دراسة على ميتسركاريا الأسماك النيلية 

بمحافظة المنيا - جمهورية مصر العربية

محمد النفار، جمال الشهاوى

تبين من فحص بعض الأسماك النيلية وجود خمسة أنواع من الميتسركاريا. تصب عضلات الكبد وكلى ستة أنواع من الأسماك هي البلطي النيلي، البلطي الجاليلي، البرموف، البياض، البيت، البوبيز، صيدت من مناطق مختلفة بمنطقة النيل بمحافظة المنيا. والميتسركاريا هي:

ميتسركاريا فيفاكس، ميتسركاريا هابلونكس بوميليو، كلينوستوماتيد ميتسركاريا، كلينوستوماتيد ميتسركاريا، سيوند بوميليو، ميتسركاريا هابلونكس بوميليو، ميتسركاريا هابلونكس بوميليو، ميتسركاريا هابلونكس بوميليو، ميتسركاريا هابلونكس بوميليو، ميتسركاريا هابلونكس بوميليو، ميتسركاريا هابلونكس بوميليو، ميتسركاريا هابلونكس بوميليو، ميتسركاريا هابلونكس بوميليو، ميتسركاريا هابلونكس بوميليو، ميتسركاريا هابلونكس بوميليو، ميتسركاريا هابلونكس بوميليو.

وقد تبين أن سمنة البياض تعمل كعامل ناقل جديد لميتسركاريا فيفاكس، وكذلك سمنة البيت، والبياض ت تعمل كعامل ناقل جديد لميتسركاريا فيفاكس. كما أن وجود سرركاريا فيفاكس في كبد وكلى الأسماك المصابيت تكون مناطق معيشية جد بده للميتسركاريا. تم دراسة نسبة الإصابة والانتشار والتفاعل والتكاثر بالميتسركاريا في المناطق المختلفة من الأسماك التي درست.
STUDIES ON THE METACERCARIAE OF THE NILE FISHES
AT EL-MINIA PROVINCE, A.R. EGYPT
(With 4 Tables and Two Figures)

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SUMMARY

Examination of the fishes revealed the presence of five types of metacercariae infesting six species of fishes namely Tilapia nilotica, T. galilae, Clarias lazera, Bagrus bayad, Mormyrous kannume and Schilbe mystus. The metacercariae are: metacercaria vivax, metacercaria of Haplorchis pumilio, clinstomatid metacercaria, cyanodiplostomatid metacercaria and diplostomulum metacercaria.

The incidence, distribution, and seasonal variation of the metacercariae in different regions of the fish examined were studied.

INTRODUCTION

The role played by fish as transport hosts of helminth parasites of birds and animals have been the subject of considerable study. The opportunities of this study are limitless, and have attracted the attention of many investigators due to the importance of fish as a source of animal protein.

The present work aims to the following:

1- Identification of the different metacercariae found in the fishes which inhabit the part of the Nile passing through El-Minia Province.

2- Study of the incidence, density, distribution and seasonal variations of the metacercariae in different regions of the fish examined.

MATERIALS and METHODS

A total of 2323 fish were caught from different localities of the River Nile at El-Minia Province. The fish examined representing 6 species namely Tilapia nilotica, T. galilae, Clariss Lazera, Bagrus bayad, Mormyrous kannume and Schilbe mystus.

The fishes were examined first by the naked eye to show any macroscopic metacercariae, then the examination was carried out by taking small snips of the muscles from different regions of the body especially the head, trunk and tail. Each snip was compressed between

two slides and examined under a binocular dissecting microscope to look for metacercariae and the prevalence of infection was calculated. The metacercariae were isolated by tissue dissection.

The intensity of infection in the different regions was estimated in 5% of the fish by examining one gram of muscle tissue from each fish and pressed between two slides and the encysted metacercariae were counted, described and illustrated after staining with acetic acid alum carmine and mounted in Canada balsam. Any detected metacercariae were drawn by the aid of a camera lucida and the measurements were in microns.

RESULTS

The incidence of metacercariae in the fish examined:

On dealing with the infection in general, table (1) give a summary of the fish examined with metacercariae collected from them. The table included 2323 fishes of which 665 Tilapia nilotica and T. galilae, 560 Clarias lazera, 364 Bagrus bayad, 344 Mormyrus kannume, and 390 Schilbe mystus.

It was found that out of 2323 fish examined, 1914 (82.39%) were infested with one or more species of encysted metacercariae.

The data indicates that highest incidence of infestation with metacercariae was found in Clarias lazera (90.89%) followed by Schilbe mystus (87.44%), Bagrus bayad (82.42%), Tilapia nilotica and T. galilae (76.39%) and lastly Mormyrus kannume (71.51%).

Table (2) and Fig. (1) show the relative incidence of metacercariae in the fish examined during the different seasons. The highest incidence with metacercariae was found in summer and spring which was 90.25% and 83.62% respectively. The lowest incidence (67.80%) was found in winter.

The highest incidence with metacercariae in different seasons was found in Clarias lazera which is represented by 98.48% in summer, 91.50% in spring, 88.39% in autumn and 77.30% in winter.

