/tannic acid contents, and 2,2-Diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging activity were examined in both wild rice and rice mutant.

[Results and Discussion]

Palmitic acid (C16:0), oleic acid (C18:1) and linoleic acid (C18:2) were the main types of 8 long chain fatty acids measured in rice samples. α -, β -, γ -, δ -tocopherol and α -, γ -tocotrienol were vitamin E found in rice samples and α -tocopherol was the most abundant form. Three phytosterols (campesterol, stigmasterol, β -sitosterol) were detected and β -sitosterol showed the highest content. Through the analysis of 58 selected phenolic compounds, 11 phenolic compounds were detected and flavonoids (isovitexin, orientin, isoorientin) were highly abundant in mutants. This study will provide information about the influence of COP1 mutation on the functional materials and antioxidant activity in rice.

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