Mem. Inst. Oswaldo Cruz, Rio de Janeiro
Vol. 85 (1): 127-129, jan./mar. 1990

Research Note

OCCURRENCE OF MOLLUSCS IN AQUARIA OF ORNAMENTAL FISHES IN BELO HORIZONTE, MINAS GERAIS, BRAZIL

CARLOS TITO GUIMARÃES; CECÍLIA PEREIRA DE SOUZA; DELZA DE MOURA SOARES; NEUSA ARAUJO & LEONÍDIA M. R. SCHUSTER

Centro de Pesquisas René Rachou – FIOCRUZ, Caixa Postal 1743, 30190 Belo Horizonte, MG, Brasil

The introduction of schistosomiasis intermediate host planorbids in undamaged areas through fishes and aquatic plants is already a well known fact (R. R. Correa et al., 1970, *Rev. Saúde Públ., 4:* 117-127; C. M. Meier-Brook, 1973, WHO/Schisto/75.37, Geneva, WHO, s. d.). Recently, Correa visiting 11 ornamental fish-shops in São Paulo city (Brazil), found *Biomphalaria straminea* and *B. tenagophila* specimens in 9 of them, showing the extension of the problem in the city (L. L. Correa et al., 1980, *Rev. Inst. Adolfo Lutz, 40:* 89-96).

In Belo Horizonte city, 21 fish-shops were visited 3 times from January/1985 to June/1987. All aquaria of these shops were numbered and examined. The molluscs were captured with aid of metallic tweezers, packed in plastic bags, and the shop name, the aquarium number, the kind of fish and aquatic plant present in it, and the collect date were recorded. In the laboratory, the snails were identified, measured and examined. Part of the specimens (503 *B. straminea* and 57 *B. glabrata*) were submitted to experimental infection by *Schistosoma mansoni.*

The Table shows that molluscs were found in 16 (76.2%) of the 21 fish-shops. Of 771 aquaria examined, 113 (14.7%) lodged snails in a total of 3,120 specimens: 2,771 (88.8%) being *B. straminea,* 282 (9.0%) *Physa sp* and 67 2.1%) *B. glabrata.* No planorbids were infected by *S. mansoni.* In 7 fish-shops (33.3%) only *B. straminea* was found out; in 1 (4.8%) only the *B. glabrata* and in another (4.8%) only the *Physa sp.* occurred. The *B. straminea* and *Physa sp.* association occurred in 5 shops (23.8%) and association among the 3 species occurred in 2 shops (9.5%). On the other hand, no association occurred between *B. straminea* and *B. glabrata* and between *Physa sp* and *B. glabrata.* From a total of 113 aquaria with molluscs, 94 (83.2%) lodged only *B. straminea;* 4 (3.5%) only *B. glabrata* and 2 (1.8%) only *Physa sp. B. straminea* and *Physa sp* living together were found in 12 aquaria (10.6%) and in only one (0.9%) *B. glabrata* and *Physa sp.*

Different species of ornamental fishes were observed associated with molluscs. The "peixe-espada" (*Xiphophorus helleri*) was more frequently found together with *B. straminea* (14 aquaria) followed by "lebistes" or "guppy" (*Lebistes reticulatus*) found in 13 aquaria with the planorbid.

Also several species of aquatic plants were found associated with molluscs, specially "cabomba" (*Cabomba aquatica*) found associated with *B. straminea* in 40 aquaria, with *Physa sp* in 6 aquaria and with *B. glabrata* in 1 aquarium.

With relation to experimental infection, from 503 *B. straminea* specimens submitted to infection in the laboratory, 12 (2.4%) were infected by *S. mansoni,* whereas from 57 *B. glabrata* specimens, 19 (33.3%) were also infected by this trematode.

These reports call attention to a fact that is becoming important is schistosomiasis epidemiological studies in Belo Horizonte, to wit, the starting of small breeding-places of planorbids in urban areas, and more worryingly, the installation of active foci of these helminths, as it happened once in the "Parque Municipal" (W. L. Paraense & J. M. Santos, 1949, *Mem. Inst. Oswaldo Cruz, 47:* 35-49) and now occurs in Julien Riant Park, a recreational area located at Sion ward, considered as a well-to-do area in

This work received financial support from CNPq.

Received October 25, 1989.
Accepted December 14, 1989.