The metacercariae were found in the superficial layers of the muscles all over the body especially in head, trunk and caudal regions. They were also found in other organs such as liver and kidneys.

Types of metacercariae in different fish examined:

Five types of metacercariae were met with in the present investigation. Table (1) indicates that every type of metacercariae may infest more than one species of fish hosts, for example, metacercaria vivax was found in Tilapia nilotica, T. galilae, Clarias lazera, Bagrus bayad, Mormyrus kannume and Schilbe mystus. Metacercariae of Haplorchis pumilio was found in Tilapia nilotica, T. galilae, Bagrus bayad and Schilbe mystus. A single host may harbour more than one type of metacercariae namely metacercaria vivax, metacercaria of Haplorchis pumilio, clinostomatid metacercaria and diplotoxonulom metacercaria. Clarias lazera harbours metacercaria vivax and the cyhodiplodiomtlid metacercaria; Bagrus bayad and Schilbe mystus harbour metacercaria vivax and the metacercaria of Haplorchis pumilio.
The density of metacercariae in different regions of the fish examined is shown in table (3) and Fig (2) and is represented by the number of metacercariae per gram of muscle tissue.

Table (3) indicates that four types of metacercariae (metacercaria vivax, metacercaria of Haplorchis pumilio, clinostomatid metacercaria and diplostomulum metacercaria were found in the muscles of Tilapia nilotica and T. gailliae. Sometimes the metacercariae were found in the internal organs e.g. liver and kidney. The highest density was found in the head region and represented by 73 - 117 (98) metacercariae and the lowest was found in the trunk region and is represented by 50 - 94 (66) metacercariae while in the caudal region, the density was found 62 - 104 (81) metacercariae (table 3, fig. 2).

The same table indicates that two types of metacercariae (metacercaria vivax, and cynodiplostomatid metacercaria) were found in the muscles of Clarias lazera. The density was higher in the head region which varies between 119 - 202 (148) metacercariae per gram tissue, then the trunk region which contains 102 - 168 (132) metacercariae per gram tissue and the lowest was found in the caudal region which contains 95 - 138 (114) metacercariae per gram tissue. These metacercariae were rarely found in the liver and kidney of Clarias lazera.

Table (3) also indicates that two types of metacercariae (metacercaria vivax and metacercaria of Haplorchis pumilio were found in the muscles of Bagrus baya. They were found in the head, trunk and caudal regions, and in the muscles of buccal cavity. The density was higher in the trunk region which was ranged between 119 - 167 (139) metacercariae per gram tissue, then the tail region which is about 96 - 137 (120) metacercariae per gram tissue and lastly the head region especially near the base of the pectoral fins which ranged between 81 - 124 (102) metacercariae per gram tissue (table 3, fig. 2).

The same table indicates that one type of metacercariae (metacercaria vivax) was found in the superficial muscles of Mormyrus kanume. The density was higher in the caudal region which was 61 - 107 (86) metacercariae per tissue, then trunk region which contains 49 - 98 (72) metacercariae per gram tissue and the lowest was found in the head region especially near the base of pectoral fins which was represented by 42 - 77 (55) metacercariae per gram tissue (table 3, fig 2).

Table (3) also indicates that two types of metacercariae (metacercaria vivax and metacercaria of Haplorchis pumilio were found in the muscles of Schilbe mystus. The highest density of metacercariae was found in the trunk region which contains 104 - 147 (130) metacercariae per gram tissue, then the caudal region which contains 99 - 136 (116) metacercariae per gram tissue, and lastly the head region especially near the base of the pectoral fins which contains 79 - 120 (96) metacercariae per gram tissue (table 3, fig. 2).

Occasionally metacercaria vivax and diplostomulum metacercaria were found in the stomach of one specimen of Schilbe mystus which contains a semidigested young Tilapia nilotica.

The comparison between the 5 types of metacercariae is shown in table 64).

**DISCUSSION**

The result of the present study revealed the presence of 5 types of metacercariae namely metacercaria vivax, metacercaria of Haplorchis pumilio, clinostomatid metacercaria, cynodiplostomatid metacercaria and diplostomulum metacercaria recovered from the fishes of the River Nile at El-Minia Province which constitute a new locality for these metacercariae.

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The results also revealed the presence of metacercariae in 6 species of fishes namely Tilapia nilotica, T. galilae, Clarias lazera, Bagrus bayad, Mormyrus kannume and Schilbe mystus. The metacercariae of Bagrus bayad were studied for the 1st time by the present authors.

The results indicates that the incidence of infection with metacercariae in all the fish examined was 82.39 % and the highest incidence of infestation was found in Clarias lazera (90.89 %) followed by Schilbe mystus (87.44 %), Bagrus bayad (82.42 %), Tilapia nilotica and T. galilae (76.39 %) and lastly Mormyrus kannume (71.51 %) (table 1).

Such results are nearly similar with that recorded by EL-NAFFAR (1970) and HASSAN (1980) for the metacercariae of Schilbe mystus, Tilapia nilotica and Mormyrus kannume.

