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# IMIQUIMOD AS AN IMMUNOMODULATORY THERAPEUTIC ALTERNATIVE FOR CHAGAS DISEASE

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**Abstract**

The treatment of Chagas disease, caused by the parasite *Trypanosoma cruzi* (*T. cruzi*), is still based on drugs licensed over 50 years ago: nifurtimox and benznidazole (BNZ). The only ones with proven efficacy against Treatment with BNZ is effective in the acute phase but has limitations in the chronic phase, with a high rate of adverse events. Thus, new compounds have been tested to improve current treatment options. Imiquimod (IMQ), an imidazoquinoline, has immunomodulatory action by acting as an agonist of the Toll-like receptor 7. Its activation stimulates the production of cytokines such as IFNγ and TNF, which could enhance the immune system's ability to eliminate the parasite. Thus, this study aimed to evaluate the in vitro efficacy of IMQ in protecting against *T. cruzi* infection. Treatment durations of 2 hours and 4 hours were tested in L929 fibroblast cell lines cultured in complete RPMI medium. Trypomastigotes were maintained in L929 cell cultures under the same conditions. $1\times10^5$ L929 cells were cultured for 24 hours and then treated with IMQ at concentrations of 10, 20, 50, and 100 µg/ml. After drug exposure, trypomastigotes ($1\times10^6$) were added and maintained for 24 hours before staining the coverslips with Rapid Panoptic stain. The most promising results were observed in the group treated with 50 µg/ml (2h), showing significant differences compared to the untreated group and the 50 µg/ml 4h group, with a lower infection rate (20%) and reduced intracellular parasite development over time. The group treated with 100 µg/ml (2h), although not showing significant differences, had similar results to the 50 µg/ml (2h) group. Thus, cells treated with 50 µg/ml (2h) of IMQ demonstrated more efficient immunomodulation. However, further experiments are needed to confirm these findings. New tests are underway for confirmation and future in vivo studies. This study was supported by the Coordination for the Improvement of Higher Education Personnel (CAPES) – Funding Code 001.

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