Antioxidant and hepatoprotective effects of Ajuga nipponensis extract by ultrasonic-assisted extraction

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ABSTRACT

Objective: To investigate suitable condition for extraction of the active components from Ajuga nipponensis (A. nipponensis).

Methods: Orthogonal experimental design was used to determine the optimal extraction parameters for ecdysterones and flavonoids. Finally, the hepatoprotective abilities of A. nipponensis extracts were evaluated by CCl4-induced animal models.

Results: Maximum yields of flavonoids (7.87 ± 0.10) mg/g and ecdysterones (0.73 ± 0.02) mg/g could be obtained when the extraction time was 50 min, the extraction temperature was 60 °C, and the ratio of sample to 70% (v/v) ethanol was 1:20 (w/w). The antioxidant property of A. nipponensis was correlated to the concentration of its extracts. At 5 mg/mL, A. nipponensis extract scavenged 84.8% of DPPH radical and had absorbance values of 2.43 ± 0.04 reducing power. Upon CCl4-induced liver injury, glutamic oxaloacetic transaminase and glutamic pyruvic transaminase decreased significantly after the mice were treated with A. nipponensis. Histological researches also explained that A. nipponensis reduced the extent of liver lesions induced by CCl4.

Conclusions: A. nipponensis exhibited potent antioxidant activity in chemical experimental models and hepatoprotective effect against CCl4-induced liver damage.

Keywords: Ajuga nipponensis, Ultrasonic-assisted extraction, Orthogonal test, Antioxidant, Hepatoprotective...