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Antigenic relationship between midgut epithelial glycoproteins of Anopheles tessellatus adult and larvae and midgut proteins of other vector mosquitoes

Glycoproteins on the luminal surface of the midgut (MG) epithelium of vector mosquitoes reportedly recognise pathogens, including malaria parasites that are transmitted by them. Characterisation of receptor MG may lead to the development of new disease-transmission blocking vaccines. The relationship between adult and larval *Anopheles tessellates* MG and peritrophic matrix (PM) glycoproteins and MGs of other vector mosquitoes (*An. subpictus*, *An. Culicifacies, An. Varuna,* A*edes and Culex*) were investigated using rabbit antisera raised against *An. tessellatus* MG concanavalin A binding proteins (ConABP) and wheat germ agglutinin binding glycoproteins (WGABP). Several distinct proteins of Mr from 16 to >150

kDa were recognised in the adult MG by both antisera. Although both antisera recognised similar proteins in adult MG, a 16 kDa protein was uniquely identified by anti-WGABP but not anti-ConABP antisera. Both antisera recognised proteins of Mr 72, 50 and 35 kDa in adult PM. The 72 kDa antigen in adult PM was not recognised in adult MG but a protein of Mr 75 kDa was identified in adult MG. An antigen of Mr >150 kDa was recognised by both sera in adult and larval MG. However, there were many differences in the Mrs of adult and larval MG antigens. Both sera reacted with few proteins in the larval PM. Although cross-reactivity was noticed among different anophelines (*An. subpictus*, *An. culicifacies* and *An. varuna*) the Mrs of reacted antigens were different in the four anophelines. A protein of Mr 75 kDa was specific to *An. tessellatus* while a 100 kDa antigen was prominent in *An. subpictus*. However an antigen of 36 kDa recognised by both antisera was common to all four anophelines. The differences between MG antigens were more marked in different mosquito genera (*Aedes aegypti* and *Culex quinquefasciatus*). While some cross-reactivity was noticed in *Aedes* and *Culex* e.g. 36 kDa antigen, most of the antigens did not correspond with *An. tessellatus* antigens recognised by anti-ConABP antisera. Similar results were obtained with anti-WGABP sera. The results show that there is significant antigenic cross-reactivity between adult and larval MG proteins of *An. tessellatus*. Cross-reactive and homologous antigens are present in different *Anopheles* species and also in *Culex* and *Aedes* mosquitoes.