Studies on the Antioxidative Activities of Salvia plebeia

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ABSTRACT

Some human diseases have been proved to have related to the oxidative stress, and the antioxidants can decrease the oxidative stress. Salvia plebeia R. Brown (Labiatae), an annual, hairy herb widely distributed in many countries of East Asia, such as Korea, China, Taiwan, India, and Malaysia, and Australia, is used as a traditional folk medicine for treating a variety of diseases such as tumor, urinary tract infection (UTI), hemorrhoids, and a variety of inflammatory diseases including hepatitis, diarrhea and gonorrhea. The aims of this study were to measure the total antioxidant capacity of the extract of S. plebeia R. Br., and the effect of the water extract on the viability of human liver tumor cell Hep G2. In this study, S. plebeia R. Br. was extracted with a variety of solvents via hot flux, and the extracts were applied to the measurement of the total phenolic and total flavonoid contents, and the antioxidant activities, including the free radical scavenging activities of DPPH radical, superoxide anion, and ABTS cation, and reducing power assay, chelating ability of ferrous ion, and the inhibition ability of thiobarbituric reactive substances (TBARS). For cell viability assay, the extract of S. plebeia R. Br. was applied to Hep G2. Experimental results show that the water extraction obtained a higher yield of 16.3%. In the measurement of total phenolic content, the 70% ethanol extract has the highest content about 62.5±0.9 mg/g, and the ethyl acetate has the highest total flavonoid content about 22.5±2.2 mg/g. For the antioxidant capacity evaluation, the 70% ethanol extract of S. plebeia R. Br. has the highest DPPH scavenging activity about 98.9% at an extract concentration of 0.1 mg/mL, the highest inhibition capacity of TBARS about 86.1% at a concentration of 1.0 mg/mL and the highest chelating ability about 69.5% at a concentration of 1.0 mg/mL. In the measurement of scavenging superoxide anion ability, the water extract has the highest activity about 62.6% at a concentration of 0.8 mg/mL. The methanol extract has the highest scavenging ABTS cation ability about 99.9% at a concentration of 1mg/mL, and reducing power assay about 188.3% (relative to a reference of BHA) at a concentration of 0.8 mg/mL. In summary, the extracts of S. plebeia R. Br. (water, 70% ethanol and methanol) have potent antioxidative capacities. Furthermore, the results also show that the water extract of S. plebeia R. Br. has no negative effect on the cell viability of Hep G2.

Keywords : Salvia plebeia R. Brown、oxidative stress、anti-oxidative activity、Hep G2

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