Natural infection of *Lutzomyia* (*Nyssomyia*) *umbratilis* Ward & Fraiha, 1977 (Diptera: Psychodidae: Phlebotominae) by *Leishmania* spp. (Kinetoplastida: Trypanosomatidae) in endemic areas of cutaneous leishmaniasis in Amazonas State, Brazil*

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Introduction: Understanding the species involved in the transmission cycle of leishmaniasis in the Amazon is important. The maintenance of this endemic disease depends on the presence of its etiologic agent, mammalian reservoirs, vectors and the environmental conditions that favor its transmission. **Objective:** The objective of this study was to evaluate the rate of natural infection by *Leishmania* in *Lutzomyia umbratilis* by comparing traditional isolation methods (dissection and direct observation of the digestive tract) with molecular methods (Nested-PCR) to detect the infection of insects from areas with endemic leishmaniasis in the municipality of Manaus, Amazonas State, Brazil. **Materials and Methods:** Two study areas were selected due to presenting different characteristics: the settlement Tarumã-Mirim and the *Base de Instrução de Guerra na Selva*-BI1 (CIGS). The former location is associated with a resident population (settled/representing major human disturbances), whereas the latter comprises individuals who migrate among several different localities throughout Brazil (representing minor disturbances). All samples were collected using "modified CDC" traps from November 2002 to October 2003. **Results:** We collected a total of 2,160 female *L. umbratilis*, of which 1,440 were dissected, and 720 were individually tested using PCR with mini-exon gene-specific primers (SLrev, SL2, SL1 and SLM2). Of the total number of females dissected, 1.6% (12/720) from BI1 and 0.4% (3/720) from Tarumã-Mirim were naturally infected. We tested 720 samples from BI1 using PCR and found that 42.9% (308/720) were infected with the subgenus *Viannia*, whereas 3.2% (23/720) were infected with the subgenus *Leishmania*. **Conclusion:** The natural infection rate was highest in the environments that were least disturbed by human activity. PCR was more effective than traditional methods for detecting *Leishmania* infection, and we recommend its use in epidemiological studies of cutaneous leishmaniasis in the Amazon region.

Keywords: Polymerase Chain Reaction; Psychodidae; *Leishmania*; Rural Settlements.

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