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## Phenolic compounds and antioxidant activity of ethanolic extracts of Adzuki beans according to cultivar

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We analyzed the phenolic compounds in five cultivars of adzuki beans [cv. Geomguseul (GGS), Arari (ARR), Yeonduchae (YDC), Whinguseul (WGS), and Whinnarae (WNR)] and compared their antioxidant abilities and cytotoxic effects. The total polyphenol contents were highest in GGS (20.53 mg GAE/g of extract), and the flavonoid contents were highest in WGS (7.79 mg CE/g of extract). The predominant phenolic compound in the adzuki beans was (+)-catechin; it accounted for 71.84, 96.08, 78.03, 87.66, and 89.31% of the content in GGS, ARR, YDC, WGS, and WNR, respectively. Gallic acid was also ubiquitously found in the adzuki beans; it comprised 2.54, 2.68, 11.24, 4.40, and 10.69% of the total phenolic acids in GGS, ARR, YDC, WGS, and WNR, respectively. The other phenolic acids differed according to the cultivar. GGS contained the most varied phenolic acids, including caffeic acid and biochanin, which were only found in this cultivar. In ARR and WNR, phenolic compounds were not detected or minor amounts

were detected, except for gallic acid and (+)-catechin. In YDC and WGS, gentisic acid and phloretic acid were the second most substantial compounds, respectively. The predominant phenolic acids in five cultivars of adzuki bean were (+)-catechin and gallic acid. Antioxidant capacities were determined using DPPH and ABTS radical, and reducing power was positively enhanced according to the total polyphenolic content. In a cell-based assay, adzuki beans showed cytoprotective effects against oxidative stress induced by tert-butyl hydroperoxide and inhibitory effects on the production of reactive oxygen species, except for the cultivar WNR. In conclusion, (+)-catechin was the predominant phenolic compound found in adzuki beans, but there were differences according to the cultivar. Overall, the five adzuki bean cultivars showed different antioxidant activities and cytoprotective effects according to the concentration and composition of phenolic compounds.

### Biography

Ji Hae Lee has earned his Doctorate degree from Korea University in 2015 and Postdoc from Sungkyunkwan University in 2016. And currently pursuing Postdoc degree in National Institute of Crop Science, Rural Development Administration (RDA), Republic of Korea. His research topic is on Investigation of bioactivities from food and natural compounds.

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