

***Hysterothylacium* sp. LARVAE (NEMATODA: ANISAKIDAE) IN *Micropogonias furnieri* (SCIAENIDAE) FROM RIO GRANDE DO SUL COAST, BRAZIL**

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ABSTRACT

The presence of *Hysterothylacium* sp. larvae parasites of *Micropogonias furnieri* from the Rio Grande do Sul State coast, Brazil is recorded by the first time. In 103 examined hosts 38 (36,89%) presented *Hysterothylacium* sp. larvae in the host intestine, intestinal caecum, stomach, celomatic cavity, liver or spleen. The morphology and measures of larvae were similar to *Hysterothylacium* MD *sensu* Deardorff & Overstreet, 1982. This is the first record of *Hysterothylacium* in the Rio Grande do Sul Coast of and *M. furnieri* is a new host for this genus.

KEY WORDS: Anisakidosis, Fish parasite, Patos Lagoon, Parasitic diseases, Public health.

RESUMO

Larvas de *Hysterothylacium* sp. (Nematoda: Anisakidae) em *Micropogonias furnieri* (Sciaenidae) do Litoral do Rio Grande do Sul, Brasil

A presença de larvas de *Hysterothylacium* sp. parasitando *Micropogonias furnieri* coletados na litoral do Estado do Rio Grande do Sul, Brasil é relatada pela primeira vez. Em 103 hospedeiros examinados, 38 (36,89%) apresentavam larvas de *Hysterothylacium* sp. no intestino, ceco intestinal estômago, cavidade celomática fígado ou baço. A morfologia e medidas destas larvas são semelhantes a *Hysterothylacium* MD *sensu* Deardorff & Overstreet, 1982. Este é o primeiro registro de *Hysterothylacium* para a costa do Rio Grande do Sul e *M. furnieri* é novo hospedeiro para este gênero.

PALAVRAS-CHAVE: Anisakidosis, Parasitas de peixe, Lagoa dos Patos, Doenças de peixes, Saúde pública.

1 – INTRODUCTION

Anisakidae (Railliet & Henry, 1912) (Nematoda) are important agents of parasitic diseases in humans, known as anisakidosis (Ubeira *et al.* 2000). This zoonosis has gained relevance due to the popularization of food based on raw fish or insufficiently cooked meat (McCarthy & Moore 2000, Thompson 2001). Among other Anisakidae, *Hysterothylacium* Ward & Magath, 1917 has been registered in several parts of the world, such as Chile (Carvajal & González 1990), Brazil (Eiras & Rego 1987), Kuwait (Petter & Sey 1997), Yugoslavia (Petter & Radujkovic 1986), Japan (Yoshinaga *et al.* 1989), United States (Moser & Hsieh 1992) and *H. aduncum* is cosmopolitan (González & Carvajal 1994).

Reports of hemorrhagic lesions in the primates stomach caused by *Hysterothylacium* were presented by Overstreet & Meyer (1981). For this reason, some of the species of this genus have been considered as being of zoonotic interest (Deardorff & Overstreet 1981a). *Hysterothylacium* are parasites of several freshwater and marine fish families (Deardorff & Overstreet 1981a, b), and some species can occur in both (Brizzola & Tanzola 1995).

Hysterothylacium under natural conditions reach sexual maturity in the digestive tract of bony fish (Køie 1993) or in marine mammals (Deardorff & Overstreet 1982). Copepod, polychaet and other invertebrates are frequently used as intermediate hosts, and their larvae can also occur encapsulated in fishes (Yoshinaga *et al.* 1989, González 1998, Køie 1993). Some studies have been carried out on the importance of *Hysterothylacium* in fish cultures (González & Carvajal 1994; Carvajal *et al.* 1995, González 1998).

