FUNCTIONAL CHARACTERIZATION OF A NOVEL ARGININE EXCHANGER FROM TRYPANOSOMA CRUZI

Henriques, C[1]; Fairman, WA[2]; Catanho, M[1]; Degrave, WM[1] and Amara, SG[2]

[1]Departamento de Bioquímica e Biologia Molecular, IOC- FIOCRUZ, Rio de Janeiro-RJ, Brazil; [2]Department of Neurobiology, University of Pittsburgh, Pittsburgh- PA, USA

Trypanosoma cruzi the aetiological agent of Chagas disease undergoes a series of morphological and physiological adaptations to survive within the insect and mammalian hosts. Thus, transporters can act as sensors of nutrient availability, play a role in cellular homeostasis and metabolism. *T.cruzi* can not synthesize arginine, they have to get arginine from the environment. Therefore, our purpose was the functional characterization of a novel arginine transporter, *TcCAT1.1,* in heterologous systems. Interestingly, TcCAT1.1 displayed lower identity to human arginine transporters (hCAT), 10% identity and 23% similarity at the aminoacid level, when compared to N- system NAT-1. Substrate saturation curves were performed in *S.cerevisiae* and an apparent K_m of 85 ± 36,37 µM was inferred for [^{3}H]-arginine. Competition assays were performed with 100 fold competitor over [^{3}H]-arginine. From the compounds tested, uptake was significantly inhibited by canavanine (70%). Ornithine, showed low affinity for TcCAT1.1, 10% inhibition of [^{3}H]-arginine uptake, and Km of 1,7 ± 0,24 mM, similar to other cationic aminoacids. Trans-stimulation was observed in *X.laevis* oocytes expressing TcCAT1.1 pre-loaded with arginine, whose [^{3}H]-arginine uptake increased 7 fold. Oocytes pre-loaded with [^{3}-H]- arginine displayed 16 fold higher efflux of [^{3}H]-arginine, than control. *T.cruzi* super-expressing *TcCAT1.1* and *GFP-TcCAT1.1* are being generated to explore the exchanger mechanism and localization into the protozoa.

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