# THERAPEUTIC POTENTIAL OF *MELALEUCA LEUCADENDRA* (L.) L. FLOWERS IN THE TREATMENT OF VISCERAL LEISHMANIASIS

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Visceral Leishmaniasis (VL) is a significant public health issue with high prevalence in Brazil and worldwide. The limited availability of effective and safe treatments, combined with the side effects of current therapies, underscores the need for alternative therapeutic options. The plant *Melaleuca leucadendra* has gained attention due to its promising biological properties. The study aimed to evaluate the *in vitro* leishmanicidal activity of the crude extract (CE) and its fractions: hexane (HE), ethyl acetate (AE), dichloromethane (DM), and butanol (BUT), from the flowers of *M. leucadendra* against *Leishmania infantum*. The experiment was conducted at various treatment times (24, 48, and 72h), with Amphotericin B as a positive control (PC). The CE was extracted using percolation with ethanol and then fractionated. Cytotoxicity was assessed in RAW 264.7 murine macrophages via the Sulforhodamine B (SRB) method, revealing low cytotoxicity with $CC_{50}$ values above 150 µg/mL at all tested time points. The leishmanicidal activity against *L. infantum* promastigote forms (OP46 strain) was determined by the MTT assay, with the DM fraction showing the greatest inhibition, exhibiting an $IC_{50}$ of 20.27 µg/mL and a selectivity index of 23.5 after 48 hours of treatment. Activity against amastigote forms was assessed using flow cytometry (FACS Calibur) with RAW 264.7 macrophages infected with *L. infantum* transfected with GFP. The DM and BUT fractions significantly reduced the percentage of infected macrophages (85.86% and 80.6%, respectively, at the highest concentrations after 24 and 48h), compared to the control. Additionally, the HE, DM, and BUT fractions reduced the parasite load by 82.28%, 82.89%, and 78.24%, respectively, after 48 hours. The DM fraction showed significant leishmanicidal activity in both promastigote and amastigote forms with low cytotoxicity, suggesting its potential as a candidate for new therapeutic agents against VL. However, further investigations are needed.

**Suported by** UFOP, PROPPI, CAPES, FAPEMIG, INCT-DT, CNPq, Rede Imunobioleish-Minas RED-00032-22; APQ-02511-22; APQ-02286-21; APQ-02494-22, APQ-02045-23 CNPq: 420912/2023-1.

**Keywords:** Visceral Leishmaniasis, *Leishmania infantum*, *Melaleuca leucadendra.*