IMMUNOGENICITY AND EFFICACY OF A HYBRID MSP3/GLURP RECOMBINANT PROTEIN OF *PLASMODIUM FALCI PARUM* IN *SAIMIRI SCIUREUS* MONKEYS


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Epidemiological data and experiments in vivo and in vitro showed that the antigens Merozoite Surface Protein-3 (MSP3) and the Glutamate Rich Protein (GLURP) of *Plasmodium falciparum* were able to induce protective immunity against malaria. The aim of the present study was to evaluate the immunogenicity and efficacy of a hybrid recombinant protein derived from MSP3 and GLURP in *Saimiri sciureus*, a WHO-recommended primate model. Four groups of five animals received three doses of vaccines on days 0, 30 and 90. Formulations: hybrid MSP3/GLURP-alum; hybrid-Montanide ISA720; hybrid-Freund’s adjuvant; Lactococcus culture supernatant-Freund's (control). Antibodies were detected by ELISA, immunofluorescence and immunoblot. Monkeys were challenged with 50,000 *P. falciparum*-parasitized erythrocytes, parasitemia daily checked and treatment administered when parasitemia >10% or haematocrit <30%. The hybrid protein was immunogenic, with high antibody titers developed after two or three injections. Monkeys immunized with hybrid-Freund’s showed the highest titers (>3.200.000), followed by those immunized with hybrid-Montanide; hybrid-alum group showed lower titers. Monkeys from the control group also developed antibodies against the hybrid protein. Epitope mapping showed that only in the group MSP3/GLURP-Freund’s there was consistent recognition of GLURP epitopes. Anti-parasite antibodies were detected in titers up to 6,400. Upon challenge, 0/5 animals of hybrid-alum group, 2/5 of hybrid-Montanide group, 4/5 of hybrid-Freund’s group and 1/5 of control group kept parasitemia under 10%. These animals presented fall in haematocrit below 30%. A more detailed evaluation of the pre- and post-challenge humoral responses is ongoing to determine their relationship with the infection outcome.

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