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The Comparison of Antioxidant Activity Based on Molecular Weight in Soysauce and Model of Maillard Reaction Products

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Abstract

The browning reactions of soy sauce were considered to have antioxidant activity as well as strong impact on flavor and color of product. The brown pigments, mainly of melanoidin and other varieties of intermediates products are resulted by Maillard reactions. The objective of this study was to investigate antioxidant activity of fractions in soy sauce and model based on molecular weight. The system models of Maillard reaction were prepared from sugar and amino acids. The, soy sauce and models were fractionated by ultrafiltration in a molecular weight ranging between 10 kDa to 100 kDa.

The fractions with molecular weight <10 kDa and 10-30 kDa of soysauce retarded oil oxidation better than fractions with molecular weight > 30 kDa, whereas the fractions molecular weight 30-100 kDa and > 100 kDa had DPPH radical scavenging activity better than fractions with molecular weight < 30 kDa. The fractions with molecular weight 30-100 kDa of models stronger had DPPH radical scavenging activity than other fractions. The fractions with molecular weight > 10 kDa of models stronger retarded oil oxidation than fraction with molecular weight < 10 kDa. The fractions of soy sauce had better antioxidant activity than the model fractions. The compounds which has the role as antioxidant is the reaction Maillard product (MRP) were determined based on uv-vis absorption at wave length 306 nm, 348 nm and 403 nm and infra red spectrum indicated functional group of –OH...O from β-diketon or C=R=R combination and →CH, →COC, >C=C<, >C=N, >NH, →N^{+}H, COO.