

REDESCRIPTION OF THE TREMATODE METACERCARIAE FROM THE MULLET (*LIZA SUBVIRIDIS*) AND HALF-BEAK (*DERMOGENYS PUSILLUS*)

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Abstract. Metacercariae from mullet and half-beak fish were examined to identify the morphological characteristics under a light microscope. Both encysted and excysted metacercariae were described and illustrated. The results of this study showed that these two trematodes species are different. They should be further confirmed by other scientific methods such as experimental host infection to discover adult or DNA fingerprints.

INTRODUCTION

Mullet, *Liza subviridis*, is a brackish water fish that is a popular food among residents in coastal areas. Most people eat this fish raw; therefore, they are at risk of infection with the metacercarial trematode, especially *Stellantchasmus* sp, because the mullet were reported to be the second intermediate host for *Stellantchasmus* (Seo *et al*, 1979, 1984; Sohn *et al*, 1989; Hong, 2000). A group of heterophyid metacercariae encysted in the flesh mullets were identified to be *Stellantchasmus falcatus*, which is the same species of metacercariae found in the fresh water half-beak fish (*Dermogenys pusillus*) (Chai and Sohn, 1988; Saenphet *et al*, 2001; Wongsawad *et al*, 2004). The purpose of this study was to identify the metacercariae from these two fish species and describe the morphological characteristic of the encysted and excysted metacercariae.

MATERIALS AND METHODS

Twenty mullets, *Liza subviridis*, 15-25 cm long were purchased from a local fish market in Samut Sakhon Province. In the laboratory, their muscles were artificially digested using an acid pepsin solution (1 ml conc hydrochloric acid, 1 g pepsin, and 99 ml 0.85% sodium chloride solution for 1½ hours at 37°C). The digested

muscle was rinsed with 0.85% sodium chloride solution and examined for *Stellantchasmus* metacercariae (Boonchot and Wongsawad, 2005). The metacercariae were collected, counted to calculate the prevalence and intensity, and measured. Both encysted and excysted metacercariae were processed on a permanent slide, fixed in 4% formalin and stained with borax's carmine, dehydrated in an alcohol series, and mounted with Permount. These permanent slides were used to examine the morphological characteristics under a compound microscope and compared with the metacercariae from half-beak fish, *Dermogenys pusillus*. Moreover, *Stellantchasmus falcatus* metacercariae were obtained from the body cavity of the half-beak fish and processed on permanent slides, which were then used to compare with the morphological characteristics of the metacercariae from the mullets.

RESULTS

The body size and details are shown in Table 1. The body size of the metacercariae from the mullets were larger than those from half-beak fish (metacercariae from mullets were 0.15-0.21 mm long, but metacercariae from the half-beak fish were 0.05 mm long) (Fig 1A, B). The excysted metacercariae of the mullet had longer organs than those of the half-beak fish. From Table 1, there were many characteristic differences between the excysted metacercariae of the mullet and the half-beak fish (Fig 2A, B). For example, the body length, body width, esophagus, ovary length, testis (right) length and

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Table 1
Measurements of excysted metacercariae from mullets in comparison with those from half-beak fish.

Items	Excysted metacercariae from mullets (mm)	Excysted metacercariae from half-beak fish (mm)
Body length	0.667-0.680	0.188-0.312 ^a
Body width	0.255-0.260	0.110-0.182 ^a
Oral sucker		
Length	0.040-0.045	0.025-0.042
Width	0.050-0.055	0.035-0.050
Prepharynx (length)	0.020-0.022	0.003-0.020
Pharynx		
Length	0.032-0.035	0.020-0.035
Width	0.025-0.030	0.015-0.022
Esophagus (length)	0.140-0.145	0.035-0.087 ^a
Ventral sucker		
Length	0.027-0.030	0.017-0.025
Width	0.032-0.035	0.020-0.027
Seminal vesicle (expulsor)		
Length	0.067-0.070	-
Width	0.035-0.040	-
Ovary		
Length	0.035-0.040	0.017-0.025 ^a
Width	0.050-0.055	0.025-0.065
Testis (right)		
Length	0.112-0.120	0.095-0.110 ^a
Width	0.070-0.077	0.035-0.047 ^a
Testis (left)		
Length	0.115-0.117	0.097-0.102 ^a
Width	0.057-0.070	0.030-0.050 ^a

^aDistinct characteristics are different in both of mullets and half-beak fish.