Despite Deardorff & Overstreet (1981a) definition of the status of *Hysterothylacium*, some doubts remain on the validity of similar genus as *Thynnascaris* Dollfus, 1933, *Contraecum* Railliet & Henry, 1912 and *Hieringascaris* Pereira, 1935 (Balbuena *et al.* 1998, Martins *et al.* 2000). Therefore, it is difficult to confirm previous records in Brazil or in other parts of the world. There are records in South America as *H. fortalezae* (Klein, 1973) by Klein (1973) and Guimarães & Cristofaro (1974), *H. rhamdiae* Brizzola & Tanzola, 1995 by Brizzola & Tanzola (1995), *H. patagonense* Moravec, Uruwa & Coria, 1997 by Moravec *et al.* (1997), *H. geshei* Torres, Andrade & Silva, 1998 by Torres *et al.* (1998). Several other records are identified only as *Hysterothylacium* sp. (Eiras & Rego 1987, Carvajal & González 1990, Torres *et al.* 1992, 1998, Gonzalez & Carvajal 1994, Torres 1995).

In Brazil, *Hysterothylacium* larvae from marine hosts, was reported in *Trichiurus lepturus* (Linnaeus, 1758)

(Trichiuridae) and *Pagrus pagrus* (Linnaeus, 1758) (Sparidae) from Rio de Janeiro coast (Eiras & Rego 1987, Silva *et al.* 2000). Records of *Hysterothylacium* larvae also was made to a variety of freshwater fishes of different families from the Paraná River (Moravec *et al.* 1993) and in *Plagioscion squamosissimus* (Heckel, 1840) (Sciaenidae) from Volta Grande reservoir in Minas Gerais state, but as *Thynnascaris* sp. (Martins *et al.* 2000). The present study takes into account the ideas of Deardorff & Overstreet (1981a) and Petter & Sey (1997) about the validity of *Hysterothylacium*.

This study presents the description, morfometry and drawings of *Hysterothylacium* sp. larvae from *Micropogonias furnieri* (Desmarest, 1823) (Sciaenidae) captured in the coast of Rio Grande do Sul, a fish which is frequently consumed by Brazilians.

2 – MATERIAL AND METHODS

One hundred and three specimens of *M. furnieri* (9.5 to 59 cm standard length), collected by the local fishery industry and in Cassino beach, in the state of Rio Grande do Sul (32°20'S; 52°00'W) were examined. All viscera and two portions chosen randomly, equivalent to 5% of the muscles of each host, were examined. The nematodes were fixed in AFA (ethanol, formalin, acetic acid) (Humanson 1979). Some specimens were stained with Semichon carmine, clarified in beechwood creosote and mounted in Canada balsam, for permanent preparation. Another were analyzed in semi-permanent preparations, with Aman lactofenol and a drop of picric acid. Drawings were made using an optic microscope with drawing tube. The measurements are in millimeters (average, followed by the smallest and larger value in parentheses). The prevalence was calculated according to Busch *et al.* (1997). Representative specimens were deposited in the Instituto Oswaldo Cruz Helminthological Collection (CHIOC) in Rio de Janeiro, Brazil.

3 – RESULTS

Description: (Based on 181 specimens, 10 measurements) Body, 2.83 (1.65 - 4.05) length by 0.07 (0.05 - 0.1) width; 39.2 (33 - 47) times the width in the total length. Cuticle with fine lateral alae along all length of the body. Oesophagus 0.26 (0.17 - 0.36) length by 0.03 (0.02 - 0.04) width, with the same diameter along the whole length, corresponding 10.72 (8.98 - 12) times the total length. Ventriculus oval, 0.36 (0.03 - 0.05) length by 0.03 (0.02 - 0.04) width. Ventricular appendage posterior extended, 0.30 (0.19 - 0.42) length by 0.04 (0.01 - 0.06) width, 1.14 (0.92 - 1.28) times longer than the oesophagus length and 5.10 (3.18 - 6.90) times longer than the intestinal cecum length. Intestinal cecum anteriorly projected, 0.06 (0.05 - 0.07) length. Tail conical, 0.10 (0.07 - 0.17) length, tipped with a single minute thorn. Four oblong rectal glands.

Taxonomic summary

Host: *Micropogonias furnieri* (Desmarest, 1823)

Site of infection: Intestine, intestinal caecum, stomach, coelomatic cavity, liver and spleen.

Prevalence: 36,89%.

Locality: Rio Grande, Rio Grande do Sul State, Brazil.

