

**PB-06**

## **Characterization of Main Nutritional Component in Oat(*Avena sativa* L.) Germplasm**

Muhammad Rauf<sup>1</sup>, Yu-Mi Choi<sup>1</sup>, Sukyeung Lee<sup>1</sup>, Myoung-Jae Shin<sup>1</sup>, Myung-Chul Lee<sup>1</sup>, Sejong Oh<sup>1</sup>, Hyemyeong Yoon<sup>1\*</sup>

<sup>1</sup>National Agrobiodiversity Center, NAS, RDA, Jeonju 54874, Korea

### **[Introduction]**

Oat(*Avena sativa* L.) is one of the most important cereal crop worldwide. It ranks sixth in the world cereal production after wheat, maize, rice, barley, and sorghum. Oat is a dual-purpose crop providing an important source of essential nutrients for both human and animals. Several studies have shown the beneficial effects of oat diet on human's health. It is a great source of high-quality proteins, carbohydrates, dietary fibers, fat, oils, minerals.

### **[Materials and Methods]**

In this study, 975 oat germplasm preserved at National Agrobiodiversity Center, Rural Development Administration (RDA) Jeonju, the Republic of Korea, was evaluated for the content of crude fiber, dietary fiber,  $\beta$ -glucan and crude lipid. This germplasm was collected from Canada, Russia, United Kingdom, Australia, Turkey, Poland, Netherlands, Finland, Belgium and Ireland. The  $\beta$ -glucan was extracted using the  $\beta$ -glucan kit(Megazyme Pty. Ltd. Australia) and the crude lipid was extracted using micro-kjeldahl method (NICS 2009). The crude fiber content was analyzed using the Fibertec 2010 auto analyzer(Foss Tecator, Denmark) and the dietary fiber content was analyzed using Fibertec 1023 system E(Foss Denmark).

### **[Results and Discussion]**

In our results, the content of crude fiber ranged from 0.08 to 6.79% with an average of 2.14%, the content of dietary fiber ranged from 5.32 to 17.59% with an average of 11.01%, the content of  $\beta$ -glucan ranged from 1.02 to 6.33% with an average of 3.05% and the content of lipid ranged from 1.41 to 8.72% with an average of 4.73%. The average content of crude fiber, dietary fiber,  $\beta$ -glucan and crude lipid were significantly different among germplasm collecting from different countries. The highest values of an average crude fiber, dietary fiber,  $\beta$ -glucan and crude lipid were observed in accessions collecting from Canada, United Kingdom, Netherlands and Turkey, respectively. In the principal component analysis, the first two components PC1 and PC2 showed 3.05 and 26.59% of the total variation, respectively. In correlation analysis, the content of dietary fiber and crude fiber showed significant but weak correlation with the content of  $\beta$ -glucan. This study will help the plant breeders to identify desirable genotypes to improve the nutritional value of already existing high yielding oat varieties.

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\*Corresponding author: Tel. +82-63-238-4880, E-mail, mmihm@korea.kr