INVESTIGATION OF THE EFFECTS CAUSED BY THE INTRODUCTION OF THE ENDOSYMBIONT *WOLBACHIA PIPIENTIS* INTO *LUTZOMYIA LONGIPALPIS* AND THE INFECTION OF THIS VECTOR BY *LEISHMANIA*

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Leishmaniasis, caused by *Leishmania* spp. and transmitted by sand flies, remains a major public health challenge. *Lutzomyia longipalpis* is the primary vector of visceral leishmaniasis in the Americas, and insecticide-based control strategies have shown limitations. *Wolbachia pipientis*, an endosymbiont successfully used to control arboviruses in *Aedes aegypti*. This study evaluated the establishment of *Wolbachia* in *L. longipalpis* and its effects on *Leishmania infantum* infection. Our purpose in this work is to investigate the use of this endosymbiont in the control of leishmaniasis transmitted by sandflies. We tested the co-infection of sandflies with the bacteria through artificial blood feeding from Lulo embryonic cells previously stably infected with the wMelPop-CLA strain together with *L. infantum*, or only infected Lulo embryonic cells as control. A pool of 10 insects was collected for RNA extraction and cDNA synthesis, using RT-qPCR. We evaluated the permanence of the bacteria in the insect for up to 144 hours after infection, targeting the wsp gene of Wolbachia. We also verified that the presence of the bacteria showed a reduction in the parasite load in relation to the group without the endosymbiont, through the quantification of the Leishmania Actin gene. We also studied the expression of insect immune genes, and verified that the presence of the endosymbiont activated the Toll pathway, demonstrating that *Wolbachia* can modulate this immune pathway. To study the potencial establishment of of the endosymbiont in the sandfly, females were fed with cells transfected with Wolbachia and detection of the bacteria occurred for up to 10 days after feeding. We also evaluated the possibility of vertical transfer of *Wolbachia* and detected the bacteria in first generation male and female insects. Our findings suggest that *Wolbachia pipientis* could be a promising tool for the biological control of *L. longipalpis*, contributing to new strategies for leishmaniasis prevention.

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