Identification and Sub cellular Localization of a UDP-N- acetylglucosamine Transporter of *Trypanosoma cruzi*


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**Introduction:** Glycoconjugates play important roles in many different biological processes. The synthesis of these molecules occurs in the lumen of the endoplasmic reticulum (ER) and Golgi apparatus using nucleotide sugars as substrates. However, nucleotide sugars are mostly synthesized in the cytosol and must be transported across the ER and Golgi membranes. The intracellular transport of nucleotide sugars is carried out by nucleotide-sugar transporters (NSTs). In this study, we have identified and characterized a UDP-N acetylglucosamine (UDP-GlcNAc) transporter from *Trypanosoma cruzi*, the etiological agent of Chagas' disease. **Material and Methods:** We initially searched for putative NSTs in the *T. cruzi* genome by performing Blastp searches in the GeneDB database. To identify UDP-GlcNAc transporters, we used a yeast complementation approach. Subcellular localization studies and expression analyses were performed by confocal microscopy and real time PCR, respectively. **Results and Discussion:** We have identified a family of 11 putative NSTs. Heterologous expression of these genes in a *Kluyveromyces lactis* mutant strain deficient in UDP-GlcNAc transport revealed that only the TcCLB.511517.150 gene was able to rescue the wild type phenotype of the yeast cells. The subcellular localization of the transporter, named TcNST1, was analyzed by an amino-terminal fusion with GFP. Our results showed a specific localization at the Golgi apparatus. By real time PCR, we determined that TcCLB.511517.150 is expressed in all stages of the parasite life cycle and during the metacyclogenesis process. This pattern of expression suggests a continuous demand for Golgi luminal UDP-GlcNAc, which would probably be used for *T. cruzi* mucin-like protein synthesis. **Conclusions:** We have identified by functional complementation of yeast cells a Golgi-localized UDP-GlcNAc transporter from *T. cruzi*, which is expressed in all life forms of the parasite. This work may be relevant for a better understanding of glycoconjugates’ biosynthesis in trypanosomatids.

Key words: Glycoconjugates, Nucleotide sugars, Transport, *Trypanosoma cruzi*

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