

TRANSMISSION-BLOCKING VACCINE DEVELOPMENT OF *VIVAX* MALARIA

Tsuboi T, Sattabongkot J, Hisaeda H, Stowers A, Torii M and Saul A

Most leading malaria transmission-blocking vaccine candidate antigens are surface proteins expressed on zygotes and ookinetes of the malaria parasites. Two prime vaccine candidates are Pfs25 and Pfs28, ookinete surface proteins of *P. falciparum*. *P. vivax* homologues, Pvs25 and Pvs28, have been cloned, and expressed in yeast as vaccine antigens. These elicit potent transmission-blocking activity to *P. vivax* Sal I strain. To test the efficacy of this vaccine candidate in the natural parasite populations, antisera against yeast expressed recombinant proteins, yPvs25 and yPvs28, were produced in mice and rabbits. The efficacies of the antisera were tested with human isolates at malaria clinics in northwestern Thailand. For most human isolates, sera from mice immunized using alum as adjuvant showed complete inhibition of oocyst development. Sera from rabbits immunized with yPvs25 or yPvs28 + alum was less inhibitory than the mouse sera. Sera from rabbits immunized with yPvs25 or yPvs28 + Freund's adjuvant were more inhibitory, but still less than the mouse sera. The inhibitory activity correlated with the antibody titer measured by ELISA on recombinant protein or IFA on cultured ookinetes. Genotypes of Pvs25 and Pvs28 from the isolates tested for transmission blocking were determined. Although Pvs25 gene was highly conserved, three amino acid substitutions were found. Pvs28 was more polymorphic than Pvs25. Ten amino acid substitutions and the different numbers of repeats at the end of the fourth EGF-like domain were found. However, there was no correlation between genotype and transmission blocking.

Vivax Malaria Research: 2002 and Beyond. Bangkok, Thailand. 3-8 February 2002.