Causticum hahnemanni*, *Conium maculatum* and *Lycopodium clavatum* highly diluted medications decreases parasitemia in mice infected by *Trypanosoma cruzi

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ABSTRACT

Introduction: Benznidazole is the only medicine available in Brazil for Chagas' disease treatment, however it presents low efficacy in the chronic phase and several adverse effects [1-3].

Aim: Evaluate the effect of *Causticum hahnemanni*, *Conium maculatum* and *Lycopodium clavatum* [4-6] administered to mice infected with *T. cruzi*.

Method: In blind randomized controlled trial 42 male Swiss mice, 8 weeks of age, have been grouped: GCaus –treated with *C. hahnemanni* 13cH (n=10), GCon –treated with *C. maculatum* 13 cH (n=11), GLy –treated with *L. clavatum*13cH (n=10) and CG – control group (n=11) treated with 7% hydro alcoholic solution 13cH. The animals were infected intraperitoneally with 1.400 blood trypomastigotes of *T. cruzi* - Y strain. Medications were been prepared according to Brazilian Homeopathic Pharmacopoeia [7]. Medication was diluted in water (1mL/100mL) offered *ad libitum*, from amber recipient during 16 hours administered 48 hours before infection and 48, 96 and 144 hours after inoculation. Parasitological parameters assessed: total parasitemia (TP), maximum peak of parasites (MPP), pre-patent period (PPP) and area under curve (AUC). Parasitemia was evaluated daily counting from the first day of infection. Clinical parameters assessed: weight, temperature, water and food intake and excreta were measured counting from the 5^o day before infection until animals' death or checking negative parasitemia for 3 consecutive days. Mortality was registered for 75 days after infection. Ethics Committee for Experiments in Animals gave approval UEM 054/11. Statistical comparison of data was performed with Kruskal-Wallis test, with 5% significance.

Results and Discussion: The diluted medications have been significantly reduced the parasitological parameters: MPP (p<0,0000), TP (p<0,0000) and AUC (9,7±3,5)×10⁹; (6,2±1,7)×10⁹; (5,5±1,7)×10⁹; (5,7±1,5)×10⁹ (p<0,0001) measured in trypomastigotes/mL, considering CG, GCaus, GCon and GLy respectively. Besides, they increased the PPP for GCaus, GCon and GLy (5,07±0,54; 5,4±1,39; 5,9±1,1) in relation to CG (4,8±1,0) (p<0,0001). Survival was significantly different between groups (p=0,0001), with Ly showing survival

estimate of 0,29 (IC: 0,182 – 1) versus 0,125 from CG (IC: 0,02 – 0,782) until the 21st day of infection. G_{Caus} and G_{Con} showed survival estimate 0 for 18 and 17 days, respectively. G_{Ly} presented significant increase in water intake (p=0,0000) and higher temperature control, lowering hypothermia before death (p<0,0000).

Conclusion: The high diluted medicines evaluated showed different performances. *Lycopodium clavatum* showed the best benefits for animals infected with lower parasitemia, best clinical development and greater survival.

Keywords: Chagas' disease; High dilutions; Mice; *Trypanosoma cruzi*.

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