

Patatin, the tuber storage protein of potato (*Solanum tuberosum* L.), exhibited antioxidant activity in vitro

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Abstract

The potato (*Solanum tuberosum* L.) tuber storage protein, patatin, was purified to homogeneity with a molecular mass of 45 kDa. The purified patatin showed antioxidant or antiradical activity by a series of in vitro tests, including 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical (half-inhibition concentration, IC(50), was 0.582 mg/mL) scavenging activity assays, anti-human low-density lipoprotein peroxidation tests, and protections against hydroxyl radical-mediated DNA damages and peroxynitrite-mediated dihydrorhodamine 123 oxidations. Using electron paramagnetic resonance (EPR) spectrometry for hydroxyl radical detections, it was found that the intensities of the EPR signal were decreased by the increased amounts of patatin added (IC(50) was 0.775 mg/mL). Through modifications of patatin by iodoacetamide or N-bromosuccinimide, it was found that the antiradical activities of modified patatin against DPPH or hydroxyl radicals were decreased. It was suggested that cysteine and tryptophan residues in patatin might contribute to its antioxidant activities against radicals.