THERAPEUTIC POTENTIAL: CAN PEPTIDES FROM THE SNAKE VENOM (CROTALUS DURISSUS TERRIFICUS) BE AN ALTERNATIVE IN THE TREATMENT OF CHAGAS DISEASE?

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Chagas disease has more than 100 years, is a highly morbid and mortal parasitic disease that affects about 8 million individuals and is caused by the protozoan *Trypanosoma cruzi*. In Brazil, the only available treatment is Benzonidazole, which has several side effects reported in up to 98% of cases, requiring treatment interruption in up to 20%. In this sense, snake venoms have demonstrated inhibitory potential against pathogenic microorganisms and little cytotoxicity to cells. The venom of *Crotalus durissus terrificus* has two peptides, phospholipase A_2 (PLA_2) and crotamine (CTM), with several reported antiparasitic activities. This study aimed to evaluate the lethal (LC_{50}) and cytotoxic (CC_{50}) activities of PLA_2 and CTM against the trypomastigote forms of *T. cruzi* and human peripheral blood mononuclear cells (PBMC), respectively, and their immunomodulatory potential. For CC_{50}, blood was collected from three healthy individuals and PBMC were subjected to the MTT method in 96-well microplates containing PLA2 and CTM (100–1.56 µg/mL) for 24 to 72 hours. The LC_{50} was obtained after evaluation of surviving trypomastigote forms subjected to treatment with PLA_2 and CTM (100–3.12 µg/mL) for 24 hours. The culture supernatant of PBMC infected by the parasite and treated with LC50 of the peptides was subjected to flow cytometry analysis to evaluate cytokine production (IFN-γ, TNF, IL-10, IL-6, IL-4, IL-2) by the Cytometric Beads Array kit. The results did not demonstrate cytotoxicity of any of the peptides to PBMC, the LC_{50} for PLA_2 and CTM was 52.07 µg/mL and 0.248 µg/mL, respectively, and statistical differences were observed only in the increase of IL-10 and IL-6 for PLA_2 and CTM, and of IL-2 for CTM when in the presence of *T. cruzi*. We conclude that PLA_2 and CTM present an interesting alternative against trypomastigote forms of *T. cruzi*, not being cytotoxic to human PBMC, but do not have promising immunomodulatory activity at the doses evaluated in the present study.

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