

Abstract

A blood-meal-induced lectin (agglutinin) with proteolytic activity was isolated from midgut extracts of *Glossina longipennis* by a two-step procedure involving anion-exchange chromatography. It is a glycoprotein [native molecular weight (M(r)) 61,000 +/- 3000 da] composed of two noncovalently-linked subunits designated alpha (M(r), approximately 27,000 da) and beta (M(r), approximately 33,000 da). The trypsin activity and the glycosyl residues were present on the alpha- and beta-subunits, respectively. The native protein was capable of agglutinating both bloodstream-form and procyclic trypanosomes as well as rabbit red blood cells. This activity was strongly inhibited by D-glucosamine and weakly inhibited by N-acetyl-D-glucosamine. Similarly, soybean trypsin inhibitor abrogated agglutination of bloodstream-form parasites, whereas the procyclics were unaffected. The agglutination activity was sensitive to temperatures above 40 degrees C but was unaffected by chelators of metal ions. Antibodies raised against the protein were used in immunoblotting experiments to show the presence of a similar protein in several members of the *Glossina* species. However, no cross-reactivity was detected with midgut extracts prepared from sandflies, mosquitoes, or stable flies. It is proposed that this molecule might play an important role in differentiation of bloodstream-form trypanosomes into procyclic (midgut) forms.