Identification of a Novel Cell Binding Peptide Belonging to the gp85/transialidase Superfamily

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INTRODUCTION: The *Trypanosoma cruzi*, a protozoan causative of the Chagas disease, has its reproductive stage in mammalians, inside the host cells. In order to recognize and invade this cells, it has first to adhere and promote signals inside its target to promote invasion. Previous work from our lab has shown that a conserved protein motif present in the gp85/Trans-sialidase family (TcTS), named FLY, can promote tissue tropism, induce cellular signals that increase parasite invasion and promotes cell adhesion to extracellular matrix among other features. To further understand the contribution of TcTS peptide motifs to the invasion process, we have expanded these studies to other peptides. **OBJECTIVES:** To find new conserved peptide motifs in TcTS family members capable of promote adhesion to host cell receptors, modulate infection and contribute to the parasite tissue tropism. **MATERIAL AND METHODS:** To achieve our aims, we aligned the sequences of TcTS proteins to identify consensus motifs. Selected sequences were expressed in the phage display vector fUSE55 and phages particles were used as surrogates to test for adhesion in mammalian cells and receptor identification. We also performed invasion assays using synthetic peptides with selected sequences. **RESULTS AND DISCUSSION:** From the alignment data, consecutive amino acids appearing with great frequency in proteins were considered conserved motifs (minimum frequency of 86,9% and maximun of 92,1%). Ten peptides were thus selected, cloned in the phage vector and tested for binding to mammalians cells (we used 5 tissue specific mouse endothelial cell lineages and 1 monkey epithelial lineage). One sequenced showed significant binding to all cell lines analyzed. **CONCLUSIONS:** We have identified a novel cell binding peptide common to proteins from the T.cruzi TcTS superfamily. Ongoing experiments should assess the effect of this peptide in parasite cell invasion and identify its receptor.

Keywords: Trypanosoma cruzi, Chagas disease, trans-sialidase, phage display, infection.
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