Recombinant expression of the *Trypanosoma cruzi* serino peptidase inhibitor ISP2, homologous to the bacterial ecotin

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Chagas' disease, though efficiently contained in Brazil by vector control programs, still has a worrying incidence, especially among the precarious new population centers forming in recently denuded areas of Amazon rainforest. Its etiological agent, *Trypanosoma cruzi*, has a gene that codes for a serine peptidase inhibitor (ISP), an ecotin homolog. Ecotin is an ISP found in *E. coli* and various other genera of gram negative bacteria. A growing number of studies indicate that ecotin producing bacteria, especially those that invade arthropod and vertebrate tissues, use it as a main line of defense against host immune systems. Recent evidence also shows ISPs synthesized by *Leishmania major* — an organism that belongs to a sister taxon of *T. cruzi* and whose ISPs are also ecotin homologous — also have exogenous targets, enhancing parasite survival when encountering the host's immune defenses. Tracing parallels between studies of ecotin producing bacteria and recent research into *L. major* ISPs, it becomes clear how pervasive is the effect of these serino proteases in modulating hosts' immune responses. The characterization of *T. cruzi*'s ISP, which is the main objective of this research proposal, is thus an important step in determining the biomolecular details of host-parasite interactions, and has the potential to lead to new methods of fighting Chagas' disease. Amplification of the *T. cruzi* ISP2 encoding sequence was performed by PCR from DNA extracted from the Y reference strain. PCR fragment was cloned into the pET28a bacterial expression vector and the recombinant *T. cruzi* ISP2 protein was present in soluble bacterial extract fraction. After purification by niquel affinity chromatography, recombinant *T. cruzi* ISP2 will be tested for serological diagnosis and as a molecular target for the development of new drugs.

**Key words:** *Trypanosoma cruzi*, serine peptidase inhibitors, recombinant protein expression

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