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Antioxidant Activity of Cauliflower (*Brassica oleracea* L.)

Ekrem KÖKSAL, İlhami GÜLÇİN

Atatürk University, Faculty of Science and Arts, Department of Chemistry, 25240
Erzurum - TURKEY

 [Keywords](#)
 [Authors](#)



agric@tubitak.gov.tr

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Abstract: Recently, a number of studies on the health benefits associated with fruits, vegetables, herbs and spices demonstrated that they possess potent antioxidant, anti-inflammatory, anti-mutagenic, and anti-carcinogenic activity. The potential antioxidant activity of water and ethanol extracts of cauliflower (*Brassica oleracea* L.) were investigated to evaluate their potential value as a natural ingredient for foods or cosmetic application. In this study antioxidant activity was measured by 2,2'-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid) (ABTS) radical scavenging, 1,1-diphenyl-2-picryl-hydrazyl free radical (DPPH \cdot) scavenging, N,N-dimethyl-p-phenylenediamine dihydrochloride (DMPD) radical scavenging, superoxide anion (O $_2^{\cdot-}$) radical scavenging, total antioxidant activity, reducing activity using Fe $^{+3}$ -Fe $^{+2}$ transformation and CUPRAC assays, hydrogen peroxide (H $_2$ O $_2$) scavenging, and ferrous metal chelating activity assays. The water extract of cauliflower (WEC) and ethanol extract of cauliflower (EEC), as antioxidants, neutralized the activity of radicals and inhibited the peroxidation reactions of linoleic acid emulsion. Total antioxidant activity was measured according to the ferric thiocyanate method. α -Tocopherol and trolox, a water-soluble analogue of tocopherol, were used as the reference antioxidant compounds. WEC and EEC showed 88.6% and 80.1% inhibition of lipid peroxidation of linoleic acid emulsion, respectively, at the concentration of 30 μ g ml $^{-1}$. On the other hand, at the same concentration, the standard antioxidants α -tocopherol and trolox exhibited 68.1.4% and 81.3% inhibition of peroxidation of linoleic acid emulsion, respectively. In addition, WEC and EEC had effective DPPH \cdot , ABTS $^+$, DMPD $^+$, and superoxide anion radical scavenging, hydrogen peroxide scavenging, total reducing power, and metal chelating of ferrous ion activity. Also, those various antioxidant activities were compared to α -tocopherol and trolox as references antioxidants.

Key Words: Cauliflower, *Brassica oleracea*; antioxidant activity, radical scavenging

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