Abstract

Midgut trypsin and lectin levels were determined in three tsetse species, namely *Glossina morsitans morsitans, G. longipennis* and *G. fuscipes fuscipes.* In addition, the abilities of midgut homogenates prepared from these flies to transform bloodstream-form *Trypanosoma brucei brucei* and *T. congolense* were compared *in vitro.* In all the species examined, trypsin levels did not differ significantly up to 24 h post-bloodmeal. There were similar rates of transformation of the bloodstream-form trypanosomes into procyclic (midgut) forms *in vivo*, so that all species had similar levels of infection in the midgut. However, trypsin levels continued to increase beyond 24 h, reaching a peak between 48 and 72 h. The peak was lowest in *G. m. morsitans.* The midgut homogenates in this species also had the lowest levels of lectin. The species had the highest levels of mature *T. congolense* and *T. brucei* infections. We propose that the lower levels of peak midgut tryspin and lectin in *G. m. morsitans* is important in the establishment of trypanosome infections in this species of tsetse.