

**PC-14**

**Simultaneous Targeted Metabolite Profiling of Functional Compounds in Soybean [*Glycine max* (L.) Merr.] Core Collection**

Kwang-Sik Lee<sup>1</sup>, Mi-Ja Lee<sup>2</sup>, Woo Duck Seo<sup>2</sup>, Seung-Yeob Song<sup>2</sup>, Hyun Young Kim<sup>2\*</sup>

<sup>1</sup>Division of Fruit Research Division, National Institute of Horticultural & Herbal Science, Wanju 55365, Korea

<sup>2</sup>Division of Crop Foundation, National Institute of Crop Science, Rural Development Administration, Wanju 55365, Korea

**[Introduction]**

A core collection is a subset that represents genetic diversity of the total collection. Soybeans are used worldwide as food and as a healthy ingredient. In addition, soybeans contain many secondary metabolites such as isoflavones, soyasaponins, tocopherols and phytosterols. These functional compounds are known to exhibit biological activities such as anti-oxidant, anti-cancer, anti-diabetic, and bone health. Therefore, this study aimed to elucidate the content of functional compounds in 382 accessions of soybean core collection.

**[Materials and Methods]**

382 accessions of soybean core collection were grown on the experimental field at the National Institute of Crop Science, Jeonbuk, Korea, and harvested in 2018. Isoflavones and soyasaponins analysis were conducted using UHPLC-Orbitrap-MS equipped with a HALO C18 (2.7  $\mu$ m, 2.1 mm  $\times$  100 mm) column. Tocopherols and pyhtosterols analysis were conducted using GC-MS equipped with a HP-5MS UI capillary (30 m  $\times$  0.25 mm  $\times$  0.25  $\mu$ m) column. All statistical analyses were performed using the R and SAS Enterprise Guide 7.1.

**[Results and Discussion]**

The total isoflavone content ranged from 119.4 to 863.2 mg/100 g. Among individual isoflavone compounds, malonyl-glycoside (malonyl-daidzin and malonyl-genistin) isoflavones were the major compound. The total soyasaponin content ranged from 54.0 to 269.8 mg/100 g. Soyasaponins Ab and Aa was high and the soyasaponin phenotype was largely divided into Aa and Ab. The total tocopherol content ranged from 5.0 to 25.7 mg/100 g. The total phytosterol content ranged from 2.6 to 53.8 mg/100 g. In conclusion, our results suggest that the profiling of functional compounds in soybean core collection is helpful for developing functional materials and effective information for breeding of high functional soybean.

**[Acknowledgement]**

This work was carried out with the support of “Cooperative Research Program for Agriculture Science and Technology Development (Project No. PJ01348301)” Rural Development Administration (RDA), Republic of Korea.

\*Corresponding author: E-mail, hykim84@korea.kr Tel. \*\*\*-\*\*\*\*-\*\*\*\*