TABLE

Distribution of molluscs captured in 21 ornamental fish-shops, in 3 collects, in Belo Horizonte, Minas Gerais, Brazil (from January 1985 to June 1987)

Shops	Aquaria			Captured molluscs[a]					
	Total	With molluscs	%	Number			%		
				B.s	B.g	Ph	B.s	B.g	Ph
No. 01	28	7	25.0	592	0	39	21.4	–	13.8
No. 02	33	2	6.1	9	0	0	0.3	–	–
No. 03	24	0	–	0	0	0	–	–	–
No. 04	30	1	3.3	11	0	0	0.4	–	–
No. 05	33	0	–	0	0	0	–	–	–
No. 06	10	0	–	0	0	0	–	–	–
No. 07	19	0	–	0	0	0	–	–	–
No. 08	76	12	15.8	172	0	0	6.2	–	–
No. 09	28	4	14.3	53	0	0	1.9	–	–
No. 10	56	2	3.6	0	0	6	–	–	2.1
No. 11	24	0	–	0	0	0	–	–	–
No. 12	62	5	8.1	26	0	8	0.9	–	2.8
No. 13	21	4	19.5	144	0	23	5.2	–	8.2
No. 14	53	42	79.2	1,047	0	114	37.8	–	40.4
No. 15	48	15	31.2	318	12	35	11.5	17.9	12.4
No. 16	05	5	100.0	122	0	0	4.4	–	–
No. 17	15	2	13.3	9	0	0	0.3	–	–
No. 18	06	1	16.7	0	45	0	–	67.2	–
No. 19	70	3	4.3	3	10	25	0.1	14.9	8.9
No. 20	75	6	8.0	157	0	0	5.7	–	–
No. 21	55	2	3.6	108	0	32	3.9	–	11.4
Totals	771	113	–	2,771	67	282	100	100	100

[a]*B.s = Biomphalaria straminea – B.g = B. glabrata – Ph = Physa sp.*

Belo Horizonte. Some hypotheses can be formulated in order to explain the starting of these "asphalt breeding-places". In the past, the molluscs came from the infected streams, that crossed the city. Now, with the canalization of these sources, such molluscs can originate from ornamental fish aquaria.

During the last years, the aquariumphily in Brazil has experienced an extraordinary development, resulting in the opening of several shops specialized in ornamental fishes, and also in the adaptation of conventional plant-shops to this new and flourishing branch of business. Nevertheless, with the development of this activity, it has been usual to find *S. mansoni* intermediate host molluscs in the aquaria of these shops, as well as in the residential ones.

It is important to mention that in November 1985, two of the 21 shops visited in this research, as incredible as it may seem, sold albino specimens of *B. glabrata* as pets at US$ 0,085 each approximately. Such molluscs are usually utilized for their ornamental effect or as auxilliary aquarium glass cleaners, since they feed on algae that grow in the aquaria. As a result of this stranger trade, two domestic breeding of this planorbids to supply shops were organized. In one of them, located near down-town, 305 albino and pigmented specimens of *B. glabrata* were collected. The other, located in Pampulha neighbourhood (a traditional focus of schistosomiasis in Belo Horizonte) could not be visited, because its owner, who by coincidence is the owner of one of the shops, did not allow our entrance.

With relation to the maintenance of these molluscs in aquaria for the purpose as herein described, it occurs frequently that, when the population increases too much, the surplus is taken away and can have two destinations. First: the planorbids are simply eliminated by molluscicides or are being thrown into the garbage or anywhere else. Second: they are

removed from the aquaria and put in the most different available hydric collections (park and garden ponds, lagoons, streams, etc).

Likewise, the same occurs in relation to aquatic plants used in aquaria. When their volume increases, the excess is eliminated or introduced into available hydric collections, being it possible to transport egg batches and/or mollusc specimens on the roots and leaves. Concerning this aspect, Correa et al. (1980) point out the importance of such plants as "propagation vehicles of *S. mansoni* vectors". From the 7 aquatic plants mentioned by those authors as the most used in aquaria in São Paulo (Elódea, Valisnéria, Cabomba, Samambaia d'água, Criptocorina, Amazonense and Sagitária) only the last two have not been found living together with molluscs in aquaria in Belo Horizonte.

Recently (March-April, 1989), the shops were visited again, and 2 of them were closed and in 11 (57.9%) of the 19 remainder, molluscs were observed (*B. straminea* and *Physa sp*), evidencing that the situation persists, in spite of recommendation made to the owners in order to avoid the manintenance of molluscs in aquaria. At the same time, *B. glabrata* has often been found in urban areas such as in waters of Julien Riant Park and in the ornamental pond (1.70 m of diameter x 0.30 m of depth) in a garden of a restaurant in the Savassi region. Also *B. tenagophila* and *Physa sp.* have already been found in the ornamental pond in front of "Palácio das Artes", in the heart of the commercial center of Belo Horizonte.

It is important to mention here that *B. straminea* and also *B. tenagophila* were not, ultil recently, considered as schistosomiasis transmitters in Belo Horizonte and neighbourhoods, but have already been found spontaneously infected in Jaboticatubas, Lagoa Santa and Pampulha Lake in Belo Horizonte (A. L. Melo et al., 1982, VII Congr. Brasileiro de Parasitologia, Porto Alegre, p. 63; A. M. S. D. Pinto, 1984, *Ciência e Cultura, 36:* 893; O. S. Carvalho et al., 1985, *Rev. Saúde Públ. 19:* 270-277).

So, a realistic analysis of the factors herein reported shows that if urgent and adequate measures are not taken, the schistosomiasis urbanization in Belo Horizonte can occur more frequently, and its control will become more and more difficult.