

# A SURVEY OF TREMATODE CERCARIAE IN *BITHYNIA GONIOMPHALOS* IN NORTHEAST THAILAND

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**Abstract.** A survey of trematode larvae in the fresh water snail, *Bithynia goniomphalos* in the main water reservoir of Huai Thalaeng district, Nakhon Ratchasima Province, Thailand, was conducted. The study site is in an area with a high prevalence of *Opisthorchis viverrini* infection. Malacological samplings were made during the year 2000 to study the prevalence and intensity of infection. Parasitological examinations of 527 live snails were performed at the Veterinary Parasitology Laboratory, Chulalongkorn University. Of the 527 snails, only 16 (3.04%) were found to be infected with cercariae. Of these 16 snails, 75% were infected with *Amphistome* cercariae, 6.25% with *Armatae* cercariae and 18.75% with *Virgulate* cercariae. Most infected snails (75%) had a density of infection of less than 100 cercariae/snail. No snail was infected with cercariae of *Opisthorchis* spp. This snail was, therefore, unlikely to be the intermediate host of *Opisthorchis viverrini* in the main water reservoir of Huai Thalaeng district.

## INTRODUCTION

Flukes are an important group of parasites that are pathogenic to animals and humans. A mollusc is always an intermediate host for these parasites, in which asexual reproduction takes place. Apart from human eating and toilet habits, the prevalence of the intermediate hosts, fresh water molluscs and fishes, infected with fluke larvae is an important factor affecting the infection rate (Harinasuta and Vajrasthira, 1960; Harinasuta and Harinasuta, 1984).

Several species of larvae of the medically important flukes have been reported in molluscs (Ito *et al*, 1977; Upatham and Sukhapanth, 1980). In the northeast region of Thailand, fluke diseases remain an important public health problem. However, studies of the prevalence of larval helminths in fresh water snails are few. We carried out a survey of cercariae in fresh water snails in an area endemic for flukes in the northeast region of Thailand.

## MATERIALS AND METHODS

### Setting

During April 2000 we performed a survey of cercariae in fresh water snails of the species, *Bithynia goniomphalos* (Fig 1); the survey site was the main water reservoir, Huai Thalaeng district, Nakhon Ratchasima Province, which is about 300km from

Bangkok, the capital of Thailand. The area is known to be endemic for fluke disease.

### Identification of the cercariae

Malacological sampling was conducted during April 2000. A total of 527 *Bithynia goniomphalos* snails were collected. After collection, all snails were cleaned, washed, and dried in the open air for 2 days; the snails were then packed into plastic bags and sent to the Veterinary Parasitology Laboratory, Faculty of Veterinary Science, Chulalongkorn University, for analysis.

All snails were examined for cercariae using the method described by Chanawong *et al* (1990). Cercariae were identified by stereomicroscopy using the method described by Schell (1970). Acid carmine staining was also performed in order to give contrast to the structure of the cercariae.

## RESULTS

Of the 527 snails, only 16 (3.04%) were found to be infected with cercariae. Of these 16 infected snails, 75% were infected with the cercariae of *Amphistome* spp, 6.25% with the cercariae of *Armatae* spp and 18.75% with the cercariae of *Virgulate* spp (Figs 2 and 3). Most snails (75%) had a density of infection of less than 100 cercariae/snail. No snail was infected with the cercariae of *Opisthorchis* spp (Table 1).

## DISCUSSION

According to our study, only 3.04% of snails were infected with cercariae. No cercariae of *Opisthorchis*

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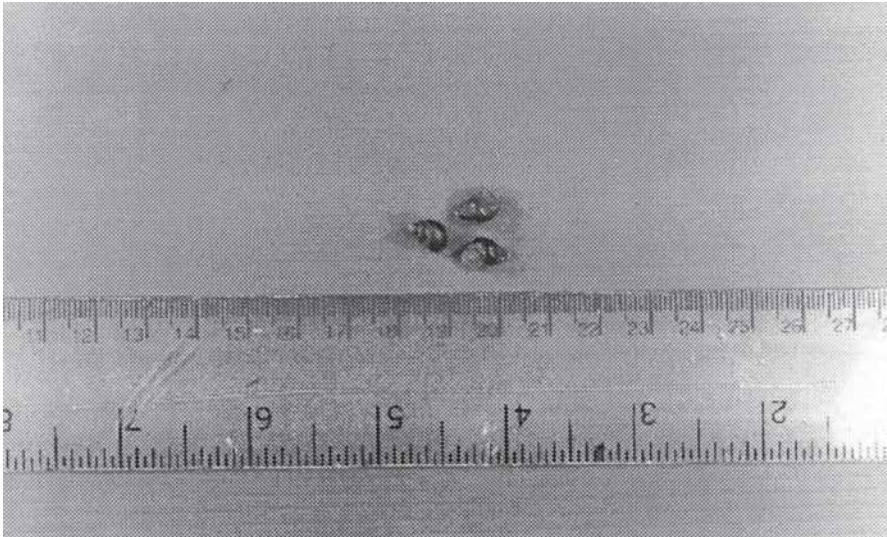


Fig 1- *Bithynia goniomphalos*.

