

Evaluation of anti-leishmanial activity of *Agrostemma githago* seed extract against *Leishmania major* lesions on infected BALB/c mice using both topical and injection therapy

Background and Objective: The Leishmaniasis is a group of diseases caused by protozoan parasites from more than 20 *Leishmania* species, transmitted to human by the bites of the infected female Phlebotomine sandfly. Cutaneous Leishmaniasis is the most common form of the disease. The current therapies mainly rely on Antimonial drugs that are associated with difficulties such as parasite resistance to the drug. This study aimed to evaluate *in vivo* anti-leishmanial activity of *Agrostemma githago* seed extract against *L.major* on infected Balb-c mice and to compare its efficacy with Meglumine antimoniate (MA, Glucantime).

Materials & Methods: In this study, promastigotes of *Leishmania major* (MRHO /IR /75 /ER) parasites was injected to the base of the tail of female Balb-c mice to cause lesions. The local treatment was done for 3 weeks by intra lesion injection of *Agrostemma githago* extract with concentrations 10 and 20 mg/kg with two day intervals and also with topical ointment of *Agrostemma githago* with concentrations 0.25, 0.5, 1 and 5% daily. Measuring of lesions sizes and weighing the mice was done before and during the treatment each week for three weeks. At the end of the treatment, pathologic slides of lesions tissue were prepared and the parasitic burden of the samples was determined.

Results: The results showed no significant changes in mice weight between different groups. Evaluation of the lesions sizes demonstrated a significant difference between the control group compared to the groups which had been treated with extract of *Agrostemma githago* and Glucantime ($P<0.001$). After treatment of the injection groups with concentrations of 10 and 20 mg/kg and the topical ointment group with concentration of 0.5% of extract, mean diameter of lesions was significantly reduced in compared to the other groups and Glucantime ($P<0.05$). Evaluation of the parasite burden determined a significant difference between the control group compared to all of the treated groups ($P<0.001$). Parasite burden in injected group with concentration of 20 mg/kg of extract and topical ointment group with concentration of 5% of extract, was significantly decreased compared to Glucantime group.

Conclusion: *Agrostemma githago* seed aqueous extract has strong anti-leishmanial activity in *in vivo* against *Leishmania major*.

Keywords: *Leishmania major*, *Agrostemma githago*, BALB/c mice, Parasite burden