

## Slugs' and snails' prevalence and abundance in an urban slum: a threat of infectious diseases

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Urban slum residents are in frequent risk of exposure to different infections, due to the poor conditions in which they live. The presence of open sewers, especially in slums located in valleys, increase the likelihood of flooding areas and puddles, which, in turn, create favourable conditions for terrestrial slugs and snails. These animals are considered intermediate hosts for several enzootic and zoonotic parasites such as helminths, particularly the lungworm *Angiostrongylus cantonensis* – a nematode that can cause eosinophilic meningitis in humans. Synanthropic animals such as the Norway rat *Rattus norvegicus*, also benefited by the poor conditions in slums, are known as the final hosts of *A. cantonensis*, following ingestion of third stage infective larvae. Humans get infected similarly to rats, however instead of completing the cycle, *A. cantonensis* migrates to the central nervous system, leading to inflammation. In slums, due to the close proximity of humans to these synanthropic animals (usually in their backyard), the promiscuous capacity of *A. cantonensis* to infect different intermediate host species may raise the threat of infection by this nematode to slum residents. The aim of this study was to identify the prevalence and abundance of terrestrial slug and snail, potential intermediate hosts of *A. cantonensis*, in an urban slum, where ~40% of Norway rats have been found to be infected. Individual slugs and snails were sampled using visual encounter surveys during two mornings in a total of 40 randomized points, located in an area of 0.17km<sup>2</sup> in the neighborhood of Pau da Lima, Salvador-Brazil. The individuals were collected for identification and quantified to enable estimations of prevalence and abundance. A total of 474 individual slugs and snails were sampled in 57.5% of the points. We identified the following species in descending order of prevalence: *Subulina octona* (47.5%), *Sarasinula marginata* (30%), *Achatina fulica* (25%), *Bulimulus* sp. (22.5%), *Bradybaena similaris* (17.5%), *Helicina* sp. (15%), *Drymaeus papyraceus* (5%) and also a member of the family Streptaxidae (5%). *S. octona* and *A. fulica* presented the highest mean abundances of  $11.36 \pm \sigma 10.26$  and  $8.80 \pm \sigma 12.83$  individuals, respectively. They were followed by *B. similaris*, *Helicina* sp. and *D. papyraceus*, with approximate means of five individuals encountered per point ( $5.85 \pm \sigma 7.71$ ,  $5.16 \pm \sigma 3.65$  and  $5.00 \pm \sigma 5.65$ , respectively); *S. marginata* and *Bulimulus* sp. with approximately four ( $3.91 \pm \sigma 3.72$  and  $3.88 \pm \sigma 2.93$ ) and members of Streptaxidae with three ( $3.00 \pm \sigma 2.82$ ). The high prevalence and overall richness of (potentially) intermediate host species of *A. cantonensis* found in this study raises concern about the likely risks of infection by *A. cantonensis* to human slum residents. The next step will be to investigate the risk factors associated with the presence of these molluscs in the study area. This will help to guide efficient application of population control measures for the intermediate hosts of *A. cantonensis*, and consequently reduce the risk of infection to humans.

Key-words: *Angiostrongylus cantonensis*, slugs; snails; intermediate hosts; prevalence; infectious diseases; *Rattus norvegicus*; eosinophilic meningitis.