Specimens deposited: CHIOC. 36223a-c.

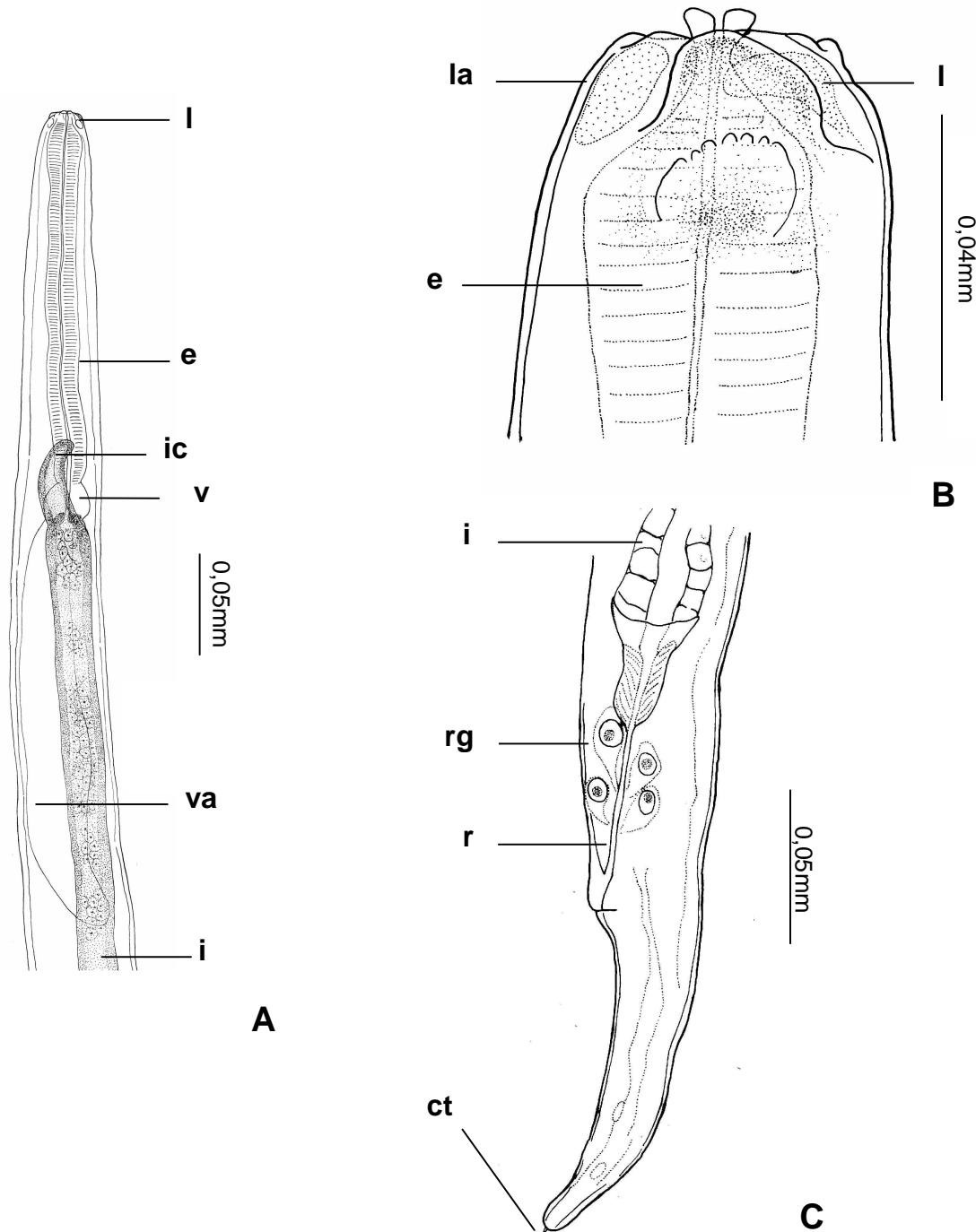


FIGURE 1 – *Hysterothylacium* sp. larvae. A. Anterior portion; B. Mouth region; C. Tail. ct – caudal thorn; e – esophagus; i – intestine; ic – intestinal cecum; l – lip; la – lateral alae; r – rectum; rg – rectal glands; v – ventriculus; va – ventricular appendage.

