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Antioxidative Effects of Phenolic Acids on Lipid Peroxidation Induced by H₂O₂ in the Presence of Myoglobin

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Antioxidant effects of the phenolic acids, caffeic acid, *p*-coumaric acid, and ferulic acid, were investigated by monitoring O₂ consumption in the linoleic acid micelles in the presence of H₂O₂ and metmyoglobin. O₂ consumption usually consists of two phases: In the first phase, O₂ is consumed slowly until the concentration of linoleic acid hydroperoxide reaches a certain value; then in the second phase O₂ is consumed rapidly. At pH 7.4, the phenolic acids prolonged the period of the first phase and showed no effect on the second phase. At pH 3.4, the phenolic acids decreased the oxygen consumption rate in the second phase. These results suggest that the main antioxidant effects of the phenolic acids should be ascribed to reduction of ferrylmyoglobin in the first phase at pH 7.4 and inhibition of the chain reaction occurring inside of the micelles in the second phase at pH 3.4.

Keywords: [caffeic acid](#), [ferulic acid](#), [hydrogen peroxide](#), [lipid peroxidation](#), [myoglobin](#), [phenolic acid](#), [polyphenol](#)

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