INTRODUCTION: One century after its discovery, the Chagas disease (CD), remains a serious health problem which is a cause of morbidity and mortality in several countries in the world. Its therapeutic option is severely limited and the treatment still depends on Benznidazole, a decades-old drug that have a number of drawbacks including toxicity, drug resistance and insufficient effeciveness against chronic disease stage. The aim of this study was to investigate new potential medicine for CD treatment. MATERIAL AND METHODS: Dm28c epimastigotes were maintained in TAU medium for 2 hours and after in TAU3AAG in the absence or in the presence of increasing concentrations of LQB 123 for metacyclic trypomastigotes. Additionally, bloodstream trypomastigotes, Y stain, were incubated with different concentrations of nitroine at 37 °C for 24h in DMEN medium. For intracellular amastigotes tests, mice peritoneal macrophages were infected with culture trypomastigotes in a 1:10 ratio, for three hours, and incubated in DMEN with or without LQB 123 at 37 °C. AlamarBlue was used for quantifying in vitro peritoneal macrophage viability. Finally, to determine the mutagenic potential of this new compound we performed a Salmonella/microsome assay (Ames test) with strains TA97, TA98, TA100, TA102 and TA1535 without metabolic activation (-S9 mix). RESULTS AND DISCUSSION: The trypanocidal activity was measured with an IC50 about 250 µM to bloodstream trypomastigotes and intracellular amastigotes. Metacyclic trypanomastigotes showed an IC50 180 µM. No drug harmful effect upon mammalian cells was observed by AlamarBlue assay (LC50 values greater than 10 mM) resulting in a high (> 40) selectivity index (LC50/ IC50). No significant induced mutagenicity was detected for the nitroine until the concentration of 500 µg/plate (10 times the IC50 value) in the absence of S9 mix. CONCLUSIONS: Taken together these results offer new insights into CD treatment suggesting additional in vivo tests.

Keywords: Nitroine, Trypanosoma cruzi, Ames assay