RESUMO SIMPLES - ECTOPARASITOS: SISTEMÁTICA, EPIDEMIOLOGIA E CONTROLE

IN VITRO EVALUATION OF THE INSECTICIDAL PROPERTIES OF CURCUMA LONGA ESSENTIAL OIL AGAINST CTENOCEPHALIDES FELIS FELIS

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Fleas are among the most significant ectoparasites in veterinary medicine, particularly due to their wide geographic distribution, clinical impact, and role as vectors of pathogenic agents. In addition to transmitting pathogens, these insects can trigger dermatitis, hypersensitivity reactions, and anemia in infested animals, representing an important issue for veterinary public health. Control of Ctenocephalides felis felis is predominantly achieved through the use of

synthetic insecticides, which, although effective, may contribute to environmental contamination, disrupt ecological balance, and promote the emergence of resistant populations when used improperly. In this context, interest has increased in sustainable and biodegradable alternatives, particularly essential oils, known for their rich composition of secondary metabolites and their biological activity against various arthropods of medical and veterinary importance. Curcuma longa, commonly known as turmeric, contains rhizomes rich in bioactive compounds with antifungal, antimicrobial, antiviral, and anti-inflammatory properties. Several studies suggest that its essential oil may exhibit insecticidal activity, but information remains limited regarding its efficacy against different developmental stages of C. felis felis. Therefore, the aim of this study was to evaluate the in vitro insecticidal activity of C. longa essential oil against larval and adult stages of C. felis felis. Seven-day-old larvae and fourteen-day-old adults from the C. felis felis colony maintained at the Center for Clinical Research and Technological Innovation in Veterinary Medicine – Laerte Grisi, at the Laboratory of Experimental Chemotherapy in Veterinary Parasitology (LQEPV), were used. From the pure essential oil, dilutions ranging from 40,000 to 78,125 µg/mL were prepared using acetone as solvent. For larval assays, filter paper discs were impregnated with 0.47 mL of each solution; for adults, filter paper strips received 0.2 mL of the same concentrations, resulting in final exposure ranges of 800 to 1.6 µg/cm². The placebo group received only acetone, and the control group was not impregnated. For each concentration, ten individuals were used per replicate, in sextuplicate. Samples were incubated for 24 hours in climate-controlled chambers (27 ± 1 ºC; 70 ± 10% relative humidity), and mortality was assessed based on motility and discoloration of individuals. Mortality percentage was calculated from the ratio of dead to exposed individuals, and LC_{50} values were estimated using Probit analysis. At the highest exposure level (800 µg/cm²), mortality reached 91.7% for larvae and 84.2% for adults. No mortality was observed in the control or placebo groups for either life stage. Probit analysis estimated LC_{50} values of 328.9 µg/cm² (95% CI: 272.9–398.6) for larvae and 92.9 µg/cm² (95% CI: 72.6–120.9) for adults, indicating greater sensitivity of adults to the essential oil under in vitro conditions.The findings demonstrate that C. longa essential oil exhibits insecticidal activity against both larvae and adults of C. felis felis, suggesting potential as a more sustainable alternative to synthetic insecticides. However, further studies are needed to evaluate its in vivo effectiveness, toxicity, stability, and potential applications in commercial formulations intended for integrated flea control.

Palavras-chave: volatile oil; flea; larvae; adults; turmeric.