

Properties of a blood-meal-induced midgut lectin from the tsetse fly *Glossina morsitans*

Abubakar, L; Osir, EO; Imbuga, MO

<http://erepository.uonbi.ac.ke:8080/xmlui/handle/123456789/31028>

Date: 1995

Abstract:

The properties of a blood-meal-induced lectin (agglutinin) from the midgut of *Glossina morsitans* capable of agglutinating *Trypanosoma brucei* were studied in vitro. The midgut homogenate from flies that had been fed twice had the highest agglutination activity, followed by that from the once-fed flies and that from the unfed insects. As compared with the bloodstream-form trypanosomes, a much lower concentration of the midgut homogenate was required for agglutination of the procyclic parasites. Furthermore, the agglutination process was specifically inhibited by D-glucosamine. Soybean trypsin inhibitor abrogated agglutination of the bloodstream-form parasites, whereas the procyclics were unaffected. The agglutination process was temperature-sensitive, with little activity being evident between 4 degrees and 15 degrees C. Similarly, heating the midguts to 60 degrees-100 degrees C led to loss of activity. When the midgut homogenate was separated by anion-exchange chromatography, the agglutination activity co-eluted with trypsin activity at approximately 50% NaCl. These results suggest a very close relationship between midgut trypsin-like enzyme and the agglutinin. Since successful agglutination of bloodstream-form trypanosomes requires protease activity, it may be that the enzyme cleaves off some surface molecules on the parasite surface, thus exposing the lectin-binding sites