

Evaluation of *Caryocar brasiliense* Extracts for Insecticidal Potential against *Lutzomyia longipalpis*: Combating Visceral Leishmaniasis.

Juliana Q Reimão*

Department of Morphology and Basic Pathology, Faculty of Medicine of Jundiaí, Jundiaí, Brazil

Introduction

Visceral leishmaniasis, a potentially fatal disease transmitted by the sand fly *Lutzomyia longipalpis*, poses a significant public health threat in Brazil. The search for effective insecticidal agents against this vector is crucial for controlling the spread of the disease. In this regard, researchers have turned to natural sources, including plants like *Caryocar brasiliense* (Caryocaraceae), for their potential insecticidal properties.

Caryocar brasiliense, commonly known as the pequi tree, is native to the Brazilian Cerrado biome and has been traditionally used for various medicinal purposes. Its extracts have shown promising bioactivity against a range of pests and pathogens, making it a promising candidate for combating insect vectors like *Lutzomyia longipalpis*.

A recent study aimed to evaluate the insecticidal potential of extracts derived from *Caryocar brasiliense* against *Lutzomyia longipalpis*, with the goal of identifying effective natural alternatives for controlling the vector and reducing the incidence of visceral leishmaniasis in Brazil.

The study utilized a series of laboratory assays to assess the insecticidal activity of *Caryocar brasiliense* extracts against *Lutzomyia longipalpis*. Various extraction methods were employed to obtain different types of extracts, including solvent extraction, steam distillation, and supercritical fluid extraction. These extracts were then subjected to bioassays to evaluate their efficacy in killing or repelling sand flies.

The findings of the study revealed significant insecticidal activity in certain extracts of *Caryocar brasiliense* against *Lutzomyia longipalpis*. Specifically, extracts obtained through solvent extraction exhibited potent insecticidal properties, leading to high mortality rates among the sand flies. Moreover, certain phytochemical constituents present in the extracts were identified and correlated with their insecticidal effects.

The results of this study hold significant implications for the development of novel insecticidal agents for controlling *Lutzomyia longipalpis* and, consequently, reducing the transmission of visceral leishmaniasis in Brazil. By harnessing the insecticidal potential of *Caryocar brasiliense* extracts, researchers can explore sustainable and environmentally friendly alternatives to synthetic insecticides, which often pose risks to human health and the environment.

Further research is warranted to elucidate the specific bioactive compounds responsible for the insecticidal activity observed in *Caryocar brasiliense* extracts. Additionally, field trials should be conducted to assess the efficacy of these extracts under real-world conditions and to determine their potential for large-scale implementation in vector control programs. Collaborative efforts between researchers, government agencies, and local communities are essential for translating these findings into practical strategies for combatting visceral leishmaniasis and safeguarding public health.

Conclusion

The evaluation of *Caryocar brasiliense* extracts for their insecticidal potential against *Lutzomyia longipalpis* represents a significant step forward in the search for effective vector control measures against visceral leishmaniasis in Brazil. By harnessing the natural insecticidal properties of this plant species, researchers offer a promising avenue for sustainable and environmentally friendly vector control strategies, ultimately contributing to the reduction of disease burden and improving the well-being of affected communities.

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*Correspondence to: Juliana Q. Reimão, Department of Morphology and Basic Pathology, Faculty of Medicine of Jundiaí, Jundiaí, Brazil, E-mail: juliana_reimao@yahoo.com.br

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