The immunotherapeutic effect of recombinant bacteriophages M13-based multiepitopes against tegumentary leishmaniasis caused by *L. amazonensis* species

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Leishmania amazonensis is one of the major etiologic agents of a broad spectrum of clinical forms of leishmaniasis and has a wide geographical distribution in the South America. The disease can induce high morbidity and mortality in populations of endemic and non-endemics areas. The purpose of this study was to evaluate the immunotherapeutic potential of a recombinant bacteriophages M13-based multiepitopes vaccine to protect mice against *L. amazonensis*. Five bacteriophages´ clones (with $5x10^{12}$ TU, of each phage clone) selected by phage display technique were used to treat mice (n=16 per group) infected subcutaneously with 10^6 stationary promastigotes of *L. amazonensis* and that presented lesions development about 2 to 3 mm. Five doses of the immunotherapy were administered, at 2-weeks intervals. As control, mice received $5x10^{12}$ TU of wild type M13 phage or saline. Eight weeks after challenge, mice were sacrificed and infected skin fragments, spleen and sera samples were collected to parasitological and immunological analysis. **Results:** Mice treated with phages´ vaccine showed a significant reduction of the diameter of lesions, a high production of IFN-γ and low levels of IL-4 and IL-10 in the spleen cells cultures. A humoral response was predominantly of IgG2a isotype. The results indicate the immunotherapeutic potential of a recombinant bacteriophages M13-based multiepitopes vaccine and its potential use for control of disease caused by *L. amazonensis*.

Keywords: Phage display; mimotopes; immunotherapeutics; tegumentary leishmaniasis; bacteriophages.

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