

Galvis-Ovallos Fredy^{1*}, Andrade do Rosario Amanda², Fonseca Rocha Marilia³, Posada Lopez Laura², Oliveira Alessandra⁴, Galati Eunice¹, Socorro Cruz Maria⁵, Figueredo Fabiano⁶, Werneck Guilherme⁷

¹Department of Epidemiology, Faculty of Public Health, University of São Paulo, Brazil

²Postgraduate-program in Public Health, Faculty of Public Health, University of São Paulo, Brazil

³Zoonosis control center, Montes Claros-MG, Brazil

⁴Federal University of Mato Grosso do Sul, Brazil

⁵Federal University of Piauí, Brazil

⁶Carlos Chagas Institute – Fiocruz/Paraná, Brazil

⁷Rio de Janeiro State University and Federal University of Rio de Janeiro, Brazil

***Corresponding author:** fgalvis@usp.br

Abstract

Deltamethrin-Impregnated Collars have been integrated into Brazil's national program for preventing and controlling visceral leishmaniasis since 2021, particularly targeting priority areas according the Pan-American Health Organization (PAHO) stratification. This study aimed to evaluate the impact of this intervention on the overall density and the proportion of engorged females of *Lutzomyia longipalpis* populations. The research was conducted across two regions in Montes Claros, MG, selected for their similar environmental and social characteristics. Each area was georeferenced and 10 blocks were randomly chosen, with one domicile selected per block using convenience sampling. Two light traps were set up monthly for three consecutive days in each chosen domicile between August/2021 and August/2023. A total of 21,322 specimens were captured, with 9,902 (8,015 males and 1,887 females) in the control area and 11,420 (9,347 males and 2,073 females) in the intervention area, indicating a male-to-female ratio of 4.4:1. No significant differences in female density were observed between the regions ($U = 303$, $p = 0.854$). The number of engorged females was lower in the intervention area; however, the difference was not statistically significant ($U = 303$, $p = 0.854$). Our findings suggest that the intervention with DM4% collars does not influence the density of *Lu. longipalpis* nor the prevalence of engorged females. Our results suggest that the intervention with DM4% does not affect the density of *Lu. longipalpis*, nor the number of engorged females. This information, along with other ecological parameters, could be useful for evaluating the implementation of DM4% collars aiming to improve the planning of prevention and control programs for VL.

Keywords: *Lutzomyia longipalpis*, DM4% collar, intervention, visceral leishmaniasis, Brazil