

معهد بحوث صحة الحيوان •

معمل بيطري سوهاج •

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### بعض الدراسات على طفيل الميتاسركاربا المتحوصل في

### أسماك الشبله النيلبي بمحافظة سوهاج

١- نسب الاصابة ومورفولوجيا طفيل الميتاسركاربا المتحوصل في نوع أسماك الشبله

نشأت عبدالمتعال ، فوزي عبدالسلام ، أحمد فتحي

تعتبر الأسماك من الصناعات المنتجة في مصر نتيجة للانفجار السكاني • وقد وجد أن أعدادا من الطفيليات المتحصلة في الأسماك النيلبية تنتقل الى الانسان والحيوان كعائل طبيعي لهذه الطفيليات مما جعل الانسان والحيوان عرضة للاصابة نظرا لاتساع مدى الاصابة بهذه الطفيليات وعدم تخصصها •

وفي هذه الدراسة محاولة لايجاد هذه الأطوار المتحصلة في العضلات والأجزاء الأخرى من أسماك الشبله النيلبي التي تم الحصول عليها من أسواق محافظة سوهاج • وقد وجد أن نسبة الاصابة بهذه الطفيليات ٧٠% في الأنسجة تحت الجلد ، العضلات ، اسفل الزعانف ، بينما الكبد ، الكليه الطحال ، الأعضاء الزكريه والانثوية ، أنسجة الأمعاء، والأنسجة المبطنه للتجويف البطني والمخ والأنسجة المحاطة بها خالية تماما من هذه الطفيليات المتحصلة • وقد تم عزل هذه الطفيليات المتحصلة ووجدت أنها ٥٣٩٠ حوصلة في الجرام الواحد من هذه الأسماك وقد صفت هذه الحويصلات الى نوعين تنتسب الى عائلتين " عائلة الهتروفيدي وعائلة السياتوكوتوليدي " •

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**SOME STUDIES ON METACERCARIAL INFECTION IN  
SCHILBE MYSTIS FRESH WATER NILE FISH AT SOHAG, PROVINCE, EGYPT  
INCIDENCE AND MORPHOLOGICAL CHARACTERS  
FOR METACERCARIAL INFECTION  
(With 5 Tables & 2 Plate)**

By  
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**SUMMARY**

Fish has become a highly productive industry in Egypt due to the pressure of a rapidly expanding human population. Nevertheless, a number of parasites with larval stages in fresh water Nile fish have a piscivorous mammalian carnivore as their normal final host and are able to infect man because of low host specificity of the adult stage. The present study attempts to find out any metacercarial indout any metacercarial infection in tissues or organs of Schilbe mystis collected from markets in Sohag province. The study showed that 70% of the infection was in subcutaneous tissue, muscles and base of fins, while liver, kidney, spleen, roos, gills, intestinal mucosa lining of body cavity and brain with its tissues surrounding it are free of the infection. The metacercarial isolation having 53.85 cysts per gram of fish meat that classified them into two types related to two families, Heterophyidae and Cyathocotylidae.

**INTRODUCTION**

During the course of a parasite survey in fishes from Sohag province, encysted metacercariae were detected. The incidence of infection by the encysted metacercariae of Tilapia nilotica, T.zilli, Mormyrus kannume, Schilbe mystis, Clarias lazera, Hydrocyon forskali and Alestes nurse ranged from 60% to 90% (FAHMY, et al. 1976). The aim of the present work is to study the incidence and morphological characters of metacercariae among Schilbe mystis in Sohag Province.

**MATERIAL and METHODS**

A total of 100 Schilbe mystis Nile fresh water fish was collected from Sohag province markets, a pparently health and fresh. The samples were packaged separately with a serial number in clean plastic bags. Each specimen was sent to Sohag Laboratory in a cool containers 4C° according to (JOHN, 1966). The dimensions of the fish specimens (Length, width and depth) were studied according to (PETER, 1981). Samples from the body surface, gills, eyes, mouth and fins were examined by trichinoscopy for metacercarial infection (JOHN, 1966). On the other hand metacercariae were collectd from the internal organs and examined by trichinoscopy according to MORISHITA, et al. (1965). In addition digestion technique according to OSHIMA, et al.

