A-30: Anti-mosquito antibodies reduce the infectivity of the malaria parasite *Plasmodium vivax* to the mosquito vector *Anopheles tessellatus*

K A Srikrishnaraj, R Ramasamy, M S Ramasamy
(Div of Life Sciences, Institute of Fundamental Studies, Kandy)

The role of antibodies to mosquitoes on the longevity, fecundity and infectivity of *Plasmodium vivax* to Anopheles tessellatus mosquitoes was studied in the laboratory. Antibodies to head thorax, abdomen and midgut tissues of *An. tessellatus* were raised in groups of New Zealand white rabbits. Antibody titres in rabbits measured against

immunizing antigens were $>10^8$. An. tessellatus fed to repletion directly on restrained immunized rabbits were separated and kept for longevity and fecundity studies. Rabbit antibodies to mosquito tissue antigens did not affect the mortality of the mosquitoes. However fecundity reduction was observed when the mosquitoes were fed on the immunized rabbits with head thorax, abdomen and midgut tissues. Antisera from immunized rabbits were used in transmission blocking experiments. Erythrocytes infected with Plasmodium vivax mixed with rabbit antisera were fed to mosquitoes through a membrane. Infected mosquitoes were confirmed by dissecting the midguts of mosquitoes and looking for the presence of oocysts.

When the results of the experiments were pooled, the overall reduction in infectivity to mosquitoes, in the presence of rabbit antisera to head/thorax, midgut and abdomen antigens were 53.3% ($P<0.05$), 56.4% ($P<0.01$) and 59.1% ($P<0.01$). Experiments with purified immunoglobulin from rabbit antisera also gave the same degree of reduction in infectivity of *P. vivax* to *An. tessellatus*. These results are consistent with the earlier findings that anti- An. farauti antibodies reduce the infectivity of *P. berghei to An. farauti.*

The results indicate the potential of anti-mosquito antibodies to disrupt the physiology of mosquitoes and to modulate the transmission of malaria parasite.