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Anthelmintic activity of glibenclamide against experimental cystic echinococcosisJulia A. Loos, Valeria A. Davila, Andrea C. Cumino
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Statement of the Problem: Cystic echinococcosis is a worldwide parasitic zoonosis caused by the larval stage of *Echinococcus granulosus*. Current chemotherapy against this disease is based on benzimidazoles (BZMs). However, BZM treatment results in a low cure rate and causes side effects. Therefore, new treatment options are needed. The antidiabetic drug glibenclamide (Glb) is a second-generation sulfonylurea receptor inhibitor that has been shown to be active against protozoan parasites. The purpose of this study is to investigate the *in vitro* and *in vivo* pharmacological effects of Glb against the larval stage of *E. granulosus*. Methodology & Theoretical Orientation: Viable protoscoleces and metacestodes were cultured *in vitro* with different concentrations of Glb and/or ABZSO and mortality was calculated daily. Subsequently, *E. granulosus*-infected mice were orally treated with Glb and/or ABZ daily for 60 days. The hydatid cysts collected from the animals were weighed and analyzed by SEM. Findings: The *in vitro* Glb activity on both protoscoleces and metacestodes was dependent on the concentration. In addition, the combination of Glb and ABZSO had a greater effect on metacestodes than each drug alone. Likewise, a reduction of the cyst weight was also found after administration of Glb to infected mice. However, Glb + ABZ combined treatment not shown to be more effective than Glb monotherapy. Our results also demonstrated mitochondrial membrane depolarization and increase of Ca⁺² intracellular levels in Glb-treated protoscoleces. Moreover, the intracystic drug accumulation, the competition of Glb for 1-NPN binding site in protoscoleces, and the bioinformatic analysis using the available *E. granulosus* genome, suggest the presence of genes encoding receptor and transporters of sulfonylureas in the parasite. Conclusion & Significance: Glb shows anthelmintic effect on *E. granulosus* larval stage. Further studies are needed to fully investigate the mechanism involved in the therapeutic response of the parasite to this sulfonylurea.

Biography

Julia A Loos has a PhD in Biological Science (National University of Mar del Plata, 2017) and she is currently working as a postdoc under the direction of Prof. Dr. Andrea Cumino. She has been serving as assistant teacher for subjects such as Histology, General Microbiology and Farmacology, that are part of the Biology, Biochemistry and Medicine courses of study. She participates in several research projects on Parasitology and has published original articles. Currently, her research is focused on the study of intermediary metabolism and energy control in the larval stage of *Echinococcus* spp.

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