Study on the Antioxidative Properties of Symphytum officinale and Polygoni multiflori

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ABSTRACT

In this study, Symphytum officinale and Polygonum multiflorum were extracted using four different solvents, n-hexane, dichloromethane, methanol-chloroform and methanol-water. The assays of antioxidative activities were included α , α -diphenyl- β -picrylhydrazyl (DPPH) radical scavenging ability, Fe2+ chelating ability, relative reducing power, superoxide anion scavenging ability, the inhibition of Fe/ascorbate-induced lipid peroxidation in a liposome model system, and ABTS cation scavenging ability. These antioxidative activities of Symphytum officinale and Polygonum multiflorum were measured and compared with those of butylated hydroxyanisole (BHA), ethylene diamine tetracetic acid (EDTA), α – tocopherol and gallic acid. The extracts of Symphytum officinale and Polygonum multiflorum from the methanol-chloroform fraction and the methanol-water fraction had the highest contents of total phenol (39.15 and 96.42 mg/g, respectively). However, the extracts of Symphytum officinale and Polygonum multiflorum from the methanol-chloroform fraction and dichloromethane had the highest contents of total flavonoids (22.32 and 28 mg/g, respectively). For antioxidant activities, the extracts of Symphytum officinale and Polygonum multiflorum from the methanol-chloroform fraction and the methanol-water fraction performed the best. These antioxidant activities for the extracts of Symphytum officinale and Polygonum multiflorum were obtained as follows: the DPPH radical scavenging ability, IC50＝0.21 ±0.01 and 0.01±0.00 mg/g, the Fe2+ chelating ability, IC50 =0.17±0.00 and 0.17±0.01 mg/g, the relative reducing power, k ＝0.20±0.00 and 0.17±0.00 mL/mg, the superoxide anion scavenging ability, 30.92% and 71.68%, the inhibition of lipid peroxidation, 57.25% and 78.88%, and the ABTS cation scavenging ability, IC50＝0.24±0.05 and 0.02±0.01 mg/g,respectively. In summary, both Symphytum officinale and Polygonum multiflorum showed some antioxidant activities. When various solvents were used to extract Symphytum officinale and Polygonum multiflorum, the extracts from the methanol-chloroform fraction and the methanol-water fraction had the highest antioxidant activities. The findings in this study can help understand the antioxidant activities and processing methods of Symphytum officinale and Polygonum multiflorum.

Keywords : Polygonum multiflorum ; Symphytum officinale ; Antioxidant

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