

Fractionation of organ extracts of *Culex pipiens* mosquitoes for the isolation of active components that impair biological parameters of the insect

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The previous phase of the present study revealed that when crude extracts of *Culex pipiens* midgut, ovaries, and salivary glands are injected into New Zealand White (NZW) rabbits (*Oryctolagus cuniculus*), rabbits immunized with midgut extract exert the greatest negative impact on adult *Cx. pipiens* survival and fecundity. This study was conducted to further our understanding of the immunogenic nature of the aforementioned antigenic preparations, thus providing data for the ultimate goal of developing a vaccine against the numerous *Cx. pipiens*-vectored diseases that affect human populations throughout the world. Extracts of *Cx. pipiens* midgut, ovaries, and salivary glands were fractionated using Sodium Dodecyl Sulphate Polyacrylamide Gel Electrophoresis (SDS-PAGE). The high (> 80.0 to >106.0 kDa) and low (< 18.5 kDa) molecular weight (MW) fractions of midgut extract, high MW fractions (75.0 - <106.0 kDa) of salivary gland extract, and low MW fraction (27.5 kDa) of ovary extract were excised, and used to immunize rabbits. Following immunization, antisera from all immunized rabbits were assayed for antibody response using Enzyme-Linked Immunosorbent Assay (ELISA), Enzyme Immunoblot transfer (EIB), and Indirect Fluorescent Antibody Techniques (IFAT). These assays resulted in both high and low MW fractions of midgut extract, with special reference to the midgut extract low MW fraction (18.0 kDa), eliciting the strongest humoral responses in immunized hosts. When *Cx. pipiens* were fed on rabbits immunized with the low MW fractions of midgut extract, the fecundity and survival rates were significantly less than those of mosquitoes fed on rabbits immunized with the high MW fractions of midgut extract and control rabbits ($P < 0.001$). It is concluded that, the low MW fraction of midgut extract is highly immunogenic, and the antibody response of immunized rabbits contributes to a significant disturbance in the life cycle of *Cx. pipiens* and their progeny. This impairment of feeding behavior and reproduction, in turn, could interfere with pathogen transmission.