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Roles of sulfotopes from glycoconjugates (glycoproteins and sulfatides) in trypanosoma cruzi, the causal agent of chagas disease

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Trypanosoma cruzi, the causative agent of Chagas disease (ChD), contains a major antigen, cruzipain (Cz). Its C-terminal domain (C-T), bears several post-translational modifications. The presence of sulfated oligosaccharides was demonstrated in Cz, in a minor antigen with serine-carboxypeptidase activity, and sulfatides. Sulfate-bearing glycoproteins in Trypanosomatids are targets of specific immune responses. T. cruzi chronically-infected-subjects mount specific humoral immune responses to sulfated-Cz. In absence of infection, mice immunized with C-T- but not with sulfate-depleted-C-T, showed surprising ultrastructural heart pathological effects. Moreover, the synthetic anionic sugar conjugate NAcGlc6SO₃ mimics the N-glycan-linked sulfated epitope (sulfotope) humoral response. Furthermore, the participation of sulfotopes in the immunomodulation by host-parasite interaction via sialic-acid-Ig-like-specific-lectins (Siglec) binding to sulfosialylated glycoproteins as well as in the parasite infection process has been reported. Strikingly, recent evidences involved to sulfotopes and their specific antibodies in the immunopathogenesis and infection processes of the experimental ChD. Interestingly, sera from chronically T. cruzi-infected individuals with mild disease displayed higher levels of IgG2 antibodies specific for sulfated glycoproteins and sulfatides compared with those in more severe forms of the disease, evidencing that T. cruzi sulfotopes are antigenic independently of the sulfated-glycoconjugate type. Ongoing assays indicate that antibodies specific for sulfotopes might play a role as predictors of stability from the early stages of chronic ChD and might be considered biomarkers of human ChD progression.

Biography

Vilma G Duschak, Doctor in Biochemistry (1989) UBA. CONICET Researcher, Argentina since 1994. Post-graduate in Medicine Chile University (1990); Cooperation: Instituto-Cs-Biomedicas- San Pablo-University-Brasil (2005) Universite-Jules Verne-Amiens- France (2007) Bernhard Nocht Institute of Tropical Medicine, Hamburg, Germany (2010-2011). Editorial Advisory Board Member, Bentham Science Publishers, USA. Awards and distinctions: 6 Publications: more than 40 Assistance to more than 100 National and international congresses. Directed Thesis: 5 Roche Diagnostics International Meeting experts, New York, USA (2016). Evaluator of research projects from ANPCyT, CONICET and UBA (Argentina), OTKA (Hungary) and European Union international projects, Brussels (2018).