

Profile of phenolic compounds, antioxidant and SOD activity of millet germplasm

Myung-Chul Lee, Yu-Mi Choi, Hyemyeong Yun, Do-Yoon Hyun, Sukyeung Lee, Sejong Oh
National Agrobiodiversity Center, National Institute of Agricultural Sciences, RDA, 370 Wansan-gu,
Jeonju-si, Jeollabuk-do, 54874, Korea

Millet is provided considerable amounts of nutrients and gluten-free cereal products and their rich non-nutritional compounds having proven health benefits, especially phenolic compounds. The aim of present investigation was to determine phenolic composition and antioxidant and SOD activity of three different millet of genetic resources namely, foxtail, proso and finger millet. Phenolic compounds were extracted from dehulled grain of genetic resources using methanol and examined for their total phenolic content (TPC), antioxidant activities and superoxide dismutase (SOD)-like activity. The TPC range of hog millet, finger millet and finger millet range from 3.3 to 25.1, 11.1 to 29.0 and 3.8 to 94.3 gallic acid equivalent (GAE)mg/g, respectively. Most of TPC content in dehulled millet grains was distributed from 10 to 20 gallic acid equivalent (GAE)/g, but two accessions of finger millet (IT235690 and 235689) were showed over than 90. The antioxidant activities were measured by 1,1-diphenyl-2-picrylhydrazyl (DPPH) free radical scavenging activity. Finger millet and hog millet showed 26.4% and 26.7% in the mean of DPPH scavenging activity percentage, but foxtail millet was 13%. The finger millet showed the higher value than hog and foxtail millet in superoxide dismutase (SOD)-like activity. Particularly, two accessions of finger millet (IT235690 and 235689) showed the highest phenolic content and antioxidant activities among the used millet genetic resources and will be primary resources for finger millet breeding to develop the appropriate breeding strategies.

Keywords: Foxtail millet, Hog millet, Finger millet, Phenolic content, DPPH