

The promiscuity of *Angiostrongylus cantonensis* in an urban slum: prevalence and intensity of infection in intermediate hosts

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Urban slums are a growing concern in large Brazilian cities and in other emergent countries. Human residents are vulnerable to the lack of improved sanitation, evident in the presence of open sewers and inadequate garbage collection. These conditions favor the presence of rodent, such as the Norway rat, *Rattus norvegicus*. The Norway rat is the final host for the lungworm *Angiostrongylus cantonensis*, which, after being ingested by humans, can cause eosinophilic meningitis. In an urban area of Brazil's third largest city, a high prevalence of *A. cantonensis* has recently been identified in a population of Norway rats (~40%), as well as five species of slugs and snails, which are considered intermediate hosts of the third stage infective larvae of *A. cantonensis*. The aim of this study was to estimate the prevalence and intensity of infection by *A. cantonensis* in its intermediate hosts, in an urban area of Salvador-Brazil. The sampling design consisted of visual encounter surveys in a total of 40 randomized points located in an area of the neighborhood Pau da Lima. Individuals of *Achatina fulica*, *Bulimulus* sp, *Bradybaena similaris*, *Sarasinula marginata*, and *Subulina octona* were collected and transported to the laboratory. Individuals were submitted to digestion and larvae extraction was conducted using an adaptation of the Rugai method. After maceration, the individuals (or pool) were placed in a digestive solution (7 ml HCl, 2.5 g pepsin and 993 ml distilled water, preheated to ~42°C) and later transferred to an incubator at 37°C for two hours. Subsequently, the sediment was observed using a stereomicroscope for the collection of larvae, which, when present, were transferred to an Eppendorf (1.5 mL) sampling vessel containing 70% ethanol. Larvae samples were stored at -20°C to await molecular analysis for identification to the species level. Intermediate hosts were found positive for larvae in 20% of the sampling points. The likely prevalence of *A. cantonensis* in *A. fulica*, *Bulimulus* sp, *S. marginata* and *S. octona* was 40%, 22%, 8% and 5%, respectively. *B. similaris* was found negative in all the sampling points. *A. fulica* presented a mean intensity of  $11.14 \pm \sigma 16.33$  larvae per individual, whereas *Bulimulus* sp. presented a mean of  $0.75 \pm \sigma 0.35$ . Only one individual of *S. marginata* was found positive to larvae, potentially of *A. cantonensis*, with nine larvae, whereas *S. octona* was present in a proportion of 0.28 larva per individual (two larvae found in a pool of seven individuals). We suggest that there is a high likelihood of infection in the study area, due to the promiscuity of *A. cantonensis* in different intermediate hosts, highlighted by the high likely prevalence of this lungworm in *A. fulica*. These results, once confirmed by molecular analysis, should be used to inform the public health system of the potential risks associated with infection by *A. cantonensis* and provide motivation for the Zoonoses Control Center to enact population control measures for the intermediate hosts of this nematode.

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