

Immunization of rabbits with *Glossina pallidipes* tsetse fly midgut proteins:

Abstract:

Proteins isolated from the midgut of *Glossina pallidipes* were used to immunize rabbits and their efficacy as vaccine candidate(s) against the fly, and their potential to block transmission of *Trypanosoma brucei rhodesiense* assessed. Two fractions, detergent (DET) and aqueous (AQ) fractions were separated using a non-ionic detergent (Triton X-114) and a series of bioassay experiments carried out using serum obtained from rabbits immunized with either of the two fractions. The mortality rates of tsetse flies fed on serum from rabbits immunized with DET and AQ was 56 and 35%, respectively, as compared to 20% mortality in controls. The DET antigen(s) caused considerably higher mortality ($\chi^2=1.194$, $P<0.05$) than that on controls. These findings suggest that midgut proteins contain antigens that are lethal to tsetse flies, and are potential candidates for the development of anti-tsetse vaccine. When flies fed on serum derived from DET immunized rabbits were fed on *T. b. rhodesiense* infected blood, only 20% of them picked the infection. Very few flies (20%) fed on serum derived from DET immunized rabbits had infection of *T. b. rhodesiense*. In the control flies 45% of them had infection in the midgut with a higher and actively motile parasite load. Assessment of fecundity indicated significantly higher ($\chi^2=2.117$, $P<0.05$) larviposition for the control flies when compared to the AQ group of flies ($\chi^2=1.054$, $P<0.05$). Significant differences in abortions and pupal weights were also observed. These results suggest that midgut proteins contain antigens with potential for use in development of vaccine to block transmission of trypanosomes through tsetse.