Activity and Expression Pattern of Glycoside Hydrolase Genes in *Rhodnius prolixus* (Hemiptera: Triatominae).

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**Introduction:** Chagas disease is a tropical illness caused by *Trypanosoma cruzi*, a parasite which is transmitted by Triatominae kissing bugs, including *Rhodnius prolixus*, a model used for studies in physiology and parasite-vector interactions. The presence in the triatominae gut of glycoside hydrolases which might interfere in development of *T. cruzi* has received little attention. Considering that *R. prolixus* gut is divided in several compartments and that development of *T. cruzi* in the vector occurs exclusively in the gut, it is essential to understand the physiological role of glycoside hydrolases which are present in different gut regions, as well as their interference in the pathogenicity of *T. cruzi*.

**Objectives:** Characterize activities and expression profiles of glycoside hydrolase genes in different gut compartments of *R. prolixus* during blood digestion. **Materials and Methods:** Enzyme assays were done using fluorogenic methylumbelliferyl-glycosides specific for each glycoside hydrolase activity. Gene expression in different gut tissues as Salivary Glands, Anterior (AM) and Posterior Midgut (PM) and Hindgut was monitored by semi-quantitative RT-PCR (GAPDH, 18S and tubulin as controls) in unfed adult male bugs and 2, 5, 7, 9, 12 and 14 days after blood feeding (DAF).

**Results:** We detected α–mannosidase, α–glucosidase, β–glucosidase α–fucosidase, N-acetyl hexosaminidase and β–galactosidase with different temporal expression patterns, with maximum activities at 5, 7 or 9 DAF. Gene expression studies revealed glycoside hydrolases which are preferentially expressed in Posterior Midgut (RPRC011517, RPRC011537), Anterior Midgut (RPRC002733, RPRC003368, RPRC013046, RPRC013370, RPRC004638) or expressed constitutively along the gut (RPRC007504) or with no gut expression (RPRC006985). **Conclusions:** These data suggest that glycoside hydrolases might have distinct roles in blood digestion and distinct effects in the development of *T. cruzi* in the gut. The study of these enzymes may be a valuable tool for the comprehension of new aspects of parasite-vector interactions in Chagas Disease.

**Key Words:** Glycoside Hydrolase, *Rhodnius prolixus*, Chagas disease

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