4 – REMARKS

Larvae measurements of the present study are similar to *Hysterothylacium* KB described by Petter & Sey (1997) and especially with *Hysterothylacium* MD *sensu* Deardorff & Overstreet (1981b) (Tables 1 and 2). The total length of larvae and the length of internal structures are larger in the larvae described by Petter & Sey (1997). *Hysterothylacium* MD larvae measurements are especially similar to the larvae found in this study. However, the measurement range of *Hysterothylacium* from *M. furnieri* is usually larger than of *Hysterothylacium* MD and

includes the range of the latter. This may be a result of the small number of specimens measured by Deardorff & Overstreet (1981b). This idea is reinforced by the fact that there are small differences between the ratios of the measurements, when *Hysterothylacium* from *M. furnieri* is compared to *Hysterothylacium* MD (Tables 1 and 2).

TABLE 1 – Comparative measurements (mm) of *Hysterothylacium* spp. larvae. Averages followed by the smallest and larger value in parentheses. L. – length; W. – width.

Structures	<i>Hysterothylacium</i> sp. This study	<i>Hysterothylacium</i> KB. Petter & Sey (1997)	<i>Hysterothylacium</i> Md. Deardorff & Overstreet (1981b)
Total L.	2.83 (1.65-4.05)	- (3.4-9.8)	- (1.5-2.5)
Larger W.	0.07 (0.05-0.1)	-	- (0.05-0.06)
Oesophagus L.	0.26 (0.17-0.36)	- (0.31-0.8)	- (0.21-0.29)
Ventricular appendage L.	0.30 (0.19-0.42)	- (0.35-0.78)	- (0.28-0.37)
Ventricular appendage W.	0.04 (0.01-0.06)	-	- (0.02-0.03)
Intestinal cecum L.	0.06 (0.05-0.07)	- (0.03-0.22)	- (0.01-0.03)
Intestinal cecum W.	0.02 (0.01-0.03)	-	- (0.01-0.02)
Tail L.	0.10 (0.07-0.17)	- (0.10-0.24)	- (0.08-0.12)

TABLE 2 – Comparative ratios between measurements (mm) of *Hysterothylacium* spp. larvae. Averages followed by the smallest and larger value in parentheses. L. – length; W. – width.

Ratio	<i>Hysterothylacium</i> sp. This study	<i>Hysterothylacium</i> Kb. Petter & Sey (1997)	<i>Hysterothylacium</i> Md. Deardorff & Overstreet (1981b)
Total L. X	10.72 (8.98-12)	- (10.96-14.51)	- (7.07-8.65)
Oesophagus L. X	1.14 (0.92-1.28)	- (1.12-1.15)	- (1.19-1.33)
Total L. X	39.2 (33-47)	-	- (31.25-40.32)
Ventricular appendage L. X	5.1 (3.19-6.9)	- (1.0-3.54)	- (12.89-20.28)
Intestinal cecum L.			

Few papers show ontogenetic modifications in *Hysterothylacium*. Peculiar features of larvae can disappear in the L3, L4 and adult stages. In the same way, the thorn observed in the tail of larvae apex and described in this study, in *Hysterothylacium* MD and in *Hysterothylacium* KB is also shown in L3 of *H. aduncum* (Rudolphi, 1802), described by Carvajal *et al.* (1995). These authors show that this feature is substituted by a multispinous process in L4 and in adult. Other features showed by Carvajal *et al.* (1995), such as the larger length of intestinal cecum and smaller ventricular appendage, definitely confirm the differences between *H. aduncum* and *Hysterothylacium* MD, *Hysterothylacium* KB or *Hysterothylacium* sp. from *M. furnieri*. However, it is evident that the use of the single

minute thorn in the tail apex, is an inadequate specific taxonomic character in this the genus, despite its use by Petter & Sey (1997) and by Deardorff & Overstreet (1981b).

Finally, this is the first record of *Hysterothylacium* from Rio Grande do Sul coast and *Micropogonias furnieri* as a new host to this genus.

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