

M. W. BURUGU, B. N. MBATIA, E. O. OSIR, E. U. KENYA and L. U. ABUBAKAR. (2008). [The Glossina proteolytic lectin \(Gpl\) gene is expressed only in members of Glossina species. International Journal of Insect Science. Vol 27 \(3/4\):145 – 151.](#)

## **ABSTRACT**

Differentiation of bloodstream-form trypanosomes into procyclics in tsetse flies (Diptera: Glossinidae) is a crucial step in the establishment of midgut infections. A number of factors have been implicated in the transformation process, including enzymes and lectins or lectin-like molecules. Recently, *Glossina proteolytic lectin (Gpl)* gene, which encodes a protein with both lectin and trypsin activities has been shown to stimulate transformation of bloodstream-form trypanosomes into procyclics in vitro. Using RT-PCR, we show that the induction of *Gpl* gene expression by blood meal occurs only in *Glossina fuscipes fuscipes* Newstead, *Glossina austeni* Newstead, *Glossina pallidipes* Austen, and not in the *Anopheles gambiae* Giles sensu stricto, *Phlebotomus duboscqi* Neveu-Lemaire, *Rhipicephalus appendiculatus* Neumann and *Stomoxys calcitrans* (Linnaeus). The expression means of *Gpl* mRNA in *G. f. fuscipes* following a blood meal were significant ( $P < 0.05$ ) with low expression in teneral flies and reaching a maximum between 48 and 72 h ( $P < 0.05$ ), suggesting time-dependent regulation of the transcription. The expression of the *Gpl* gene was significantly lower ( $P < 0.05$ ) in *G. f. fuscipes* fed on blood meal infected with *Trypanosoma brucei brucei* as compared with *G. f. fuscipes* fed on uninfected blood meal. This suggests some form of interaction of *T. b. brucei* or the parasite products with *Gpl* within the tsetse midgut leading to down-regulation of the *Gpl* gene. Additionally, refractory *G. f. fuscipes* expressed higher ( $P < 0.05$ ) transcript abundance than the susceptible *G. pallidipes*.