**Evaluation of a vaccine composed of a new *Leishmania*-specific hypothetical protein in the protection against visceral leishmaniasis**

Daniela P. Lage[1]; Vívian T. Martins[1]; Mariana C. Duarte[1,2]; Miguel A. Chávez-Fumagalli[1]; Beatriz C.S. Salles[1]; Thaís T.O. Santos[1]; Daniel S. Dias[1]; Patrícia A.F. Ribeiro[1]; Fernanda F. Ramos[1]; Mariana P. Lima[1]; Grasiele S.V. Tavares[1]; Danniele Vale[2]; Débora V.C. Mendonça[1]; Daniel Menezes-Souza[1,2]; Bruno M. Roatt[2] ; Eduardo A. F. Coelho[1,2]

[1]Programa de Pós-Graduação em Ciências da Saúde: Infectologia e Medicina Tropical, Faculdade de Medicina and [2]Departamento de Patologia Clínica, COLTEC, UFMG, Brazil.

In this work, the effect of vaccination of a newly described Leishmania infantum antigenic protein has been studied in BALB/c mice infected with this parasite species. The LiHyD protein was characterized after a proteomic screening performed with the sera from dogs suffering visceral leishmaniasis (VL). Its recombinant version was expressed, purified and administered to BALB/c mice in combination with saponin. As a result of vaccination and ten weeks after challenge using a infective dose of L. infantum stationary promastigotes, vaccinated mice showed lower parasite burdens in different organs (liver, spleen, bone marrow and footpads´ draining lymph nodes) than mice inoculated with the adjuvant alone or the vaccine diluent. Protected mice showed anti-Leishmania IgG2a antibodies and a predominant IL-12 driven IFN-γ production (mainly produced by CD4+ T cells) against parasite proteins whereas unprotected controls showed anti-Leishmania IgG1 antibodies and parasite mediated IL-4 and IL-10 responses. Vaccinated mice showed an anti-LiHyD IgG2a humoral response and their spleen cells were able to secrete LiHyD specific IFN-γ, IL-12 and GM-CSF cytokines before and after infection. The protection was correlated to the Leishmania-specific production on nitric oxide. Altogether, the results indicate that the new LiHyD protein could be considered in vaccine formulations against VL.

**Keywords:** Visceral leishmaniasis; vaccine; LiHyD; *Leishmania*, immune response.

**Financial Support:** Programa de Pós-Graduação em Ciências da Saúde: Infectologia e Medicina Tropical, Faculdade de Medicina, UFMG. FAPEMIG. CAPES. CNPq.