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Comparative Profiling of Targeted Phenolic Compounds in Agricultural Products using LC-ESI-MS/MS

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[Introduction]

Phenolic compounds are widely found in various agricultural products including not only therapeutic herbs as well as whole grain. The increasing demands of rice consumers regarding of various phytochemicals and functional compounds such as phenolic compounds due to a plethora of health benefits and its high antioxidant activity. Therefore, this study aims to compare targeted 54 phenolic compounds profiling in four different agricultural product such as rice, mungbean, ginseng and mushroom using (-) ESI-LC-MS/MS.

[Materials and Methods]

Rice, mungbean, ginseng and mushroom samples were obtained from retail markets or farms. The optimized LC-MS/MS conditions were as follow as: Thermo Syncronis C18 column (150 x 4.6 mm, 5 μm), column temperature 25°C, the flow rate 500 μL/min, mobile phase 0.1% formic acid in water, 0.1% formic acid in acetonitrile gradient, Curtain gas 50 psi, collision gas 2 psi, ion spray voltage -4400 V, GS1 40 psi, GS2 50 psi, and temperature 500°C. According to the present method and conditions, the limit of detection, limit of quantification, and matrix effect were also evaluated in this study.

[Results and Discussion]

The phenolic contents examined and total 17 phenolic compounds were detected in four different agricultural products; 6 compounds including protocatechuic acid, *p*-coumaric acid, caffeic acid and salicylic acid in rice, 16 compounds including vitexin, rutin, orientin and *p*-hydroxybenzoic acid in mungbean, 5 compounds including chlorogenic acid, caffeic acid, *p*-coumaric acid and ferulic acid in ginseng, and 4 compounds including gentisic acid, *p*-hydroxybenzoic acid, protocatechuic acid and *p*-coumaric acid in mushroom. Hence, the optimized method was evaluated as suitable for the simultaneous phenolic compounds analysis in different agricultural products with the aspect of a high-throughput metabolomics.

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