

GASTRO-INTESTINAL NEMATODES OF SOME MARINE FISHES AT PORT SAID PROVINCE

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ABSTRACT

A total of 190 marine fishes; 128 Bull head (*Cottus gobio*), 42 Red Mullet (*Mullus barbatus*), 8 Dusky perch (*Epinephelus gigas*), 12 Sea Bass (*Morone laborax*) were collected from mediterranean sea area at Port Said province. The prevalence of nematodes in the examined fishes was 5.26 %. Bull head (*Cottus gobio*) and Red Mullet (*Mullus barbatus*) were infected with nematodes (3.12 % and 14.3 %) while, Dusky perch (*Epinephelus gigas*) and Sea Bass (*Morone laborax*) were free from infection with nematode parasites. Five species of the nematodes belonging to family Anisakidae were recovered from the examined fishes. *Goezia spinulosa* was detected from stomach of Bull head. *Hysterothylacium reliquens*, *Hysterothylacium geschei*, *Hysterothylacium sp.* and, *Hysterothylacium sp. larvae* were recovered from intestine of Red Mullet.

INTRODUCTION

Fish is considered as one of the most promising source for animal protein of high biological value due to its content of nearly all essential amino acids necessary for man, animal and birds (*Harford & Arlene (1994)*). Gastrointestinal nematodes of fish play an important role in determining the health status of fish, they may act either a primary source of diseases or as secondary invader to other infections (*Kabata, 1985 and Elmer et al., 1989*). Among the agent of fish diseases, an important position is occupied by parasitic worms which attack most body organs of fish parasitizing them as adult or larvae. Nematodes are constituting a significant

part of the parasitic fauna of marine fishes and represent an important public health problems because fish may be a source of serious nematodes to man, for example Anisakiasis. Some species of nematodes are known to be the agent of serious fish diseases causing considerable losses in fish poulation (*Moravec,1994*).

Many research works at different part of the world have been done on anisakid nematodes of marine fishes,*Parukhin,(1976&1989); Eslami and Mokhayer,(1977&1994);Deardorff and Overstreet,(1981);Lakshmi et al.,(1990); Moravec, (1994); Petter and Sey, (1997); Torres et al., (1998);Lymbery et al.,(2002)and Mattiucci et al.,(2003)* while,*Mahmoud, (1990); Raef,(1990);Abdel Rhaman,(1995) and Raef &Abdel Wahab, (1999)* work on parasites of marine fish in Egypt.

The aim of the present work is to throw the light on some parasitic nematodes of some marine fishes at Port Said province, concerning their prevalence, taxonomy and morphology.

MATERIALS AND METHODS

A total of 190 marine fish; 128 Bull head (*Cottus gobio*), 42 Red Mullet (*Mullus barbatus*), 8 Dusky perch (*Epinephelus gigas*),12 Sea Bass (*Morone laborax*) were collected from Mediterranean sea area at Port Said province. In laboratory, the fishes were examined visually and externally for detection of various nematodes localized under host skin and cyst containing nematode larvae. The fish body cavity was opened and examined, then various organs; digestive tract, swim -bladder, liver, gall bladder, spleen and kidney were dissected and placed separately in Petri dishes with saline for individual examination by naked eye and under dissecting microscope (*Moravec,1994*).

The obtained nematodes were washed in physiological saline and kept in refrigerator for killing and relaxation. The relaxed nematodes were cleared and mounted according to *Navone et al.,(2000)*. The recovered nematodes were measured, drawn by camera lucida , photographed and identified according to *Moravec, (1994)* and *Petter and Sey, (1997)*.

RESULTS

Examination of 190 marine fishes at port said city revealed that ten (5.26 %) were infected with nematode parasites. Bull head (*Cottus gobio*) and Red Mullet (*Mullus barbatus*) were infected with nematodes (3.12 %) and (14.3 %) respectively while, Dusky perch (*Epinephelus gigas*) and Sea Bass (*Morone laborax*) were free from nematode parasites. The prevalence of the *Goezia spinulosa* and, *Hysterothylacium species* (*Hysterothylacium reliquens*, *Hysterothylacium geschei*, *Hysterothylacium sp.* and *Hysterothylacium sp.larvae*) were 3.12% and 14.3% respectively. Taxonomy and morphological description of the detected nematodes will be denoted as follow

Order :- *Ascaridida* (*Skrjabin et Schulz, 1940*)

Superfamily :- *Ascaridoidea* (*Railliet et Henry, 1915*)

Family :- *Anisakidae* (*Railliet et Henry, 1912*)

A-Genus :- *Goezia* (*Zeder ,1800*)

Goezia spinulosa (*Railliet and Henry, 1915*). *Fig. 1- 3*

- **Host** : Bull head (*Cottus gobio*)

- **Habitat** : stomach

DESCRIPTION OF MALE

It is a medium sized nematode, measuring 19.0 x 1.5 mm. The cuticle is transversely ringed, the posterior edges of the cuticular rings are provided with minute posteriorly directed spines. The head end is provided with three flat lips, one dorsal and two ventro-lateral. The oesophagus is muscular somewhat expanded posteriorly ends with small ventriculus and measures 0.92-1.25 mm long. The spicules are bent and almost equal measuring 0.83 mm long.

