

Title Antioxidant activity of brown pigment and extracts from black sesame seed (*Sesamum indicum* L.)
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Abstract

The antioxidant activities of brown pigment, extract of *n*-hexane and extract of supercritical carbon dioxide extraction of black sesame seeds were investigated in this study. Kinetics of anti-radical activity showed that the reaction between DPPH[·] and brown pigment of sesame seed was rapid and reached the steady state in 10 min. Extracts from supercritical carbon dioxide extraction and *n*-hexane extraction reacted with DPPH[·] slowly and the absorbance became stable after 35 min. However, α -tocopherol and trolox were rapid while the kinetic behaviour of BHA was intermediate. The brown pigment of sesame seed also showed a lower EC₅₀ (13.5 $\mu\text{g ml}^{-1}$) than the other two extracts and α -tocopherol, which was about 7–10 fold of the antioxidant activity of the supercritical carbon dioxide extract and the *n*-hexane extract. The ferric thiocyanate (FTC) method also showed that the brown pigment of sesame seed provided higher inhibition activity against lipid peroxidation at 200 $\mu\text{g ml}^{-1}$ than did the supercritical carbon dioxide extract and *n*-hexane extract at 1 mg ml^{-1} . However, the activities of the supercritical carbon dioxide extract and *n*-hexane extracts were significantly higher than that of α -tocopherol. In the linoleic acid system, the brown pigment of black sesame seed showed an equal antioxidant activity to BHA and higher than trolox and α -tocopherol. The results indicated that the brown pigment of sesame seed possessed excellent antioxidant activity.