(1966) was sometimes applied. The isolated metacercariae were fixed in 10% formol-saline, stained with acid alum carmine and mounted (SOULSBY, 1982). Morphological characters were studied, drawing were made with the aid of camera lucida according to HAN PABERNA (1980) and Mahmoud (1983).

## RESULTS

The results are explained by tables as follows:

**Table (1):** Rate of infection with metacercariae (70%) and their average number per gram of fish meat 53.85.

**Table (2):** The average dimensions of morphological metacercarial cysts (Spherical 406 x 406u and Oval 280 x 350 u).

**Table (3):** Relation between infected fish length per cm and the number of infected fish.

**Table (4):** Relation between infected fish width per cm and the number of infected fish.

**Table (5):** The average dimensions of the heavily infected fish.

## DISCUSSION

The present studies revealed a rate of 70% metacercarial infection in Schilbe mystis fresh water Nile fish. The results pronounced a higher infection rate when compared with the rate of infection in other water Nile fishes in river Nile and lakes at lower and Upper Egypt, as shown by MAHMOUD (1983) he found that metacercarial percentage showed variation among Nile fish species, Clarias lazera (85%) and Mulletts (95%). Accordingly to HAN PABERNA (1980) the metacercarial percentage among Tilapia zilli and T.nilotica was (67% and 69%) respectively. WILLIAM and BEVERLY (1956) found that metacercarial percentage showed variation among Nile fish species, Sciana aquella (45%) and Solea vulgaris (50%).

The mean number of metacercarial infection per gram of fish tissue approximate to 53.85 metacercariae in fish specimens examined (Table 1). These results recorded a moderate percentage of metacercarial infection if compared with the percentage of other infected fresh water Nile fish species, Clarias species up to 300 cysts per gm, Tilapia species up to 100 cysts per gm and Mulletts up to 800 cysts per gm (HAN PABERNA, 1980). However, in the present study, five specimens recorded a hyper metacercarial rate of infection up to 130 cysts per gm. In this study the mean value of metacercariae was around 53.85 cysts per gm (Table 1). The morphological characters of metacercariae are depended on studies after it has been fixed, stained and mounted (HAN PABERNA, 1980) and (SOULSBY, 1982). The metacercarial cyst is characterized by double contour, thick fibrous surface, while the inner one is thin and membranous. The cercariae are curled structures inside the cyst, moving within a fluid medium. The morphological character of the metacercarial cyst wall was either oval or spherical in shape (Table 2, Plate 1&2). This may coincide with the findings of EL-MOSSALAMI & SHERIF (1964), HAN PABERNA (1980) and MAHMOUD (1983) in Clarias lazera.

Our studies have pronounced heavy infected fishes of moderate size, measuring 17.85 cm in its mean length (Table 3, 4 cm in its mean width (Table 4) and 4-48 cm in its mean depth (Table 5), while a lot of small sized fresh water fishes are a always recommended with a highly

## STUDIES ON METACERCARIAL INFECTION

infection rate (MARTIN & KUNTZ, 1955) and (HAN PABERNA, 1980). The presence of Gastropoda near the banks of river and trickles continuously released a huge number of cercariae (PETER, 1981), that attack the integument, subcutaneous tissues, eyes, gills and other organs (MARTIN & KUNTZ, 1955). Metacercarial isolation has been done in the present study from subcutaneous tissues, adipose tissues near the base of fins, muscles (hypaxial and epiaxial muscles), while brain, gills, liver, spleen, kidney and intestinal surface are free from infection which coincides with MARTIN & KUNTZ (1955) and disagreement with HAN PABERNA (1980) and EL-MOSSALAMI and SHERIF (1964) who found that gills, eyes, skin, brain and tissue surrounding them are highly infected. The present studies may throw the light on the possibility that man may be easily infected with the metacercariae of Prohemistomum vivax. This view is supported by KHALIL (1932). Those transmitted to wild birds as members of family Diplostomatidae are recorded naturally in milvus migrans aegypticus, WILLIAM & BEVERLY (1956). Experimentally infect cats & dogs, MAHMOUD (1983) which indicate that many types of fish metacercariae may be easily transmitted to animals and birds.

