

Survival in golden syrian hamster (*Mesocricetus auratus*) infected by *Leishmania chagasi* changes according to gender and Homeopathic product – Factors of Self Organization

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Background: The hamster is a species used as an experimental model in the study of visceral leishmaniasis with progressive fatal evolution (Solano-Gallego et al, 2009). Factors of the Self-Organization (FAO) can be used in animals (Monteiro da Silva et al, 2011) and stand out favorably because anti-leishmania drugs cause well known side effects, mortality and toxicity, increasing antimicrobial resistance (Sundar and Chatterjee, 2006). Testosterone or estradiol influence parasitemia in males and females hamsters. The parasitemia was lower for females and animals injected with estradiol (Anuradha and Katiyar, 1990).

Aims: Evaluate the survival, clinical and pathological signs of disease in experimental hamsters infected with *Leishmania (Leishmania) chagasi*.

Methodology: Fifty healthy young animals were experimentally infected intraperitoneally with promastigotes of *Leishmania chagasi* MHON/BR/1972/BH400 strain at a concentration of 1×10^6 stationary phase of growth and monitored for 16 weeks. After 17 days of experimental infection the animals in the experimental group (n = 10 per sex) received the FAO ultra-diluted complex medication on potencies 5, 3 and 12 potencies on the 50 millesimale scale, with components *Antimonium crudum*; *Kali carbonicum*; *Mercurius solubilis*; *Sulphur*; *Natrum muriaticum*; *Aurum metallicum*; *Ammonium muriaticum*. The positive control group (n = 15 per sex) received 5% hydroalcoholic solution as a placebo. For statistical analysis of survival the Log-Rank test (Collett) was used, and significance level was fixed in $p < 0.05$ (BioEstat 5.3 software). This study was authorized by the ethics committee for animal use 210/2007 CONCEA UFMG.

Results: The infection was confirmed by histopathological examination. No female treated animal died during the experiment, differently from its positive control. The survival was significantly increased by the treatment in females ($p=0.04$), but not in males ($p=0.76$), compared to their respective control groups. The decrease in mortality was surprising in this experimental model. Since new tools are needed to treat visceral leishmaniasis, the use of novel therapeutic drugs, such as FAO, can contribute as an alternative to treatment of this neglected disease. Its action on mortality in females may be related to estradiol receptors expression or its endogenous production and should be evaluated in future studies.

Conclusion: Medication was able to significantly change mortality in females hamsters experimentally infected with *Leishmania chagasi* but not in males.

Keywords: visceral *Leishmania chagasi*, hamster, Factors of Self Organization, mortality survival



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Conflict of interest: We had full access to all the data in this study and we take complete responsibility for the integrity of the data and the accuracy of the data analysis.

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