Leishmania donovani whole cell antigen delivered with adjuvants protects against visceral leishmaniasis in vervet monkeys (Chlorocebus aethiops)

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DOI: 10.1016/S1674-8301(12)60002-5

Abstract

In a previous immunogenicity and efficacy study in mice, montanide ISA 720 (MISA) was indicated to be a better adjuvant than bacillus calmette guerin vaccine (BCG) for a Leishmania vaccine. In the present study, we report the safety, immunogenicity and efficacy of Leishmania donovani (L. donovani) sonicated antigen delivered with alum-BCG (AlBCG), MISA or monophosphoryl lipid A (MPLA) in vervet monkeys following intradermal inoculums. Vaccinated and control animals were challenged with virulent L. donovani parasites and the parasitic burden was determined. Only animals vaccinated with alum BCG adversely reacted to the inoculum by producing ulcerative erythematous skin indurations. Non-parametric ANOVA followed by a post test showed significantly higher IgG antibodies, and revealed the presence of lymphoproliferative and interferon gamma responses in both AlBCG+Ag and MISA+Ag as compared to the MPLA+Ag or other groups (P < 0.001). We conclude that L. donovani sonicated antigen containing MISA is safe and is associated with protective immune response against Leishmania donovani infection in the vervet monkey model.

Keywords

- visceral leishmaniasis;
- Leishmania donovani;
- vervet monkey;
- sonicated antigen;
- adjuvants

This work was supported by a grant from the National Council for Science and Technology, Government of Kenya (No. NCST 51003 CALL2 226).