B- Genus : *Hysterothylacium* (*Ward et Margath, 1917*)

1- *Hysterothylacium reliquens* (*Norris et Overstreet, 1975*) (*Fig.4-6*)

-**Host** : Red Mullet (*Mullus barbatus*)

-**Habitat** : intestine

DESCRIPTION

Large whitish nematode with body tapering at both ends. The lateral alae is very thin, barely visible at the base of lips and become more apparent below lips. The head is provided with three lips and three inter-labia. The dorsal lip is provided with two papillae while the ventro-lateral lips are provided with one small papillae. The inter-labia are small and conical. The oesophagus is cylindrical ending with small ventriculus and narrow ventricular appendix.

Male: It measures 18-53 (40.3) mm long and 0.5-1 mm wide. The dorsal lip measure 0.16 mm long and 0.16-0.17 mm wide while the ventro-lateral one measure 0.14-0.15 mm long and 0.15-0.17 mm wide. The oesophagus measures 2.4-3 mm long The ventriculus is broader than long measuring 0.21x0.18 mm while, ventricular appendix measures 0.27-1.14 mm. The nerve ring is 0.5 mm from the anterior extremity. The excretory pore is slightly posterior to the level of nerve ring. The spicules are alate, equal and measure 1.9-3.3 mm long.

Female: It measures 28-63 (49.0) mm long and 0.85-1.5 mm wide. The dorsal lip measure 0.19-0.23 mm long and 0.2-0.15 mm wide while the ventro-lateral one measure 0.21-0.22 mm long and 0.22-0.25 mm wide. The oesophagus measures 3.2-4.3 mm long . The ventriculus and ventricular appendix measure 0.27-0.23 x 0.24-0.29 mm and 0.9-1.2 mm long respectively. The nerve ring is 0.6 mm from the anterior extremity. The vulva open at the anterior third and without lips. Tail is conical, measuring 0.27-0.42 mm and ends with small spinosed process.

2-Hysterothylacium geschei (Torres et al., 1998) (Fig. 7-9)

- **Host** : Red Mullet (*Mullus barbatus*)

- **Habitat** : intestine

Description of female : The body of the adult worm is tapering at both ends measuring 32-73 (45.8) mm long and 0.7-1.5(1.0)mm wide. The head is rounded with two cephalic process. The dorsal lip which measures 0.15-0.2 x 0.14-0.19 mm is slightly wider than the sub-ventral ones which measure 0.15-0.18 x 0.13-0.15 mm. The inter-labia are longer than wide. The oesophagus measure 3.3-7.6 m long. The ventriculus is slightly wider than narrow and measure 0.24-0.35 x 0.25-0.45 mm. The ventricular appendix measure 1.2-2.2 mm long. The vulva open at the anterior third of the body. Tail is provided with numerous small spine and measures 0.22-0.24 mm long.

3-*Hysterothylacium* sp. (Fig. 10-12)

-Host : Red Mullet (*Mullus barbatus*)

-Habitat : intestine

Description of female: Its body is cylindrical measuring 50 mm long. The head is rounded and provided with three pairs of ridges. Lips are small and rounded. The oesophagus measure 1.3-2.0 mm long. The ventriculus is nearly spherical measuring 0.19x0.18 mm while, the ventricular appendix is short and measures 0.27 mm long. Tail is tapered, provided with numerous sub-terminal spines and measures 0.2 -0.22 mm long.

4-*Hysterothylacium* sp. larva. (Fig.13-14)

- Host : Red Mullet (*Mullus barbatus*)

