Investigation of chemical compounds, acute toxicity, and subchronic toxicity of *Lycium barbarum* L. extract

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Abstract

Lycium barbarum L. has been known as a traditional medicine in many Eastern region countries due to its treatment and health-promoting effects. In the current study, the goji berry extract was obtained using the hot water extraction method at a 1:20 ratio. The composition of the initial extract was analyzed using a functional group qualitative method. An acute and subchronic toxicity evaluation of the present extract was conducted according to the "Up and Down" procedure (OECD Guideline No. 425). Acute toxicity was evaluated at 2000 mg/kg and 5000 mg/kg in a rat model, while subchronic toxicity was evaluated at 150 mg/kg and 200 mg/kg in a rat model. The extraction process yielded an average of 8.03 ± 0.28%, and the qualitative analysis confirmed the presence of 9 bioactive compounds, including flavonoids, terpenoids, steroids, alkaloids, cardiac glycosides, saponins, phenolics, tannins, and reducing sugars. Toxicity assessment results indicated that the median lethal dose (LD_{50}) of the goji berry extract is considered to be greater than 5000, with a 100% survival rate observed at doses of 150 mg/kg and 200 mg/kg throughout the 15-day subchronic toxicity study. These results suggest that the goji berry extract exhibited a LD_{50} > 5000 mg/kg and is safe for rats at concentrations of 150 mg/kg and 200 mg/kg over a 15-day experimental period.

Keywords: *Goji berry, Lycium barbarum L. extract, acute toxicity, sub-chronic toxicity, LD50*