Abstract

Introduction. The current chemotherapy for Chagas disease is unsatisfactory with only two drugs available for treatment. Research to discover new drugs for Chagas disease is urgent. Hexadecyl-phosphocholine (HPC, miltefosine) has been demonstrated to have in vitro activity against Trypanosoma cruzi parasites, but its activity on different Colombian T. cruzi strains is not known.

Objective. To evaluate the in vitro susceptibility of T. cruzi strains isolated from humans and vectors in Santander, Colombia, to miltefosine, nifurtimox and benznidazole.

Materials and methods. Eight T. cruzi Colombian strains and three reference strains (Esmeraldo, SilvioX10 and Y) were studied. Drug activities against extracellular epimastigotes and intracellular amastigotes were determined by microscopic counting. The results were expressed as the concentrations that inhibited 50% and 90% growth (IC50 and IC90).

Results. For miltefosine a similar range of drug activity was observed against all the Colombian strains, all parasites being more susceptible to miltefosine than to the reference drugs. The intracellular amastigotes were more susceptible to miltefosine (IC50 0.08 to 0.63 uM and IC90 0.21 to 2.21 uM) than extracellular forms (IC50 <0.92 to 2.29 uM and IC90 1.38 to 4.76 uM). For reference drugs, parasites were more susceptible to nifurtimox than to benznidazole and some differences in activity of benznidazole between T. cruzi strains was observed. Conclusions. The results showed the significant in vitro activity of miltefosine against T. cruzi stages, and the expected results for the reference drugs. Further in vivo studies with miltefosine are planned.

Keywords

Trypanosoma cruzi, Chagas disease, miltefosine, benznidazole, nifurtimox, drug therapy, Colombia.