

Evaluation of the antileishmanial activity of total aqueous extract of *Glycyrrhiza glabra* in compared to amphotricin B: *In vitro* and *in vivo* studies

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Background and Aims: Cutaneous leishmaniasis (CL) is among the important infectious disease in the world. Different medicines are used for treatment of CL, but their side effects and drug resistance cause to look for effective natural drugs. The aim of this study was to examine the effect of an Iranian traditional plant, *Glycyrrhiza glabra* extract, on CL *in vitro* and *in vivo* in compared to Amphotricin B.

Methods: *In vitro*: The promastigote of *L.major* were incubated in the presence of 16, 8, 4, 2, 1, 0.5 mg/ml of the root extract of *Glycyrrhiza glabra* at 25 C0. Amphotricin B (0.1mg/kg) and a group without extract were as control groups. The effect was determined by counting the alive promastigotes daily for 4 days; then IC50 estimated. *In vivo*: Infected mice assign to the following quintuplet groups: control group received 6mg/kg Amphotricin B, three test groups received 0.8, 0.4, 0.2 g/kg extracts intralesionally and negative control without treatment. Treatment was performed every 4 day for 20 day with extracts. Leision size measured every week after beginning treatment for 8 week.

Results: IC50 of *Glycyrrhiza glabra* was 14.8 mg/ml after 88 hour. In animal assay, lesion size of each of groups received plant extracts decreased compared to primary lesion size. ($p < 0.05$). Mean of decrease lesion size of groups received 0.8, 0.4, 0.2 g/kg extracts of *Glycyrrhiza glabra* were 0.39, 0.193, 0.09 cm respectively. This improvement was 0.491 for group received Amphotricin B. Groups received the highest dose of *Glycyrrhiza glabra* have no significant difference with Amphotricin B ($P > 0.05$), so have similar effect in compared to Amphotricin B. *Glycyrrhiza glabra* extract killed promastigotes of *L.major* in high dose than other effective plants and standard therapies of leishmaniasis, but in highest dose was effective as same as positive control *in vivo*.

Keywords: *Glycyrrhiza glabra*; Antileishmanial; *In vitro*; *In vivo*; Amphotricin B