Table (2) revealed that the highest incidence with metacercariae was found in summer and spring (90.25 %) and (83.62 %) respectively. Such results are coincide with that reproted by BOULOS (1979) for Tilapia nilotica infected with metacercariae of Pygidiosis genata which he stated that the prevalence of infection was higher during the summer months than other seasons.

Table (1) shows that 4 types of metacercariae were found in the muscles and kidneys of Tilapia nilotica and T. galilae, two types in Clarias lazera, two types in Bagrus bayad, one type in Mormyrus kannume and two types in Schilbe mystus which coincide with the results obtained by HASSAN (1980) and EL-NAFFAR et al. (1985) for the metacercaria of the 1st three types of fishes, but in contrast with them for the metacercaria of Schilbe mystus in which they reproted that one type of metacercaria was found in Schilbe mystus.

The density of the metacercariae in different region of the fish examined was studied in the present work. It was found the highest density with metacercariae in Tilapia nilotica and T. galilae nilotica and T. galilae was found in the head region and the lowest in the trunk region, such results are coincide with the results of BOULOS (1979) which stated that the metacercariae of Pygidiosis genata in Tilapia nilotica was found mostly in the head region followed by the tail and body of the fish.
METACERCARIAE OF THE NILE FISHES

REFERENCES


Table (1)

The relative incidence of the fish examined with the metacercariae collected from them.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Total number</th>
<th>Type of metacercariae</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>examined</td>
<td>No.</td>
</tr>
<tr>
<td><strong>Family Cichlidae</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tilapia nilotica</td>
<td>665</td>
<td>508</td>
</tr>
<tr>
<td>Tilapia galilae</td>
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<td></td>
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<td><strong>Family Claridae</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clarias lazera</td>
<td>560</td>
<td>509</td>
</tr>
<tr>
<td><strong>Family Bagridae</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bagrus bayad</td>
<td>364</td>
<td>310</td>
</tr>
<tr>
<td><strong>Family Mormyridae</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mormyrus kannume</td>
<td>344</td>
<td>246</td>
</tr>
<tr>
<td><strong>Family Schilbeidae</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schilbe mystus</td>
<td>390</td>
<td>341</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2323</td>
<td>1914</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Season</th>
<th>B. mylius</th>
<th>P. galilee</th>
<th>D. b. b.</th>
<th>C. latera</th>
<th>T. otto</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td>90</td>
<td>96</td>
<td>72</td>
<td>77</td>
<td>69</td>
<td>365</td>
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<td>Winter</td>
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<td>69</td>
<td>96</td>
<td>77</td>
<td>69</td>
<td>365</td>
</tr>
<tr>
<td>Autumn</td>
<td>95</td>
<td>71</td>
<td>80</td>
<td>72</td>
<td>77</td>
<td>469</td>
</tr>
<tr>
<td>Summer</td>
<td>77</td>
<td>69</td>
<td>72</td>
<td>77</td>
<td>69</td>
<td>469</td>
</tr>
</tbody>
</table>

The relative incidence of metacercariae in different species of fish examined during different seasons.

Table (2)

Metacercariae of The Nile Fishes

33
Table (3)
The number and average number of metacercariae per gram of muscle tissue from head, trunk and caudal regions of the different fish examined

<table>
<thead>
<tr>
<th>Types of fish</th>
<th>Type of metacercariae</th>
<th>Average number of metacercariae per gram tissue from fish</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>head region</td>
</tr>
<tr>
<td>Tilapia nilotica</td>
<td>metacercaria vivax</td>
<td>73-117(98)</td>
</tr>
<tr>
<td>tilapia galilae</td>
<td>metacercaria of Haplorchis pumilio, oligostomatid metacercaria and diplodistomulus metacercaria.</td>
<td></td>
</tr>
<tr>
<td>Clarias lazera</td>
<td>metacercaria vivax and cynodiplodistomatid metacercaria.</td>
<td>119-202(148)</td>
</tr>
<tr>
<td>Bagrus bayad</td>
<td>metacercaria vivax and metacercaria of Haplorchis pumilio.</td>
<td>81-124(102)</td>
</tr>
<tr>
<td>Mormyrus kannume</td>
<td>metaceroaria vivax</td>
<td>42-77(155)</td>
</tr>
<tr>
<td>Schilbe mystus</td>
<td>metacercaria vivax, and metacercaria of Haplorchis pumilio.</td>
<td>79-120(96)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Mustard</th>
<th>Keyhole</th>
<th>Inconspicuous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>Mustard</td>
<td>Inconspicuous</td>
<td></td>
</tr>
<tr>
<td>Yellow</td>
<td>Keyhole</td>
<td>Inconspicuous</td>
<td></td>
</tr>
<tr>
<td>Brown</td>
<td>Keyhole</td>
<td>Inconspicuous</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>Mustard</td>
<td>Keyhole</td>
<td></td>
</tr>
</tbody>
</table>

**Table (4)**

**Comparison between the 5 types of metacercariae (measurements are in microns)**
Fish examined

muscle in each region of ten fish of different species of

Fig. 2: The relative incidence of metacecariae of

The average number of metacecariae per gram of muscle.

Schilbe myurus
Mormyrus kannume
Bagrus barychelus
Clariga lazerana
Filaria nilotica