Specific serodiagnosis of visceral and tegumentary leishmaniasis using recombinant antigens derived from *Leishmania infantum* species

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A gold standard serological diagnostic test for leishmaniasis should be focused in markers that present a specific humoral response in the infected hosts. Canine and human leishmaniasis are endemic diseases in Brazil, but current serologic tests present limitations related to their hampered sensitivity and/or specificity. Recently, an immunoproteomic approach in *Leishmania infantum* was performed using sera of asymptomatic and symptomatic visceral leishmaniasis (VL) dogs, and antigenic proteins of the parasite were identified. In the present study, the diagnostic properties of two of these proteins, cytochrome *c* oxidase (CcOx) (XP_001565615.1) and IgE-dependent histamine-releasing factor (HRF) (CAJ05086.1), were evaluated. Both antigens were obtained as recombinant proteins, and employed to test their antigenicity using canine VL (CVL) or human tegumentary leishmaniasis (HTL) sera. For the CVL diagnosis, sera from non-infected dogs living in endemic or non-endemic areas of leishmaniasis, from asymptomatic or symptomatic VL dogs, sera from Leish-Tec® vaccinated dogs, and sera from animals experimentally infected by *Trypanosoma cruzi* or *Ehrlichia canis*, were used. For the HTL diagnosis, sera from non-infected subjects living in an endemic area of leishmaniasis, samples of cutaneous or mucocutaneous leishmaniasis patients, as well as sera from *T. cruzi*-infected patients, were used. ELISA experiments performed with the recombinant CcOx (rCcOx) and HRF (rHRF) proteins presented sensitivity and specificity values of 100% for both forms of the disease, besides of a maximum Youden index (1.00), and high values of positive and negative predictive values for the serodiagnosis. The diagnostic capacities for both proteins were higher than these obtained by another *Leishmania* antigen assayed as a recombinant protein (rA2 protein) or with lysates of the parasites (Soluble Leishmanial Antigen, SLA). We conclude that the two recombinant proteins could be considered promising tools for the improvement of serological diagnosis for CVL and HTL.

Keywords: Leishmaniasis; serodiagnosis; ELISA; sensitivity; specificity; recombinant proteins.

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