β-ATP Synthase: A Lipophorin-Binding Protein in the Midgut Membrane of
Panstrongylus megistus (Hemiptera: Reduviidae)

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Lipid transfer from lipophorin, the main insect lipoprotein, to the midgut is mediated by a non-endocytic pathway which involves the interaction of lipophorin with specific sites in the plasma membrane of enterocytes. Although such process is a key event in the physiology of the insects, the identification of non-endocytic lipophorin receptors is still lacking. In this context, the aim of this work was to characterize lipophorin binding proteins of the midgut membrane potentially involved in the transfer of lipids from lipophorin to enterocytes in Panstrongylus megistus, a vector of Chagas’ disease. The experimental approach included ligand blotting; tandem mass spectrometry; radioiodinated lipophorin-binding assays; RT-PCR; western blot and immunofluorescence tests. Ligand blotting followed by MS identified several midgut membrane proteins that interacted with lipophorin, including the β subunit of the ATP synthase complex (β-ATPase), which was previously described in human cell lines as a lipoprotein receptor. There was no correlation between the ability of the midgut tissue to bind lipophorin with the expression of β-ATPase (mRNA and protein). The immunofluorescence assays evidenced a partial co-localization of β-ATPase and lipophorin in the sub-epithelial layer of the midgut tissue. Taken together, these findings suggest that β-ATPase could function as a non-endocytic lipophorin receptor in the midgut of P. megistus.

Keywords: lipophorin; β-ATPase; midgut
Supported by: CONICET, SeCyT, FONCyT, CAPES-SPU