

Determination of Phenolic Contents and Antioxidant Activities of *Chenopodium quinoa* Willd. Seed Extracts

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Abstract : The genus *Chenopodium* belongs to Amaranthaceae, is represented by approximately 250 species in the world and 15 species and three subspecies in Turkey. *Chenopodium* species are traditionally used to treat chest and abdominal pain, shortness of breath, cough and neurological disorders. *Chenopodium quinoa* Willd. (Quinoa) is native to Andes region of South America (especially Peru and Bolivia) and cultivated in many countries include also Turkey in the world nowadays. The seeds of quinoa are rich in protein, and the phytochemical composition consists of antioxidant substances such as polyphenolic compounds, flavonoids, vitamins, and minerals; anticancer and neuroprotective compounds such as tocotrienols; anti-inflammatory compounds such as carotenoids and anthocyanins and also saponins and starch. Food products of quinoa such as quinoa cereal bar, pasta and cornflakes are used in the diet made during many disorders like obesity, cardiovascular disorder, hypertension and Celiac disease. Also quinoa seems to have antimicrobial, anti-inflammatory and cholesterol-lowering properties because of its bioactive compounds. In this present study, the aqueous ethanolic extracts of the seeds of three different coloured genotypes of quinoa were investigated for their antioxidant activities using 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging activity, ferrous ion-chelating effect, ferric-reducing antioxidant power, ABTS radical cation decolorization assays and total phenolic contents using Folin-Ciocalteu assay. Among the three genotypes of quinoa; the aqueous ethanolic extract of the red genotype had the highest total phenolic content (83.54 ± 2.12 mg gallic acid/100 g extract) whereas the extract of the white genotype had the lowest total phenolic content (70.66 ± 0.25 mg gallic acid/100 g). According to the antioxidant activity results; the extracts showed moderate reducing power effect whereas weak ABTS radical cation decolorization and ferrous ion-chelating effect and also too weak DPPH radical scavenging activity when compared to the positive standards.

Keywords : amaranthaceae, antioxidant activity, *Chenopodium quinoa* willd., total phenolic content

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