

## Comparison of Isoflavone Content and Composition in Soybean (*Glycine max* L. (Merr)) Germplasm

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Soybean is known as to have a several healthy ingredients. Among them, isoflavones are effective in reducing obesity, menopausal symptom. Isoflavones consist of 12 isomers, including Aglycon, Glucoside, Malonyl glucoside, Acetyl glucoside, and are usually found in soybean seeds. The content is determined by the sum of 12 isomers, and the content value difference between the varieties is huge. In this study, we investigated the agronomic traits, 12 isomer of isoflavone content and composition for 49 soybean germplasms. This germplasms were selected from the 23,000 germplasms with the highest total content of isoflavones possessed by the National Agrobiodiversity Center. Seed samples were cultivated in experimental field located in Jeonju City on April 04, 2019. Matured seeds were harvested and portions of each seed samples were oven-dried, pulverized, and analyzed for their isoflavone compositions using HPLC-DAD. The soybean samples showed distinction in their agronomic traits, isoflavone compositions and contents. The days to flowering ranged between 38 and 69 days while the days to maturity ranged between 103 and 156 days. The seed coat color of soybean germplasms was 24 in black, 10 in yellow, 2 in green, 5 in yellowish green, 4 in green with black spot, 4 in pale yellow. The germplasm with the highest total content of isoflavones was the IT178054(1257.61±7.98  $\mu\text{g/g}$ ), but the germplasms containing the largest number of isoflavone isomers were IT274592, IT275005, both germplasms had 11 isoflavone isomers excluding Malonyl glycitin. The largest source of Aglycon, the most easily absorbed isoflavone form in the human body, was IT274592(DZ: 8.83±0.30  $\mu\text{g/g}$ , GL: 11.14±0.81  $\mu\text{g/g}$ , GE: 8.16±0.26  $\mu\text{g/g}$ ), while only IT274592, IT275005, IT308619 contained all three components of Aglycon. In Principal Component Analysis(PCA), the first two principal components showed more than 3.5 Eigen value and accounted for 58.2% of variability. The total content value had strong relationship with Malonyl genistin content value. Acetyl isomers had strong relationship, but Malonyl isomers were only related to isomers except Malonyl glycitin. These results will help in research on soybean varieties to enhance isoflavone ingredients.

**Key words:** Soybean, Germplasm, Isoflavone, composition, content

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