

Characterization of protective antigens from the midgut of *Amblyomma variegatum* ticks

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Abstract:

Separation of midgut membrane proteins from the tick, *Amblyomma variegatum*, using a nonionic detergent (Triton X-114), resulted in two protein fractions, namely DET (detergent) and AQ (aqueous). In immunoblotting analysis with polyclonal antibodies against these fractions, 4 proteins (Mr approximately 27,000, 67,000, 86,000 and 95,000,) and 2 proteins (M, approximately 54,000 and 67,000) were detected in the DET and AQ fractions, respectively. Three of the DET fraction proteins Mr approximately 27,000, 67,000 and 95,000 were glycosylated since they bound to the lectin, concanavalin A. In 2-dimensional gel electrophoresis, the AQ and DET fraction proteins were found to be acidic in nature. In a series of bioassay experiments, rabbits were first immunised with both DET and AQ fractions and then infested with ticks. The egg batch weights of these ticks were reduced by 50% compared to control ticks. Furthermore, there was a significant reduction in the hatchability of eggs laid by ticks fed on rabbits previously immunised with both DET (14%) and AQ (33%) fractions. Based on the egg hatchability, the reproductive capacity of ticks was reduced by 77 and 48% by DET and AQ fractions, respectively.