

Survivorship of wild caught *Mepraia spinolai* nymphs: The effect of seasonality and *Trypanosoma cruzi* infection after feeding and fasting in the laboratory

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Chagas disease is caused by *Trypanosoma cruzi*. Vector survival is an important variable affecting vectorial capacity to determine parasite transmission risk. The aims of this study are to evaluate vector survival under fasting/starvation conditions of wild-caught *Mepraia spinolai* after feeding and fasting, the pathogenicity of *T. cruzi* infection, the parasite burden and seasonal variation in parasite discrete typing units (DTU). The survivorship of *M. spinolai* nymphs after two continuous artificial feedings was evaluated, assessing their infection with microscopic observation of fecal samples and PCR. Later, insects were fasted/starved until death. We performed qPCR analyses of parasite load in the fecal samples and dead specimens. *T. cruzi* genotyping was performed using conventional PCR amplicons and hybridization tests. Infection rate was higher in *M. spinolai* nymphs in summer and spring than in fall. Parasite burden varied from 3 to 250,000 parasites/drop. Survival rate for starved nymph stage II was lower in insects collected in the spring compared to summer and fall. TcII was the most frequent DTU. Mainly metacyclic trypomastigotes were excreted. We conclude that *M. spinolai* infection rate in nymphs varies among seasons, suggesting higher transmission risk in warmer seasons. However, nymphs stage II collected in spring are more sensitive to starvation compared to other seasons. TcII in single or mixed infection does not seem relevant to determine vector pathogenicity. These results of vector survivorship after fasting/starvation are important to

determine the competence of *M. spinolai* as a vector of *T. cruzi*, since they excrete metacyclic trypomastigotes and the parasitism with *T. cruzi* seems to be poorly pathogenic to the vector under a severe fasting/starvation condition.