

# DEVELOPMENT OF A VACCINE FOR LICE OF MEDICAL AND VETERINARY IMPORTANCE

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Resistance to human body louse, *Pediculus humanus humanus*, induced by feeding on rabbits immunized with an extract of the louse midgut was studied. Lice fed on immunized rabbits showed higher mortality, took smaller quantities of blood, laid less eggs, their eggs were less viable, and the nymphal stages took longer to develop to the next stage, as compared with lice fed on control animals. The proportion of dead nymphs and female lice with ruptured guts was significantly higher in lice fed on immunized rabbits. All these parameters together resulted in a steady decrease in the louse population. From an extract of the louse midgut 18 proteins ranging between 12 kDa and 117 kDa were detected by electrophoresis. Serum from rabbits immunized with a louse midgut extract recognized nine immunogenic proteins. Four of them were electroeluted from the gel and laboratory animals were immunized with the individual antigens. Although each protein induced significant protection, it seems that for an effective vaccine at least two proteins should be used. Four of the immunogenic proteins were also detected by immunoblot in the feces of the louse. Studies also showed that host animals could successfully be immunized with fecal extracts of the parasite. Most of the immunogenic antigens were localized on the microvilli of the midgut epithelial cells. One proteolytic enzyme, a leucine aminopeptidase, was detected in the midgut of the louse. At least four proteins were identified which were common to the human body louse, the human head louse, *Pediculus humanus capitis*, the cattle louse, *Hematopinus africanus* and the goat louse, *Linognatus stenopsis*.