CYSTEINE PROTEINASES OF *TRYPANOSOMA CRUZI*: DIGESTIVE ENZYMES, VIRULENCE FACTORS, AND MEDIATORS OF AUTOPHAGY AND PROGRAMMED CELL DEATH.

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The recently completed genome project of *Trypanosoma cruzi* predicts the presence of 70 cysteine, 40 serine, 250 metallo, 25 threonine, and 2 aspartyl peptidases. The real total number may be closer to 200. Clan CA is represented by 7 families. The C1 family contains cruzipains 1 and 2, cathepsin B, two putative cathepsins and a bromelain-like enzyme. Family C2 (calpains) is represented by 24 sequences; however, they lack essential domains and/or amino acid residues, what makes unlikely that they may be active enzymes. Families C12, C19 and C65 contain deubiquitinating enzymes, and family C51 presents five putative D-alanyl-glicyl endopeptidases. Family C54 includes the Atg4 proteinases (autophagins). We have recently expressed the two homologs present and shown that they process correctly the *T. cruzi* Atg8 homologs, which participate in the formation of the autophagic vesicles. Clans CD, CE, and CF are represented, respectively, by families C13, C14 and C50; C48 and C15. Family C13 includes a homolog of the GPI transamidase. Family C14 includes the metacaspases, presumably involved in apoptosis in lower eukaryotes and plants. Two homologs, TcMCA3 (16 copies) and TcMCA5 (one copy per haploid genome) are present. Family C15 has a homolog of pyroglutamyl peptidase I, which might be a virulence factor.
Key Words: *Trypanosoma cruzi*; Cysteine proteinases; autophagy.