معهد بحوث صحة الحيوان

معمل بيطرى سوهاج

رئيس المعمل: د. نورى أحمد عبد السلام

بعض الدراسات على طفيل الميتانسكاربا المتحول في
أسماك الشبلة النيلي بمحافظة سوهاج

1- نسب الأصابة ومورفولوجيا طفيل الميتانسكاربا المتحول في نوع أسماك الشبلة

نشأت عبدالمطايل ، نورى عبد السلام ، أحمد فتحي

تعتبر الأسماك من الصناعات المنتجة في مصر نتيجة للانفجار السكاني. وقد وجد أن أعدادهم في الطفيليات المتحولة في الأسماك النيلية تنتقل إلى الإنسان والحيوان كعامل طبيعي لهذه الطفيليات مما جعل الإنسان والحيوان عرضة للإصابة نظراً لانتشارها.

في هذه الدراسة محاولة إيجاد هذه الأطوار المتحولة في العضلات والأجزاء الأخرى من أسماك الشبلة النيلية التي تم الحصول عليها من أسواق محافظة سوهاج. وقد وجد أن نسبة الأصابة بهذه الطفيليات 70% في الأنسجة تحت الجلد، العضلات، الأمعاء، الزعانف، بينما الكبد، الكليه، القلب، الأعضاء التناسلية والأنثوية. أنسجة الأمعاء، الأنسجة المبطنة للتجويف البطني، والمخ والأنسجة المجاورة بها خالية تماماً من هذه الطفيليات المتحولة. وقد تم فرز هذه الطفيليات المتحولة ووجدت أنها 85.6%

حوصلة في الجرام الواحد من هذه الأسماك وقد صفت هذه الحويصلات إلى نوعين تنتسب إلى عائلتين "عائلة الهتروفيدي وعائلة السياتوكيونتيدي".
Animal Health Research Institute,  
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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 ind out 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, heart, 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 Cyathocotyidae.

INTRODUCTION

During the course of a parasite survey in fishes from Sohag province, encysted metacercarialae were detected. The incidence of infection by the encysted metacercarialae of Tilapia nilotica, T. zilli, Mormyrus kamnun, Schilbe mystis, Clarias lazera, Hydrocynus forskali and Aistes nune ranged from 60% to 90% (FAHMY, et al. 1976). The aim of the present work is to study the incidence and morphological characters of metacercarialae 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 apperently 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 metacercarialae were collected 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 406μ and Oval 280 x 350 μ).

**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 mystic* 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 *Mullct* (95%). Accordingly to HAN PABERNA (1980) the metacercarial percentage among *Tilapia zillii* and *T.nilotica* was (67% and 69%) respectively. WILLIAM and BEVERLY (1956) found that metacercarial percentage showed variation among Nile fish species, *Sclani aequil* (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 *Mullct* 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 curied 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 1A2). 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
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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 epaxial 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 SHERF (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 infect 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 muso 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.

REFERENCES


Table (1)
Rate of infection with metacercariae and their average number per gram of meat

<table>
<thead>
<tr>
<th>Fish species</th>
<th>Number of metacercariae Per gram</th>
<th>Mean</th>
<th>Sample</th>
<th>Total infected Fish</th>
<th>Percentage of infected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schilbe</td>
<td>-15* -30 -45 -60 -75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mystis</td>
<td>17 21 6 4</td>
<td>53.90</td>
<td>100</td>
<td>70</td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td>-90 -105 -120 -135</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14 3 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Interval 15

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

<table>
<thead>
<tr>
<th>Plate</th>
<th>Morphological types *</th>
<th>mean of diameter/M</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Spherical</td>
<td>406</td>
</tr>
<tr>
<td>2</td>
<td>Oval</td>
<td>280</td>
</tr>
</tbody>
</table>

* 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 Heterophylidae and cyathocotyldae.
STUDIES ON METACERCARIAL INFECTION

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

<table>
<thead>
<tr>
<th>Fish species</th>
<th>Infected fish length/cm</th>
<th>mean X</th>
<th>Sample size</th>
<th>Total infected fish</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schilbe mystis</td>
<td>-10*</td>
<td>-20</td>
<td>-30</td>
<td>17.95</td>
<td>100</td>
</tr>
</tbody>
</table>

* Interval 10

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

<table>
<thead>
<tr>
<th>Fish species</th>
<th>Infected fish length/cm</th>
<th>mean X</th>
<th>Sample size</th>
<th>Total infected fish</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schilbe mystis</td>
<td>-5*</td>
<td>-10</td>
<td>4</td>
<td>100</td>
<td>70</td>
</tr>
</tbody>
</table>

* Interval 5

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

<table>
<thead>
<tr>
<th>Fish species</th>
<th>Length/cm</th>
<th>Width/cm</th>
<th>Depth/cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schilbe mystis</td>
<td>17.95</td>
<td>4</td>
<td>4.48</td>
</tr>
</tbody>
</table>