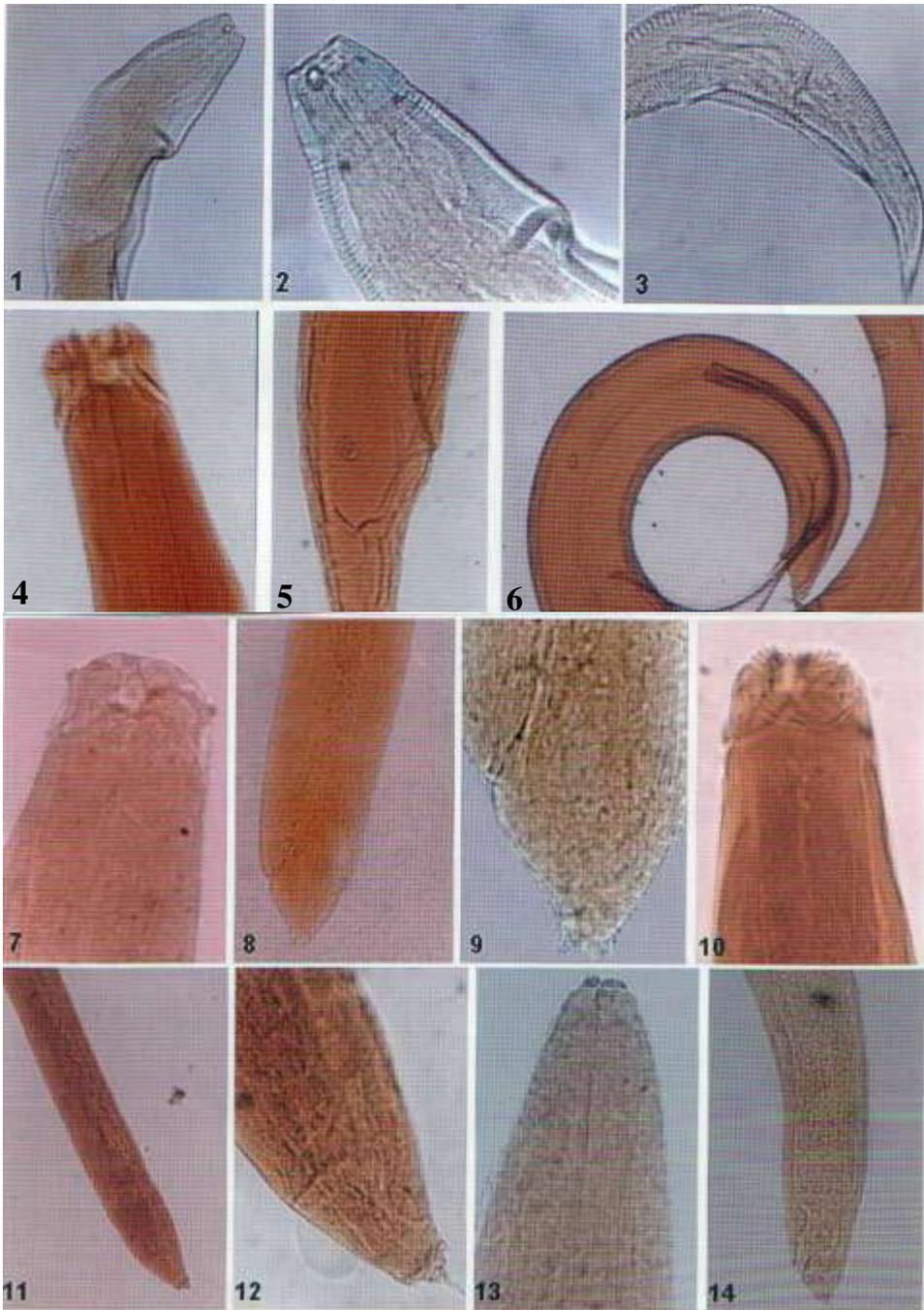
- Habitat : intestine

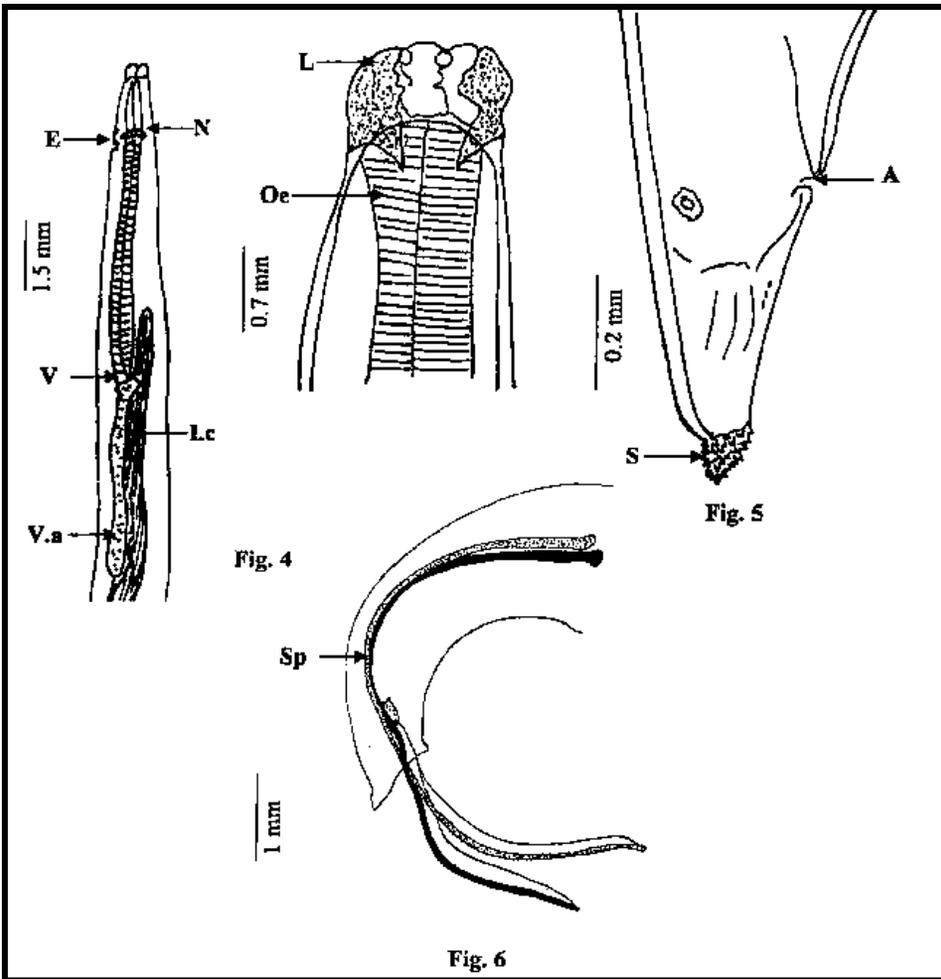
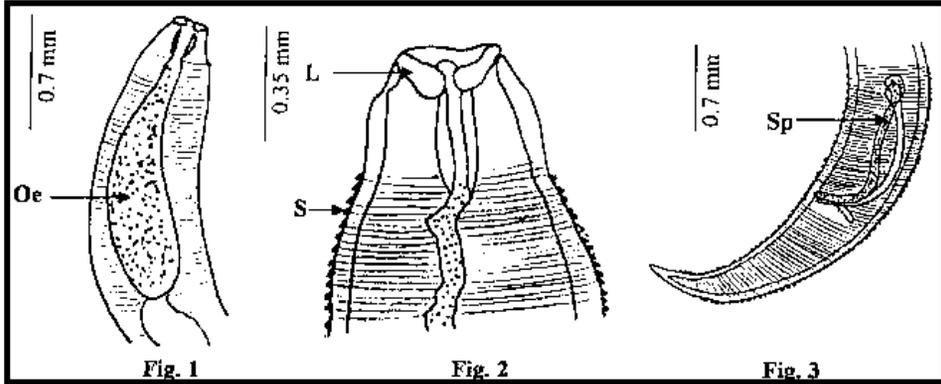
Description: It measures 8-13 mm long. The head is provided with two papillae at its anterior extremity. The oesophagus is long and thin measuring 0.6-1.0 mm long. The ventriculus is small