

Pectin Hydroxamic Acids Exhibit Antioxidant

Activities in Vitro

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摘要.

Abstract

Commercial pectins with different degrees of esterification (DE) were reacted with equal volumes of 2 M alkaline hydroxylamine (pH 12.0) at room temperature for 4 h to prepare pectin hydroxamic acids (PHAs; DE94T4, DE65T4, and DE25T4) according to a previously reported method (Hou et al., J. Agric. Food Chem. 2003, 51, 6362–6366) and were used to test the antioxidant and antiradical activities in comparison with those of DE94, DE65, and DE25 pectins. The half-inhibition concentrations, IC₅₀, of scavenging activity against DPPH were 1.51, 5.43, and 5.63 mg/mL for DE94T4, DE65T4, and DE25T4, respectively, and were much lower than those of corresponding DE pectins under the same concentrations. The scavenging activities of PHAs for DPPH radicals were positively correlated with original DE values of pectin. The optimal pH of DE94T4 for scavenging DPPH radicals was 7.9 or 8.0. Using electron spin resonance (ESR) for scavenging hydroxyl radicals, under the same concentrations of 125 μ g/mL, DE94T4, DE65T4, and DE25T4, respectively, exhibited 73.53, 69.01, and 55.17% antiradical activities. PHAs also exhibited protection against hydroxyl radical-mediated DNA damage and anti-human low-density lipoprotein peroxidation tests