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**Table (1)**  
**Rate of infection with metacercariae and their average number pergram of meat**

Fish species	Number of metacercariae Per gram					Mean X	Sample Size	Total infected Fish	Percentage of infected
	-15*	-30	-45	-60	-75				
Schilbe	17	21	6	4	-	53.90	100	70	70%
mystis	-90	-105	-120	-135	-				
	-	14	3	5					

\* Interval 15

**Table (2)**  
**The average dimensions of morphologically  
 isolated metacercarial types**

Plate	Morphological types *	mean of diameter/M	
1	Spherical	406	406
2	Oval	280	350

\* Morphological types.

The metacercarial cyst has double contour. The outer surface is characterized by thick fibrous layers while the inner one is thinner membranous. The curled cercariae showed inside the cyst structure and pronounced a metabolized fluid. The morphological types have been seemed in two types belonging to Heterophyidae and cyathocotolydae.

## STUDIES ON METACERCARIAL INFECTION

Table (3)  
Relation between infected fish length/cm  
and the number of infected fish

Fish specie	Infected fish length/cm			mean X	Sample size	Total infected fish	%
	-10*	-20	-30				
Schilbe mystis	-	56	14	17.95	100	70	70

\* Interval 10

Table (4)  
Relation between infected fish width/cm  
and the number of infected fish

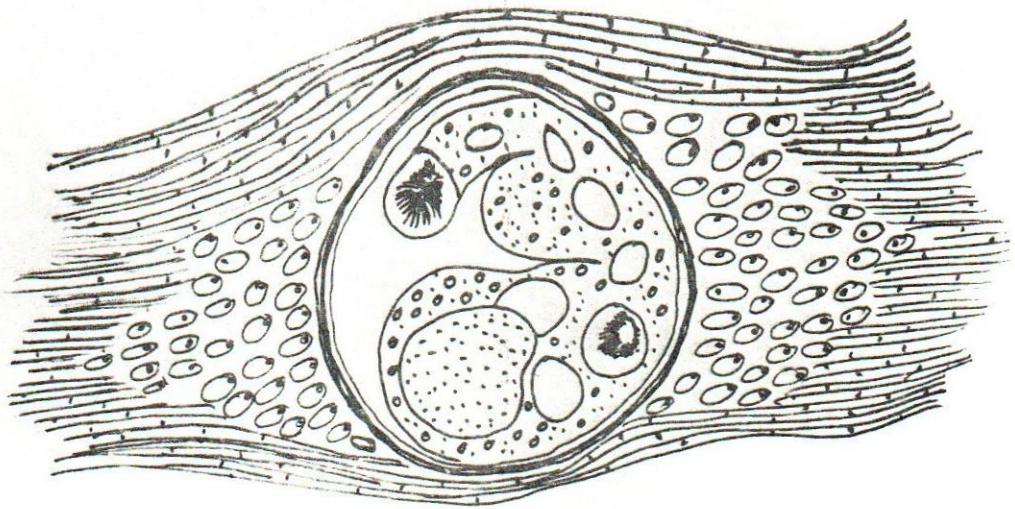
Fish species	Infected fish length/cm		mean X	sample size	Total infected fish	%
	-5*	-10				
Schilbe mystis	58	12	4	100	70	70

\* Interval 5

Table (5)  
The average dimensions of the heavily infected fish

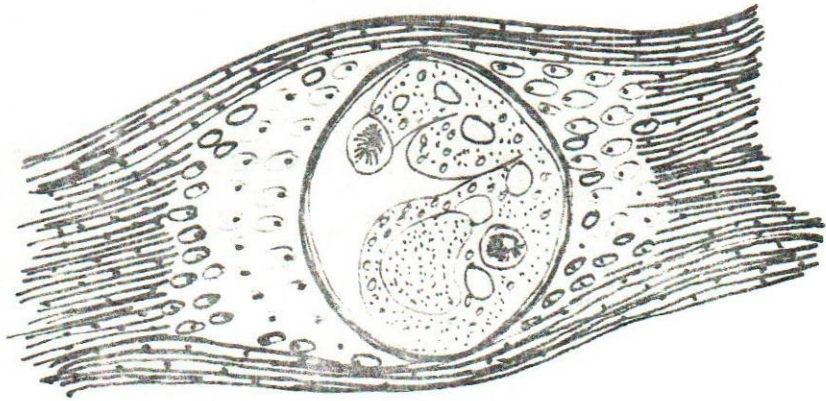
Fish species	Length/cm	Width/cm	Depth/cm
Schilbe mystis	17.95	4	4.48

Plate (1)



0.2 mm

Plate (2)



0.2 mm