

SOME STUDIES ON METACERCARIAL INFECTION IN THE FRESH WATER FISH (*SCHILBE MYSTIS*) WITH POSSIBLE TRANSMISSION TO PIGEONS, AT GIZA, GOVERNORATE, EGYPT.

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SUMMARY

Metacercariae collected from a heavily and moderately infected *Schilbe mystis* at Giza, governorate were fed to young Pigeons (*Columbia livia domestica*). Indeed, *Stictodora tridactyla* (Martin and Kuntz, 1955), *Apophallus donicus* (Skrjabin and Lindtrop, 1919) and *Procerovum unum* (Onji and Mishio, 1916) were recovered from the intestinal mucosa, one week post infection. The recovery rate was 21.33%. The encysted metacercariae and adults were described.

INTRODUCTION

The role played by different species of Nile fishes in possibly transmitting parasitic diseases to mammals and birds has been recorded. Some trematodes from birds could infect human beings through the same source of infection, (Tadros and El-Mokaddem 1983).

The experimented parasitic worms of birds had attracted the attention of some workers as; Martin and Kuntz, (1955), Velasquez (1973), Abd-El-Salam et al., (1987), and Mahdy (1991), who described different trematode species recovered from birds after being fed on metacercariae collected from several fishes. The present work, aimed to add some knowledge about the role of metacercariae obtained from *Schilbe mystis*, when fed to Pigeons (*Columbia livia domestica*).

MATERIAL AND METHODS

A total of 20 fresh, heavily and moderately infested *Schilbe mystis* fishes were collected from

Giza, governorate markets. Pieces of one gram from fish muscles were compressed and examined microscopically for encysted metacercariae.

About 150 viable metacercariae were fed to three experimented young pigeons (50 metacercariae for each of three pigeons and 3 pigeons left as control). The droppings of pigeons were daily examined through the concentration flotation technique until eggs of trematodes appeared in the faeces. Three days later, they were sacrificed, their intestines were opened and examined for any trematodes. The latter were prepared for microscopic examination according to Kruse and Pritchard technique (1982). Measurements, drawings and microphotographs were prepared from mounted specimens. The identification of the discovered parasites was done according to Yamaguti (1958), Skrjabin (1964), and McDonald (1981).

RESULTS

The examination of 20 fishes (*Schilbe mystis*) showed that 17 were infested with encysted metacercariae with prevalence of 85%. Two of isolated encysted metacercariae were obtained. The first type was oval, measured 0.143-0.168 (mean 0.16 mm.) long and 0.114-0.119 (mean 0.116 mm.) wide. The cyst wall was double with the inner one was very near to the metacercaria. The metacercariae was elongated and U-shape inside the cyst wall. The oral sucker was nearly rounded, measuring 0.04-0.05 mm. in diameter, the ventral sucker lied in front of the excretory vesicle, oval and situated in the posterior end of the body. The vesicle was filled with spherical refractive excretory globules. (Fig. 4.A).

The second type of metacercaria was round to

oval and measured 0.30-0.51 (mean 0.43mm) in length and 0.35-0.42 (mean 0.37 mm) in width. the metacercaria was nearly round and measured 0.28-0.33(mean 0.33 mm.) in diameter. The oral sucker was round and measured 0.038-0.043 (mean 0.040mm.) while the ventral was situated at the middle measuring 0.057-0.071 (mean

0.063mm.). The cyst wall was double layered and contained characteristically light spots. (Fig. 4.B)

Three adult trematode worms were recovered from the small intestine of experimentally infested pigeons with viable encysted metacercariae collected from *Schilbe mystis*.

Table (1): Experimental feeding of isolated viable metacercariae to young pigeons (*Columba livia domestica*).

Fish species	No. of inf. Pigeons	No. of control Pigeons	Single dose cyst/ Pigeon	Total No. of worms recovered	Total recovery rate	Type of worms recovered		
						Stictodora	Apoph. allus	Procerovum
<i>Schilbe mystis</i>	1		50	10	20%	2	6	2
	1	3	50	13	26%	2	3	8
	1		50	9	18%	1	4	4
Total prevalence	3	3	150	32	21.33%	5 15.6%	13 40.6%	14 43.75

Abbreviations of trematodes

- O. S. : Oral sucker
- C. P. : cirrus pouch
- A. T. : anterior testis
- P. T. : posterior testis
- OV. : Ovary
- Ph. : pharynx
- A.C. : acetabulum
- S. R. : seminal receptacle
- V. L. : Vitelline follicle
- E. : egg.

