

Physicochemicals and Antioxidative Properties of Selected Barnyard millet (*Echinochloa utilis*) Species

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식용피의 물리화학적 특성 분석 및 항산화활성 검정

농촌진흥청 국립식량과학원 기능성작물부: 서우덕*, 한상익, 장기창, 나지은, 박보람, 최경진, 이기환, 강항원

실험목적 (Objectives)

The purpose of this study was to analyze and report the nutritional and physicochemical properties of thirteen barnyard millet varieties (*Echinoshloaspp.*) in Korea.

재료 및 방법 (Materials and Methods)

○ 실험재료 및 방법

A total of thirteen barnyard millet varieties (*Echinochloaspp.*) were harvested in September 2009 ,in the experimental field of National Institute of Crop Science (NICS), Rural Development Administration (RDA), Miryang, Korea. The number of the strains in the parenthesis is provided by Dr. Myung Chul Lee and all seeds were supported by RDA -Genebank Information Center, Republic of Korea. All varieties were grown in the same condition to avoid variations in character due to the environmental factors.

실험결과 (Results) (11 포인트 진하계)

The starch granules from K141285 were tightly packed with small air space granules. IT153600, among the varieties, was exhibited the highest total protein (14.75±1.7 %), lipid (6.92±1.1%), and amino acids content (137.10±3.1 mg/g) with high germination rate (98.9±1.8%). In fatty acid composition, the highest linoleic acid (67.6±2.5%) contents were found in K141285. K141286 varieties exhibited the highest amylose content. The highest mineral contents were found in IT153604. One of the varieties K141285, based on excellent agricultural properties, was selected and investigated for its antioxidant effect using 1,1-diphenyl-2-picrylhydrazyl(DPPH), 2,2-azino-bis-(3-ethylbenzthiazoline-6-sulfonicacid) (ABTS), hydroxyl radical scavenging abilities. Furthermore, 80 % methanol extract of K141285 was significantly showed the total phenol and flavonoid contents. All selected barnyard millet (*Echinoshloa spp.*) varieties would be considered to be new functional crop due to its anti-oxidative effect and high nutrition.

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