Rho-actin signaling pathway is linked with cellular events such as adhesion and endocytosis in *Trypanosoma cruzi*.

Do Amaral, M.J.¹; Carvalho, S.S¹; Henriques, D.G.¹; Reis, S.A.¹; Atela, G.C.²; Silva-Neto, M.A.C.²; De-Melo, L.D.B.¹

¹ Dep. de Biotecnologia, IFRJ-Campus Rio de Janeiro, RJ, Brazil; ² Dep. de Bioquímica Médica, IBqM-UFRJ, RJ, Brazil.

**Introduction:** Rho family GTPases play critical roles in motility, phagocytosis, intracellular transport, adhesion and morphology, performing these functions via the actin cytoskeleton. The etiologic agent of Chagas disease, *Trypanosoma cruzi*, has orthologs for Rho, actin, and several actin-binding proteins. **Objective:** Previously, we showed the involvement of Rho with adhesion and differentiation in *T. cruzi*. In the current work, we carry out assays to link Rho phenotypes with actin cytoskeleton, analyzing events as adhesion, proliferation and endocytosis. **Methods:** *T. cruzi* clone Dm 28c stably transfected to overexpress actin or the dominant-negative Rho (DN-Rho) were used in assays of proliferation in axenic medium, and receptor-mediated or fluid-phase endocytosis with fluorescent tracers, both assays in the presence or absence of cytoskeleton disrupting drugs as cytochalasin D and jasplakinolide. The substrate adhesion was investigated during differentiation *in vitro* of epimastigotes-trypomastigotes. **Results and Conclusions:** After incubation with the drugs, the deficit in proliferation observed for parasites overexpressing actin was similar to that observed for parasites expressing DN-Rho, suggesting that actin and rho are members of a similar signaling pathway. The analyses of receptor-mediated endocytosis by fluorescent tracers reveal that both transfected parasites are incapable of reversing the damage caused by drugs. However, expression of DN-Rho caused severe reduction in the endocytic potential of parasites. Cell-substrate adhesions reveal antagonistic results with higher levels in parasites overexpressing actin and lower levels in parasites expressing DN-Rho. These results provide a better understanding of cellular physiology of the parasite.


Supported by: IFRJ, FAPERJ