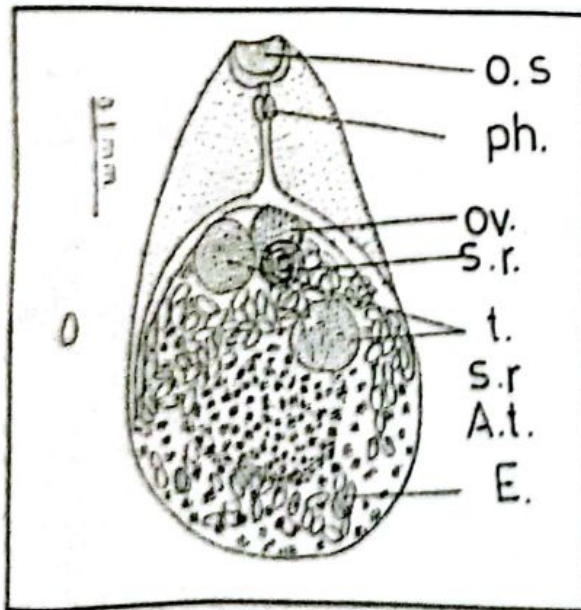


Fig. 1: *Stictodora tridactyla*

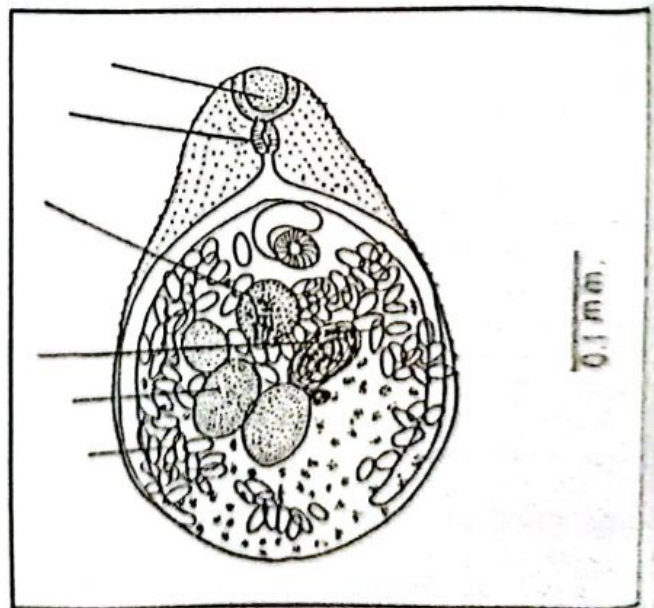


Fig. 2: *Apophallus donicus*.

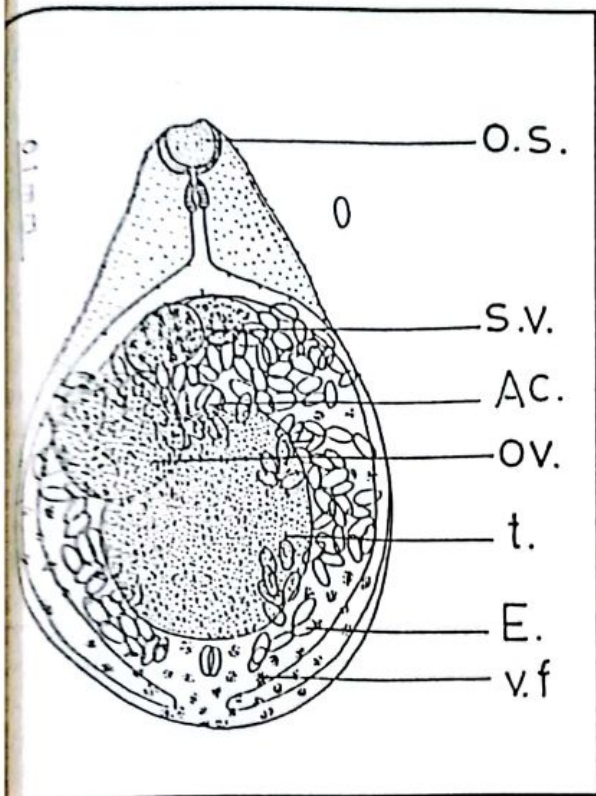


Fig. 3: *Procerovum varium*.

