

Antibody and clinical responses in volunteers to immunization with malaria peptide-diphtheria toxoid conjugates

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(Accepted for publication 18 October 1994)

SUMMARY

Twenty residue peptides from the 185–200-kD and 45-kD merozoite surface antigens of the malaria parasite *Plasmodium falciparum* were covalently linked to diphtheria toxoid as a carrier and used to immunize human volunteers with aluminium hydroxide as an adjuvant. Significant antibody levels were elicited by two boosting injections. The antibodies reacted with acetone-methanol fixed merozoite membranes in an immunofluorescence assay, but no inhibition of merozoite reinvasion could be detected in *in vitro* cultures containing the antibodies. Antibody levels against the immunizing peptides declined markedly within 77 days after the third injection. No hypersensitivity was observed against the peptides. However, the volunteers developed hypersensitivity against diphtheria toxoid, and in particular a pronounced type III (Arthus) hypersensitivity after three injections with the toxoid. This effect might appear to limit the use of peptide-diphtheria toxoid conjugates for human immunization. Several biochemical, haematological and immunological tests done on the volunteers showed no other adverse effects from the immunizations.