

***In vitro* antiviral screening of euphorbia spinidens extract and its fractions against herpes simplex virus type 1**

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Background and Aims: Herpes simplex viruses (HSV-1 and -2) are important pathogens for humans, especially in the case of highly susceptible adults. Moreover, HSV-2 has been reported to be a high risk factor for HIV infection. Therefore, the discovery of novel anti-HSV drugs deserves great efforts. Recent antiviral screenings have demonstrated that some Euphorbiaceae species, e.g. *E. pekinensis*, *E. peplus*, *Phyllanthus nanus* and *P. amarus*, are effective against viral infections. Therefore, with the aim of finding fractions containing promising antiviral compounds, we have studied the activities of total extracts and subfractions from *E. spinidens* (Euphorbiaceae) against Herpes simplex virus type 1.

Methods: In this research, dried acetone:chloroform extract (1:2) of aerial parts of *Euphorbia spinidens* collected from the khorasan province in North East part of Iran, and its chromatographic subfractions rich in terpenoid and phenolic compounds was used on herpes virus Vero cell culture for different tests. In the next step cytotoxic concentration (IC₅₀) of the extract and subfractions on replication of HSV-1 both in extracellular and intercellular cases were assessed. The statistical data was analyzed by the SPSS software using Probit analysis.

Results: Based on Probit analysis, a bio-guided screening against herpes simplex virus type 1 was carried out with total extract and fractions. Significant relationship was found between the CC₅₀ of the extract and cell death in the cell studied using the Probit model ($P < 0.01$). IC₅₀ of the extract on the virus before cellular attachment and after entering the cells were 2.5 mg/ml and 1.25mg/ml, respectively. Based on the Probit model, by increasing the extract concentration, percentage of inhibition of cytopathic effect (CPE) was increased in both stages ($P < 0.05$).

Conclusions: Based on the findings of this study, it seems that components of active chloroform partition could be isolated and identified as an appropriate anti-herpetic compound.

Keywords: *Euphorbia spinidens*; Herpes simplex; Cytotoxicity; TCID₅₀