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#### TITLE

**MORPHOLOGICAL AND MOLECULAR CHARACTERIZATION OF BIOMPHALARIA SNAILS IN BELÉM, PARÁ, EASTERN AMAZON AREA IN BRAZIL**

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#### ABSTRACT

Introduction: The *Biomphalaria* genus includes snails that are considered hosts of *Schistosoma mansoni*, the etiological agent of schistosomiasis in Brazil. Three are considered main hosts of this trematode: *Biomphalaria glabrata*, *Biomphalaria tenagophila* and *Biomphalaria straminea*, all previously reported in Pará state. Objective: This study aimed to morphologically and molecularly characterize *Biomphalaria* snail species collected in Belém municipality, Pará state, and investigate the presence of *Schistosoma mansoni* cercariae infecting these specimens. Methods: Malacological surveys were conducted between 2020-2023, on eight Administrative Districts (ADs) of Belém. Collected snails were preserved and transported to the Malacology Department (LABMAL) of Evandro Chagas Institute (IEC) for examination. The specimens were measured and individually exposed for *S. mansoni* cercarial shedding. Subsequently, specimens were randomly selected from each collection site for fixation and morphological analysis. Morphological identifications were based on a comparison of shell characteristics, excretory organ morphology and features of the female and male reproductive systems. Molecular characterization using Polymerase Chain Reaction Restriction Fragment Length Polymorphism (PCR-RFLP) was performed on dissected snail foot tissue. Results: A total of 7.648 snails were collected, and 6.959 were identified as *Biomphalaria* genus. Four species were morphologically identified: 4.097 as *B. glabrata*, 2.728 as *B. straminea*, 129 as *B. tenagophila*, and 5 as *B. occidentalis*. The molecular characterization by PCR-RFLP confirmed the morphological findings. *S. mansoni* infection was observed in 78 *B. glabrata* specimens, with an infectivity rate of 1,9% (78/4.097). The *Biomphalaria* snails were found in 13 neighborhoods alongside the ADs. *Biomphalaria glabrata* and *B. tenagophila* were found in the ADs of Guamá and Sacramento; *B. straminea* was found in the ADs of Benguí, Guamá, Icoaraci, Mosqueiro, Outeiro and Sacramento; *B. occidentalis* was found in AD of Guamá. Conclusion: These findings enhance our understanding of *Biomphalaria* snails' distribution and diversity in Pará state. This knowledge is valuable for health and environmental surveillance efforts, aiding in targeted control actions for schistosomiasis and their intermediate hosts in Belém.

#### KEYWORDS

*Schistosoma mansoni*; *Biomphalaria*; Health Surveillance; Planorbid; Polymerase Chain Reaction

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