Antioxidative Activies of Extracts from Tainung 66 (TNG 66) and Purple Sweet Potato of Ipomoea batatas L. Leaves

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ABSTRACT

The polyphenols, being phytochemicals and having a strong antioxidant capacity, widely present in fruits and vegetables. It has been shown that polyphenolic com-pounds have the ability to rid free radicals in a human body and help protect body tis-sues against oxidative stress. The study is aimed to evaluate the antioxidativity of ex-tracts of the leaves of two varieties of sweet potatoes (TNG 66 and purple-leaf). Three different solvents (water, 40% ethanol, and 95% ethanol) were used to extract the leaves (fresh or dried). Each extract was concentrated under a reduced pressure and freeze-drying process to become a powder product. The contents of total phenolics and total flavonoids were determined, and the antioxidativity and the antibacterial ability of each extract were analyzed. The major analyses of antioxidativity included scavenging ability of α, α-dipheny1- β-picryl-hydrazyl (DPPH), ferrous iron chelating ability, ABTS cation scavenging ability, and reducing ability of ferric ion. Experi-mental results showed that the extracts of TNG 66 fresh and dried leaves had the highest extraction yields of 2.55% and 5.80%, respectively, both extracted by water. For fresh and dried leaves of purple-leaf sweet potato, the highest yields were 3.23% and 8.41%, respectively, both extracted by water. The total phenolics contents were 0.97 and 3.52 mg/g, respectively, in the extracts of the fresh leaves and dried leaves of TNG 66 sweet potato by 40% ethanol. The highest contents of total phenolics were 2.59 and 5.26 mg/g, respectively, in the extracts from the fresh leaves (extracted by water) and dried leaves (by 95% ethanol) of purple-leaf sweet potato. The total flavo-noid contents were 0.63 and 1.91 mg/g, respectively, in the extracts from the fresh leaves (extracted by water) and dried leaves (by 95% ethanol) of TNG 66 sweet potato. The total flavonoid contents were 6.11 and 5.66 mg/g, respectively, in the extracts from the fresh leaves (extracted by water) and dried leaves (by 40% ethanol) of the purple-leaf sweet potato. The extract of dried leaves (by 95% ethanol) of purple-leaf sweet potato had the highest antioxidative activity. The extract had the highest scavienge ability of DPPH (99.7%) at a concentration of 0.8 mg/mL, had the highest che-lating ability of ferrous iron (99.3%) at a concentration of 4 mg/mL, had the highest scavenge ability of ABTS cation (99.9%) at a concentration 0.8 mg/mL, and had the highest relative reducing ability (61.3 %) at a concentration of 0.8 mg/mL. The extract of fresh leaves (by 40 % ethanol) of purple-leaf sweet potato had the highest antibac-terial ability and had a good antibacterial affect with an inhibiting zone of 11.0 mm at a low concentration of 0.05 mg/mL.

Keywords : Purple-leaf sweet potato、leaf of Ipomoea batatas、total phenolic、total flavonoids、antioxidativity

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