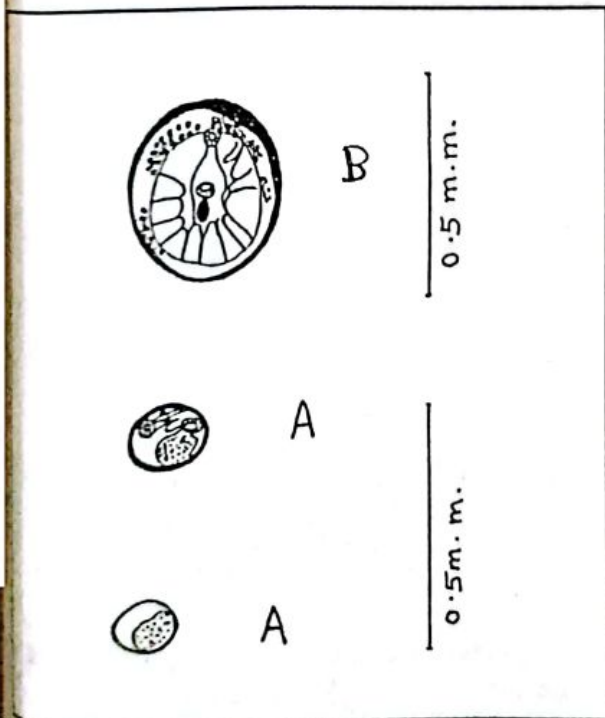


Fig. 4: (A&B)

- A) Encysted metacercaria (first type)
- B) Encysted metacercaria (second type)

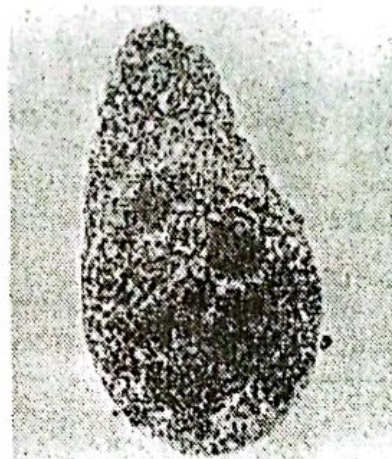


Photo (1): *Stictodora tridactyla* (X100)



Photo (2): *Apophallus donicus* (X 100)

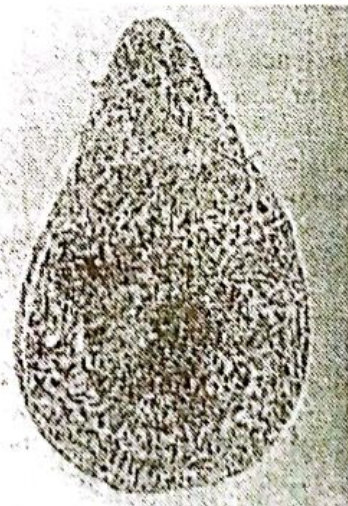


Photo (3): *Procerovum varium* (X100)

According to data shown in Table 1 & 2, the three types of isolated digenetic trematodes were identified as *Stictodora tridactyla*, *Apophallus donicus*, and *Procerovum varium*. Table (2) showed the characteristic features differentiating

(1976) obtained *S. tridactyla* from puppies and Kittens without mentioning the 2nd IH fish species. In 1987, Abd El-Salam mentioned the after feeding newly hatched one dya old chick with metacercariae from *Schilbe mystis* at Sohag Egypt-As well as, he reported that the P. P. P.

Table (2): Characteristic features differentiating the recovered trematodes from experimentally infected pigeons.