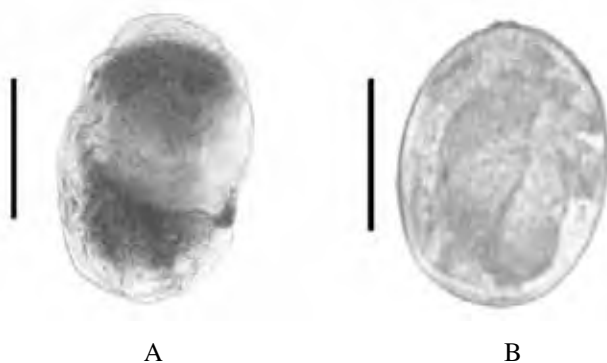


Fig 1- A: Excysted metacercaria from mullet (scale = 0.1 mm), B: Excysted metacercaria from half-beak fish (scale bar = 0.02 mm).

width, and testis (left) length and width, from excysted metacercariae of the mullet were distinct from excysted metacercariae of the half-beak fish. Moreover, the prevalence and intensity of metacercarial infection of the mullet and half-beak fish are shown in Table 2. The prevalence of the metacercariae from mullets was 100% and intensity was 67.8, while the prevalence and intensity of the metacercariae from the half-beak fish of the previous reported were 100% and 999.5, respectively.

DISCUSSION

The body size of excysted metacercariae,

Table 2
The prevalence and intensity of metacercarial infection from mullets in comparison from half-beak fish.

Items	Metacercarial infection from mullets	Metacercarial infection from half-beak fish (Sripalwit <i>et al</i> , 2003)
Prevalence (%)	100	100
Intensity	67.8	999.5

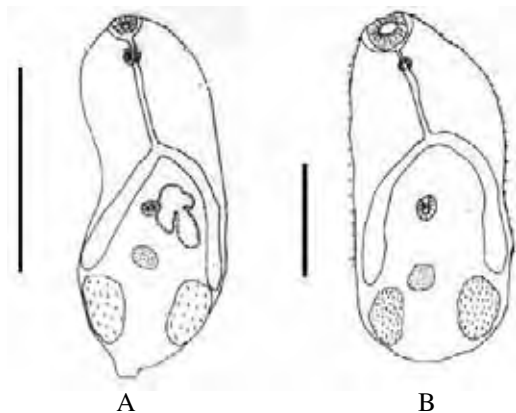


Fig 2- A: Excysted metacercaria from mullet (scale bar = 0.3 mm), B: Excysted metacercaria from half-beak fish (0.1 mm).

the size of the encysted metacercariae, and the esophagus length of mullets were greater than those characteristics of the half-beak fish. Besides, the intensity of the metacercarial infection of the half-beak fish was more than the metacercarial infection of the mullet. From Table 1, the size of encysted metacercariae and organs of the metacercariae from mullets were longer and wider than those from the half-beak fish were. Although the prevalences of the metacercariae of these two fish species were equal, the intensities of their metacercariae were different; the metacercarial intensity from half-beak fish was greater than the metacercarial intensity from mullets.

Several studies (Noda, 1954; Seo *et al*, 1979, 1984; Chai and Sohn, 1988) have described *Stellantchasmus falcatus* metacercariae that was collected from mullets, *Mugil cephalus*. However,



Fig 3- Mullet, *Liza subviridis*.

the present study examined the *Stellantchasmus* metacercariae from mullets, *Liza subviridis* (Fig 3). Because of the differences between fish species, the *Stellantchasmus* metacercariae that were found in the two fish species were not similar.

The results of this study suggested that these two trematodes species are different. Further, these differences should be confirmed by other scientific methods, such as experimental host infection, to discover adult or molecular method.

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