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#### TITLE

**EFFECT OF ESSENTIAL OIL FROM THE PLANT ALOYSIA TRIPHYLLA ON THE SNAIL BIOMPHALARIA GLABRATA**

#### AUTHORS

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#### ABSTRACT

**Introduction:** Schistosomiasis mansoni is one of the neglected tropical diseases (NTDs) of great relevance to public health in Brazil and other countries where it is endemic. To combat and reduce the disease in endemic countries, the World Health Organization (WHO) recommends, among other measures, the treatment of human cases and the control of the intermediate hosts of the parasite. **Objective:** To evaluate the molluscicidal action of the essential oil (EO) of *Aloysia triphylla* on *Biomphalaria glabrata*. **Methods:** Experimental in vivo study, based on behavioral aspects (survival and mortality) of *B. glabrata*. All experiments were carried out using chlorine-free water and with adult animals (*B. glabrata* - from the São Lourenço da Mata lineage – Pernambuco, Brazil), measuring 10 to 15 mm in diameter. Initially, we performed an EO screening to verify whether it presented molluscicidal potential. For this purpose, we followed the guidelines established by the WHO for testing candidate molluscicide products. This screening was performed at a concentration of 100 µg/mL, with a volume of 250 mL of water and 5 animals per beaker, randomly arranged into different groups: test group (T = EO + water + 0.001% dimethyl sulfoxide (DMSO)), co-solvent control (CSC = water + 0.001% DMSO), and negative control (C- = water only). After exposure (24h), the animals in the treated and control waters were rinsed, transferred to containers containing water, and fed lettuce; after a 24h recovery period, mortality was recorded for up to 96h post-exposure. Subsequently, we performed Bioassay I, using well plates with volumes of 2 mL per well, using a concentration of 100 µg/mL. This bioassay was performed according to the previous conditions, with 5 animals per group (T, CSC, C-) and positive control (C+ = 1 µg/mL of Niclosamide). This bioassay was performed in technical triplicate. **Results:** Regarding screening, the EO of *A. triphylla* showed good results. After 24h of exposure to the EO, we obtained 20% mortality, reaching 100% mortality 48h after exposure. For bioassay I, we observed a disparity between the replicates of group T, receiving in the first replicate, a mortality of 40% after 24h, and reaching 100% mortality 48h after exposure. However, in the second and third replicates, mortality was obtained at 0% and 20%, respectively. **Conclusion:** Our results indicate that *A. triphylla* EO is a promising candidate for molluscicide, and can be used to control *B. glabrata* populations and aid in actions to control schistosomiasis mansoni in Brazil since this is the main species that transmits the parasite *Schistosoma mansoni* in the country. However, it is necessary to optimize the use of EO in the bioassay involving well plates to better elucidate the effect of the oil on exposed animals, as well as to evaluate the ecotoxicity profile of this EO.

#### KEYWORDS

Molluscicide; *Biomphalaria* spp.; *Schistosoma mansoni*; Plant Bioprospecting

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