

P149

Antioxidant activity of the extracts of adzuki bean (*Vigna angularis*) landraces in Korea

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Abstract

Adzuki bean (*Vigna angularis*) has been extensively investigated due to their biological activities. In this study, total polyphenol content (TPC), total phenolic acid content (TPA), and total flavonoid content (TFC) in 209 Korean adzuki bean landraces were determined by colorimetric methods. Antioxidant effects were evaluated with the DPPH, ABTS, ferric reducing antioxidant power (FRAP), reducing power (RP), and SOD assays. TPC, TPA, and TFC in the 209 Korean adzuki bean landraces ranged from 1.1 to 11.7 mg gallic acid equivalents/g, 0.37 to 5.03 mg caffeic acid equivalents/g, and 0.17 to 0.91 mg quercetin equivalents/g, respectively. Antioxidant activities as assessed by the DPPH, ABTS, FRAP, PR, and SOD assays showed wide variation, ranging from 12.2 to 86.3 (IC₅₀), 0.85 to 5.25 mg ascorbic acid equivalents (ASC)/g, 0.41 to 5.44 mg ASC/g, 0.54 to 1.83 mg ASC/g, and 60.4 to 142.8 (IC₅₀), respectively. Using the relative antioxidant capacity index (RACI), we found that the IT189394 sample had the highest antioxidant activity. In clustering analysis, 209 Korean adzuki bean landraces were classified into three clusters. Among them, cluster I contained 22 accessions with higher antioxidant activities, TPC, TFC, and TPA and smaller seed sizes than the other clusters. We anticipate that these results will provide useful information for the development of adzuki bean-based functional foods..

Keywords Adzuki beans, antioxidant activity, Korean landraces, phytochemicals

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