

Antioxidant Activity of a Broad Bean Extract and its Fractions

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Phenolic compounds were extracted from broad seeds using 80% (v/v) aqueous acetone. The crude extract was applied to a Sephadex LH-20 column. Fraction I, consisting of sugars and low-molecular-weight phenolics, was eluted from the column by ethanol. Fraction II, consisting of tannins, was obtained using acetone-water (1:1; v/v) as the mobile phase. Phenolic compounds present in the crude extract and its fractions demonstrated antioxidant and antiradical activities as revealed from studies using a β -carotene-linoleate model system, the total antioxidant activity (TAA) method, the DPPH radical-scavenging activity assay, and a reducing power evaluation. Results of these assays showed the highest values when tannins (fraction II) were tested. For instance, the TAA of the tannin fraction was 3.77 $\mu\text{mol Trolox}^{\text{®}}$ eq./mg, whereas the crude extract and fraction I showed 0.58 and 0.39 $\mu\text{mol Trolox}^{\text{®}}$ eq./mg, respectively. The content of total phenolics in fraction II was the highest (99.8 mg/g); the tannin content in fraction II, determined using the vanillin method and expressed as absorbance units at 500 nm per 1 g, was 121. There were 14 compounds identified in the crude extract using an HPLC-ESI-MS method: catechin gallate, digallate procyanidin dimer, and epicatechin glucoside, *trans*-*p*-coumaric acid were the dominant phenolics in the extract.