

ON THE FINDING OF BIOMPHALARIA TENAGOPHILA NATURALLY INFECTED WITH SCHISTOSOMA MANSONI IN THE STATE OF MINAS GERAIS, BRAZIL (*)

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S U M M A R Y

Natural infection in *Biomphalaria tenagophila* with *Schistosoma mansoni* was observed for the first time in a small area, in Jaboticatubas, in the State of Minas Gerais, Brazil. In view of this finding, the Authors decided to carry out some detailed investigations, since *B. glabrata* has been known as the vector snail of schistosomiasis in that State. *B. tenagophila* was found naturally infected throughout the investigation period (15 months). Strains of the snail and of the parasite were isolated four times, and then maintained at the laboratory through *B. tenagophila* — hamster passages. The possibilities of *B. tenagophila* to play a role in the epidemiology of the human disease in the State of Minas Gerais, in the future, are discussed.

I N T R O D U C T I O N

Biomphalaria glabrata has been known as the vector of schistosomiasis mansoni in the State of Minas Gerais, Brazil. It is the main species found naturally infected in that area and maintains the high prevalence of the endemy.

Other species of the genus *Biomphalaria*, as *B. straminea*, have been reported to occur naturally infected in Brazil. This snail is an important vector of schistosomiasis in north-eastern Brazil, whereas *B. tenagophila* is the vector of this disease in the south of the country (PARAENSE⁵).

In the past, *B. tenagophila* was considered a less susceptible snail and it was named *Planorbis immunis* by LUTZ³, owing to its apparent resistance to infection. The area where schistosomiasis is acquired through infected *B. tenagophila* is expanding its limits, and strains of *S. mansoni* more adapted to infect this snail could spread the disease to uninfected areas.

It is worth to mention that the role played by *B. tenagophila* as a vector of this disease is increasing in the last decades.

Although this species occurs in several counties of the State of Minas Gerais, as reported by PARAENSE⁵, the natural infection in this mollusc in that State was observed for the first time by MELO et al.⁴, and reported to the VII Brazilian Congress of Parasitology, in 1982. Further field and laboratory investigations were carried out and the results are presented in this paper.

M A T E R I A L S A N D M E T H O D S

The molluscs were collected in a small stream (named "Córrego da Guia"), near Boa Vista Village, Jaboticatubas County, State of Minas Gerais. The snails were also found in irrigation ditches. After collection, snails were packed inside a wood box with pieces of wet filter paper. At the laboratory, they were remov-

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ed to plastic containers filled with spring water, for macroscopic observations. The following day the snails were transferred to Petri dishes with water, individually, and then exposed to artificial light for 1 hour to stimulate cercarial emergence (grossly, natural infection amounted to 17.5%). Cercariae shed by infected snails were concentrated as recommended by PELLEGRINO & MACEDO⁸ and injected in hamsters, subcutaneously (PELLEGRINO & KATZ⁷). Some infected snails were killed with water heated at 70°C and dissicated under stereomicroscope (PARAENSE & DESLANDES⁶).

The remaining molluscs were maintained in aquaria containing well water and received artificial food and fresh lettuce, according to FREITAS².

Subsequent generations of the mollusc were maintained at the laboratory, as suggested by the same Author. Hamster — *B. tenagophila* — hamster passages of parasites were carried out according to PELLEGRINO & KATZ⁷. Collections for worms from the hepatic portal

system, as well as oogram studies were performed as usual.

Susceptibility of *B. glabrata* to the isolated strain of the parasite was also investigated by the same procedures.

RESULTS AND COMMENTS

Data of natural infection in *B. tenagophila* are summarized in Table I. See also map in Fig. 1.

