

Mosquito midgut glycoproteins and recognition sites for malaria parasites

Ranjan Ramasamy *, Ishani C. Wanniarachchi, K. Alagaratnam Srikrishnaraj,
Manthri S. Ramasamy

Molecular Biology and Entomology Laboratories, Division of Life Sciences, Institute of Fundamental Studies, Hantana Road, Kandy, Sri Lanka

Received 24 February 1997; accepted 6 March 1997

Abstract

Midgut glycoproteins of the malaria vector *Anopheles tessellatus* were partially characterised by gel electrophoresis and lectin binding. Specific binding to wheat germ agglutinin (WGA) and Concanavalin A (Con A) indicated the presence of N-linked core oligosaccharides in many proteins. Rabbit antibodies were produced against wheat germ agglutinin binding proteins (WGABP). These antibodies also recognised distinct proteins in the peritrophic membrane which is secreted into the midgut to enclose a bloodmeal. Rabbit anti-WGABP antibodies ingested in a bloodmeal containing infective gametocytes of the human malaria parasites *Plasmodium falciparum* and *P. vivax* tended to reduce infectivity of the parasites to vector mosquitoes. Chitotriose added to a bloodmeal also inhibited parasite development in the mosquito. The results are consistent with a hypothesis that N-acetyl glucosamine residues in mosquito midgut glycoproteins and/or midgut chitin and proteoglycan function as recognition sites for malaria parasites. © 1997 Elsevier Science B.V.

Keywords: *Anopheles* midgut; Glycoprotein; Lectin; Malaria; Peritrophic membrane; *Plasmodium falciparum*; *Plasmodium vivax*