	<i>Stictodora tridactyla</i> (Martin and Kuntz, 1955)	<i>Apophallus donicus</i> (Skrjabin & Lindtrop, 1919)	<i>Procerovum varium</i> (Onji and Nishio, 1916)
Body Prepharynx Oesophagus	Pear shaped measures 0.011 from 0.5. 0.05mm.	Pear shaped absent 0.01mm.	Pear shaped measures 0.005 from oral sucker 0.038mm.
Testes	round, smooth, oblique and were post. to the bi- furcation of the intestinal coeca.	Oval, smooth, oblique and were located at the junction of the middle with the post. third of the body	Single testis is rounded in the middle of post. part of the body.
Ovary	rounded in shape and lies beside the anterior testis.	rounded in shape and lies between V. S. and the post testis	ovoid in shape and lies obliquely in-front of tes- tis.
Vitellaria	Start at level of the poste- rior testis	start at level of the posterior testis	start at level of the testis. In the post helf of the body.

the trematodes recovered from experimentally infested Pigeons.

The prevalence rates were 15.6%, 40.6% and 43.75% for *Stictodora tridactyla*, *Apophallus donicus* and *Procerovum variun*, respectively. The prepatent period was found to be one week for each trematode.

DISCUSSTION

Stictodora tridactyla (Martin and Kuntz, 1955) was recovered from the small intestine of the domestic fowl (*Gallus domsticus*) after experimental infection with metacercariae collected from *Aphanius fasciatus* fishes at Dakahlia Egypt. Martin and Kuntz, 1955 concluded that "natural hosts probably were piscivorous birds and possibly man", Fahmy et al.,

2 weeks, however in the present study, it was one week only. These findings indicated that the P. P. P. is varied in different hosts. The present recovered trematode coincides morphologically with the description of Fahmy et al., (1976) and Abd El-Salam et al., (1987).

The recovery rate of the worm, in the present work was 21.33%, which was greater than that given by Abd-El-Salam et al. (1987), who recorded it to be 1.77%.

The present specimens were slightly larger than the described by Abd-El-Salam et al. (1987). Probably that this might be related to the definitive host.

The present worker agreeded that, the public health importance of this trematode was similar

to heterophyid species in that it was of low host specificity and may easily be transmissible to man; an observation which was also previously mentioned by Martin and Kuntz, (1955) and Ilan Paperna, (1980).

Concerning, *Apophallus donicus* (Skrjabin and Lindtrop, 1919) and Mc-Donlad (1981) it was reported in the water fowl after experimental infection with different fresh water fishes. The present trematode was isolated from the small intestine of pigeons after being fed metacercariae collected from *Schilbe mystis* with prevalence rate of 43.7%. In addition, *Apophallus donicus* was morphologically coincided with the morphological characters of that reported by Mc-Donald (1981), except, that his specimens were larger being 1.3mm. while the present specimens were 0.43-0.46mm. Moreover, the number of eggs was much that given by Mc-Donald (1981) where he noticed only 34 eggs in the original worm.

According to the available literature, it appeared that this was the first record of *A. donicus* from experimentally infected pigeons with *Schilbe mystis* in Giza, Egypt.

Moreover, *Procerovum varium* (Onji and Nishio, 1916) was described in China and Japan by Kobayasi (1942), Chen (1949) and HSU (1950), followed by Pearson, (1964) who redescribed it from a water rat, (*Hydromys chrysogaster*) in Australia, noticing the separate ventral sucker, gonostyle and distribution of vitelline follicles. Velasquez (1973) redescribed it from experimental infection of dog, kitten and chick in Phillipine. The Phillipine material agreed with *Haplorchis sisoni* (Africa, 1938, Vesquez colet and Africa 1940) and with *P. varium* (Pearson, 1964) in most respects. However, Pearson (1964) mentioned differences in the length of the caeca which extended beyond the posterior border of the testis.

The present material agreed with *P. varium* (Velasquez, 1973) in most morphological characters, where the intestinal caeca extended beyond the posterior border of the testis. Moreover, the size of the trematode and the diameter of the testis in present specimens were

greater and the uterus had much eggs than these described by Velasquez, (1973). However this trematode was the first record of experimentally infecting pigeons from *Schilbe mystis* material in Giza, Egypt.

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