T A B L E I
Natural infection in *Biomphalaria tenagophila* from Jaboticatubas County, State of Minas Gerais, Brazil

Date (snail collection)	Number of snails		
	Examined	Positive for <i>S. mansoni</i>	Positive for xiphidiocercaria
October 1981 *	23	8	3
July 1982	11	2	1
February 1983	11	3	2
March 1983	12	5	3
TOTAL	57	18	9

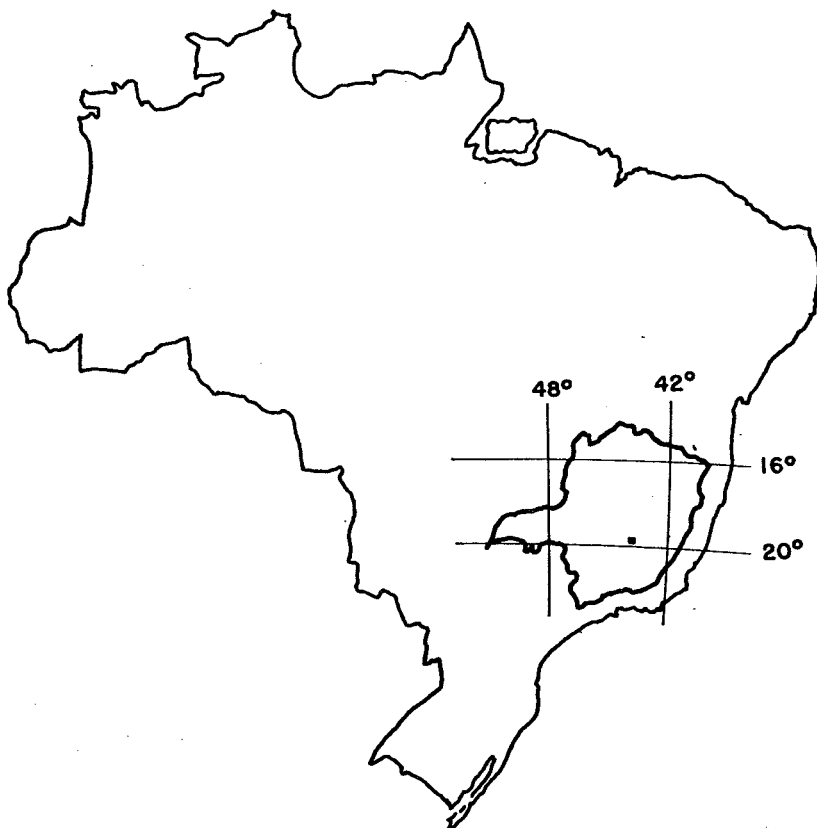


Fig. 1 — Jaboticatubas, State of Minas Gerais, Brazil

Morphology of cercariae, adult worms, and eggs were found to be typical of *S. mansoni*. *B. tenagophila* was easily reared at the laboratory, all four isolations maintained at least to F₂ generations.

Hamster — *B. tenagophila* — hamster passages were successful, the Belo Horizonte strain of *B. glabrata* being also susceptible to the experimental infection (63% of positivity).

Jaboticatubas has been a well known focus of endemic schistosomiasis through many years. The vector was always referred to as being *B. glabrata* (RUIZ⁹). The finding of *B. tenagophila* with persistent natural infection may be attributed to two different possibilities:

a) A progressive adaptation of the parasite, in an endemic area, to another species of the same genus of the planorbid snail;

b) Contamination of the local *B. tenagophila* with another strain of the parasite, introduced by a human carrier from a *B. tenagophila* transmission area.

Both possibilities must be considered and an epidemiological study involving people living in that area is being carried out.

B. tenagophila has been found in several other counties without natural (CARVALHO et al.¹, PEREIRA *) or no autochthon human infection, but foci of this endemic disease may arise in such areas harboring planorbid species.

RESUMO

Sobre o encontro de *Biomphalaria tenagophila* naturalmente infectada com *Schistosoma mansoni* no Estado de Minas Gerais, Brasil

A presença de infecção natural em *Biomphalaria tenagophila* com o *Schistosoma mansoni* foi verificada em outubro de 1981, no Município de Jaboticatubas, Minas Gerais. Uma vez que o vetor da esquistossomose mansoni neste Estado é a *B. glabrata*, este achado deu origem a um trabalho de campo que vem sendo realizado até o presente momento. A *B. tenagophila* foi encontrada naturalmente infectada durante

todo o período de observação e as amostras do parasito e do molusco, isoladas quatro vezes, foram mantidas em laboratório através de infecções alternadas hamster — *B. tenagophila* — hamster. É discutida a possibilidade da *B. tenagophila* desempenhar futuramente um papel de transmissor secundário da esquistossomose mansoni em Minas Gerais.

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