

**PC-10**

## Evaluation of Metabolite Contents and Antioxidant Activities Korean landrace Sorghum Germplasms

Sukyeung Lee<sup>1\*</sup>, Yu-Mi Choi<sup>1</sup>, Myoung-Jae Shin<sup>1</sup>, Hyemyeoung Yoon<sup>1</sup>, Joungyun Yi<sup>1</sup>, Yoonjung Lee<sup>1</sup>, XiaoHan Wang<sup>1</sup>, Kebede taye Desta<sup>1</sup>

<sup>1</sup>National Arobiodiversity Center(NAC), National Institute of Agricultural Science, Rural Development Administration, Jeonju 54874, Republic of Korea

### [Abstract]

In this study, 139 Korean landrace sorghum germplasms collected in 10 different Korean regions were analyzed for tannin, total phenolic contents(TPC), and antioxidant activities using three assays including ABTS, DPPH, and FRAP. The Korean landrace sorghums showed significant variations of metabolite contents and antioxidant activities by collection regions. Gyeonggi sorghum had the highest tannin and TPC contents with 273.73%, 7.395mgGAE/g, respectively. Therefore, three assays of antioxidant activities of Gyeonggi sorghum, which is highly related to tannin and TPC, were also significantly higher than others. However, Gyeongnam sorghums showed the lowest tannin and TPC with 148.34% and 3.482mgGAE/g, thus, three antioxidant activities showed the lowest levels. Three accessions(IT322580, IT340261 and IT329053) had the highest tannin levels over 400%, but, two accessions (IT322613, IT270366) showed less than 1% of tannin content. Four accessions (IT270349, IT286448, IT331878, and IT251882) showed the highest level of TPC over 9mgGAE/g. In this study, antioxidant activities with three assays were strongly related to tannins and TPC, and TPC showed higher significance than tannin with all three antioxidant activities. The germplasms with the highest overall antioxidant activity were IT270349, IT340261, and IT286448, which had the highest levels of tannin and TPC. The principal component analysis presented that 2 sub-populations were divided. Gyeonggi and Gangwon Yeongseo sorghums, which had high metabolite contents and antioxidant activity levels, were mainly included in group 1. Gyeongnam and Jeonnam sorghums, which had low metabolite and antioxidant activity levels, were mainly included in group 2. This results could contribute to discover breeding materials for the development of functional sorghum varieties.

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\*Corresponding author: E-mail, reset00@korea.kr Tel. +82-63-238-4901