

Title Determination of rosmarinic acid and antioxidative capacity of *Perilla frutescens* var. *acuta* extracts depending on extraction conditions

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Abstract

The efficiencies conditions for the extraction of total phenolics and flavonoids from *Perilla frutescens* var. *acuta* were evaluated. And the developed HPLC and LC/MS method has used to determinate ofrosmarinic acid in *Perilia frutescens* extracts (PFE). As well as, the anti oxidative capacity of the obtained various PFE and fractions of the PFE were investigated by reducing power, DPPH and lipid peroxidation with use of a β -caroteneninoleic acid system. The extraction efficiency of phenolics such as rosmarinic acid and flavonoid depended strongly on extraction conditions. The optimal conditions for the efficient extraction of rosmarinic acid from PFE were found to be the use of a refluxed extraction process with a solvent-water ratio of 70 % ethanol and an extraction time of 24 hr. HPLC condition was developed the assessment of rosmarinic acid; the separation system consisted of a C18 reversed-phase column, an isocratic elution system comprised of acetonitrile-H₂O containing 1 % acetic acid (22:78 v/v), and an UV detector at 320 nm. And LCIMS results, mass spectrum found at peak was rosmarinic acid with an [M]⁺ of 360.0 m/z. Rosmarinic acid levels was indicated the highest 70 % ethanol PFE (2.50 and 3.80 mg/g dry matter). Furthermore, the 70 % ethanol PFE (500 μ g/ml) showed the strongest inhibitory potential for reducing power and DPPH to 0.501, 91.77 % and 81.5%, respectively. Especially, ethylacetate fraction of 70 % ethanol PFE (500 μ g/ml) was studied most effective in antioxidant activity. The results suggested that optimal conditions for most effective of rosmarinic acid level and antioxidant capacity are ethyl acetate fraction of 70 % ethanol PFE by refluxed extraction process for 24hr.