

RESUMO - ECTOPARASITOS: SISTEMÁTICA, EPIDEMIOLOGIA E
CONTROLE

**IN VITRO EVALUATION OF THE INSECTICIDAL ACTIVITY OF GERANIUM
ESSENTIAL OIL ON HAEMATOBIA IRRITANS ADULTS**

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The indiscriminate use of conventional synthetic insecticides has led to an increase in resistant populations due to their toxic potential to animals, humans and the environment, prompting the search for new control alternatives. Consequently, the use of essential oils with insecticidal activity has been the subject of numerous scientific studies and may represent a promising alternative for controlling *Haematobia irritans*, one of the major cattle ectoparasites that

causes significant economic losses to livestock breeders. *Pelargonium graveolens* (geranium) essential oil (EO), widely used in the cosmetic industry, has also demonstrated repellent and insecticidal activity, offering a potentially more sustainable strategy for controlling *H. irritans* and other veterinary pests. Therefore, we evaluated the insecticidal activity of geranium EO on adult *H. irritans* flies and determined its lethal concentration values (LC), specifically LC50 and LC95. The EO was commercially obtained, and flies were collected directly from naturally infested cattle at the experimental farm of the Laboratório de Quimioterapia Experimental em Parasitologia Veterinária (LQEPV) of Universidade Federal Rural do Rio de Janeiro (UFRRJ). Flies were collected in the morning using an entomological net and placed in adapted polypropylene cages. They were exposed to filter paper discs impregnated with different concentrations of this EO (15.72, 19.65, 23.58, 31.44, 47.15, and 55.01 $\mu\text{g}/\text{cm}^2$) in Petri dishes. Mortality evaluations were conducted at 2- and 4-hours post-exposure. At the 2-hour evaluation, mortality significantly increased from 27.71% at a concentration of 23.58 $\mu\text{g}/\text{cm}^2$ to 92.00% at 31.44 $\mu\text{g}/\text{cm}^2$, and reached 100% mortality at 47.15 and 55.01 $\mu\text{g}/\text{cm}^2$. At the 4-hour evaluation, the concentration of 23.58 $\mu\text{g}/\text{cm}^2$ increased mortality from 27.71% to 60.24%; together with the two highest concentrations, 31.44 $\mu\text{g}/\text{cm}^2$ also resulted in 100% mortality. The LC50 and LC95 values were statistically calculated using Polo Plus, with a 95% confidence interval ($p = 0.05$). The LC50 values were 25.41 (23.37 – 27.30) and 21.19 (19.42 – 22.61) $\mu\text{g}/\text{cm}^2$, while the LC95 values were 33.79 (30.68 – 41.52) and 30.32 (27.63 – 36.09) $\mu\text{g}/\text{cm}^2$, both for the 2- and 4-hour evaluations, respectively. *P. graveolens* essential oil demonstrated *in vitro* insecticidal activity against *H. irritans*, indicating its potential as a subject for further investigation in the control of this species.

Palavras-chave: horn fly; cattle ectoparasites; natural products.