



Anti-toxoplasmosis activity evaluation of *Artemisia vulgaris* L. extract and its subfractions *in vitro* and *in vivo*

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Background and objectives: *Toxoplasma gondii* affects almost one-third of people worldwide, causing disorders such as abortion or congenital disease in its intermediate hosts. This is while the current available medications are limited in terms of efficacy and side effects. Previous researches have shown *Artemisia annua* to be highly effective on this parasite. The aim of this study was to evaluate the antitoxoplasma effects of *A. vulgaris*. **Methods:** Anti toxoplasmosis activity was evaluated *in vitro* using different concentrations of *A. vulgaris* total extract and the petroleum ether, chloroform, ethyl acetate and *n*-butanol fractions. After 2 h of incubation, flow cytometry method was applied to determine the anti-parasitic activity. Phytochemical profiles of these extracts were developed by HPTLC. For the *in vivo* experiment, toxoplasmosis was induced by intradermal injection of the parasite tachyzoites into the rats. Average survival time of the rats treated with 16-128 mg/kg of the total extract was compared with the control groups. **Results:** *In vitro* evaluation of *A. vulgaris* extracts revealed that the petroleum ether fraction was the most active by IC₅₀ of 8.31 µg/mL and the *n*-butanol fraction didn't exhibit any significant activity. In *in vivo* tests, all concentrations of the total extract led to an increase in the average survival time. HPTLC analysis of the crude extract and its fractions revealed the presence of terpenoids in the non-polar phase. **Conclusion:** According to the data and statistical analysis, *A. vulgaris* and particularly its petroleum ether fraction exhibit significant anti-toxoplasmosis activity, suggesting that the non-polar terpenoids could be responsible for this effect.

Keywords: *Artemisia vulgaris*, HPTLC, *Toxoplasma gondii*