Short Report

Anti-Pfs25 monoclonal antibody 32F81 blocks transmission from Plasmodium falciparum gametocyte carriers in Cameroon

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Pfs25 is a target protein for the induction of antibodies that block transmission of Plasmodium falciparum. Anti-Pfs25 monoclonal antibody (mAb) 32F81 has been generated against gametes of strain NF54 and shown to block the oocyst development in mosquitoes fed on red blood cell suspensions containing NF54 gametocytes (VERMEULEN et al., 1985). Comparison of the genes encoding Pfs25 in 8 isolates of different geographical origin showed almost complete sequence homology (KASLOW et al., 1989). Since transmission blocking activity of 32F81 has been reported for NF54 only, we wanted to test the capacity of this mAb to block transmission of field isolates by experimentally feeding local Anopheles gambiae on blood from naturally infected carriers of P. falciparum gametocytes. mAb 32F81 was added to the blood meal at a concentration of 50 µg/mL. A blood meal from the same gametocyte carrier without the mAb was used as a control. Gametocyte density was estimated from the parasite/leucocyte ratio by counting gametocytes against 1000 white blood cells and assuming an average leucocyte count of 8000/µL. In 5 mosquitoes, fed on persons with >200 gametocytes per µL, round forms (activated macrogametocytes and zygotes) were searched for 4 h after the blood meal, using mAb 32F81 labelled with fluorescein isothiocyanate. Ookinete numbers and concentration of antibody.

Table. Infections of Anopheles gambiae fed on whole blood samples from 13 Plasmodium falciparum gametocyte carriers in the presence and absence of monoclonal antibody 32F81 (VONNUDURAI et al., 1987). The table is used to support the development of a transmission-blocking vaccine based on this protein. Transmission blocking is more effective at low gametocyte densities, which are prevalent under natural conditions, and this confirms previous findings in experimental infections (PONNUDURAI et al., 1987). In addition to naturally occurring transmission blockage of P. falciparum in endemic countries (MULDER et al., 1994), immunization using a Pfs25 vaccine might further reduce malaria transmission (KASLOW et al., 1991; KASLOW, 1993).

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References


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