

兩品種山藥塊莖儲藏性蛋白質體外抗氧化活性之研究 Comparisons of in vitro Antioxidant Activities of Storage Proteins in Tuber of Two Dioscorea Species

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摘要

兩品種山藥《台農一號與日本山藥》塊莖儲藏性蛋白質 dioscorin 經由 DE-52 離子交換層析法純化。經由一系列體外抗氧化實驗，包括清除 DPPH 與氫氧自由基，還原能力，抗脂質過氧化能力，保護去氧核糖核酸傷害能力，及抑制 peroxynitrite 氧化 dihydrorhodamine 123 能力。結果顯示，兩品種山藥 dioscorin 具有不同的抗氧化能力，即使 100°C 加熱五分鐘也仍具有不同的清除 DPPH 與氫氧自由基的能力。以胃蛋白酶水解台農一號 dioscorin 不同時間之水解產物也具有清除 DPPH 自由基的能力。以 Sephadex G-50(F) 膠濾層析進行分離並進行 DPPH 自由基清除實驗，結果顯示小分子水解產物也具有抗氧化能力。

Abstract

Dioscorin was purified by DE-52 ion exchange chromatography from two yam species, *Dioscorea alata* L. cv. Tainong 1 (TN1) and *Dioscorea batatas* Decne (imported from Japan, JP). By different in vitro antioxidant tests, including DPPH radical and hydroxyl radical scavenging activity assay, a reducing power test, an anti-lipid peroxidation test, DNA damage protection, and inhibition of dihydrorhodamine 123 oxidation by peroxynitrite, it was shown that dioscorins from the two species exhibited different scavenging activities against DPPH and hydroxyl radicals, even after heating 100°C for 5min. Dioscorins from TN1 were hydrolyzed by pepsin for different durations and the peptic hydrolysates exhibited DPPH radical scavenging activities. Peptic hydrolysates separated by Sephadex G-50(F) gel filtration were tested for anti-DPPH radical activity. Results showed that fractions of smaller molecular weight still have antioxidant activities.