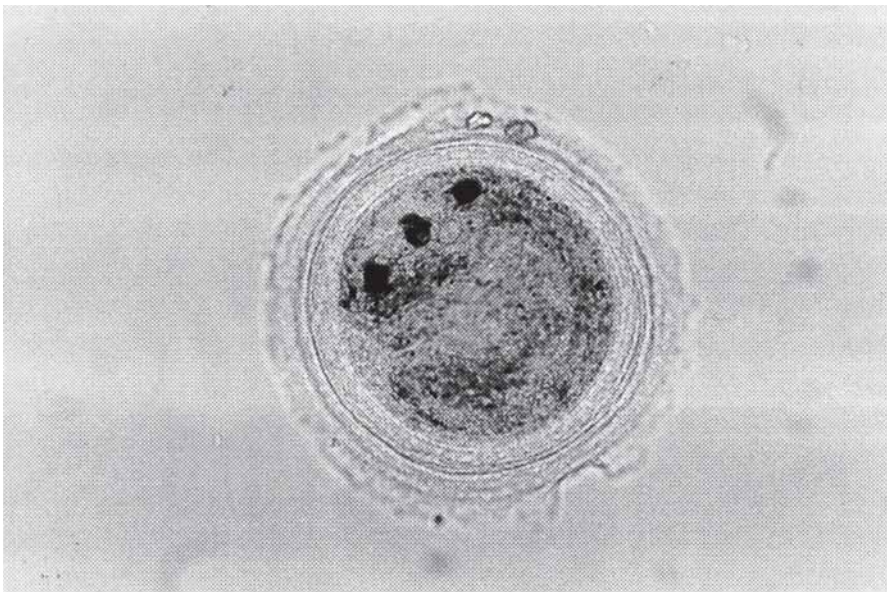


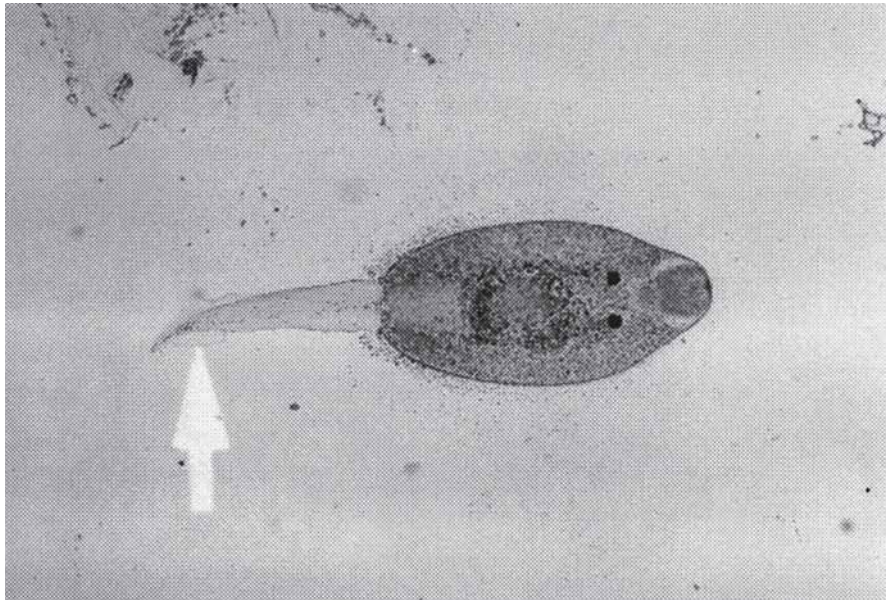
Fig 2- Cercaria of *Amphistome* sp.

*viverrini* were found although the study site is in the area with a high prevalence of opisthorchiasis.

Many factors can affect the prevalence of cercariae including the setting, season, type and number of parasites and fish. Generally, the highest cercarial infection rate in snails is found during the late rainy season, July to October (Upatham and Sukhapanth,

1980). Furthermore, the reservoir is the main water source for the people in the area, and therefore special care of this reservoir has been given by the people of the community that it serves. The low prevalence in our study, in April, might be lower than the peak prevalence in the rainy season.

Our results in the rate of cercaria infection in fresh

Fig 3- Cercaria of *Virgulate* sp.Table 1  
Prevalence of cercariae in the collected snails.

Type of cercaria	Number of infected snails (%)	Rate of infection (%)	Number of cercariae/snail		
			1 - 99	100 - 200	> 200
<i>Amphistome</i>	12 (75%)	2.28	9	1	2
<i>Armatae</i>	1 (6.25%)	0.19	-	-	1
<i>Virgulate</i>	3 (18.75%)	0.57	3	-	-
Total	16 (100%)	3.04	12	1	3

water snails (3.04%), are similar to the previous report in Thailand, which presented a rather low infection rate of 1.6% (Upatham and Sukhapanth, 1980).

Our result confirmed the previous data, which suggested that the prevalence of snails naturally infected with *Opisthorchis* spp cercariae was about 0.1-2% (TROPMED Technical Group, 1986). Furthermore, our result echoes another earlier report, which highlighted the low susceptibility of *Bithynia goniomphalos* (9.6%) in comparison with other species of snail (69.9% to 72.2%) (Chanawong and Waikagul, 1991). The results of this study show that the endemicity of *Opisthorchis viverrini* in this community may be not necessarily related to the type of snails inhabited in the main water reservoir.

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