and longer than wide while , the ventricular appendix is very long measuring 0.27-0.56 mm . Nerve ring is lying at the junction of the first and second thirds of oesophagus . The excretory pore is slightly posterior to nerve ring. Tail is short, conical, without spine and measures 0.11-0.115 mm.

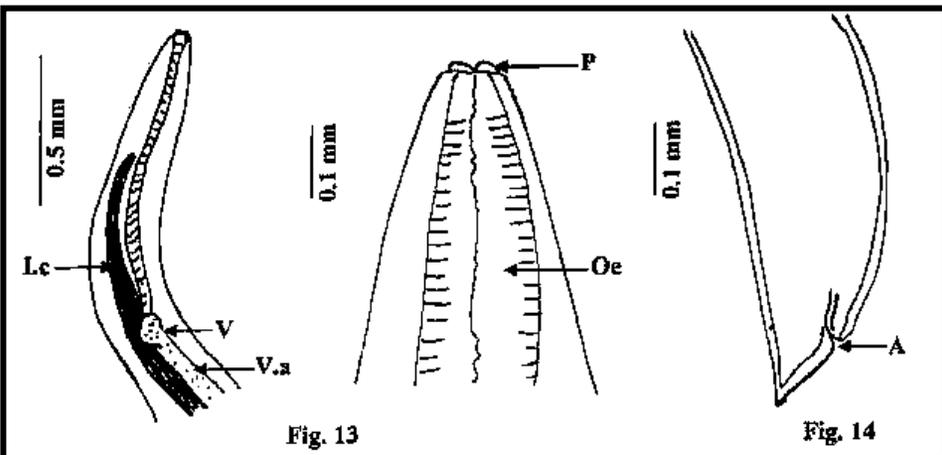
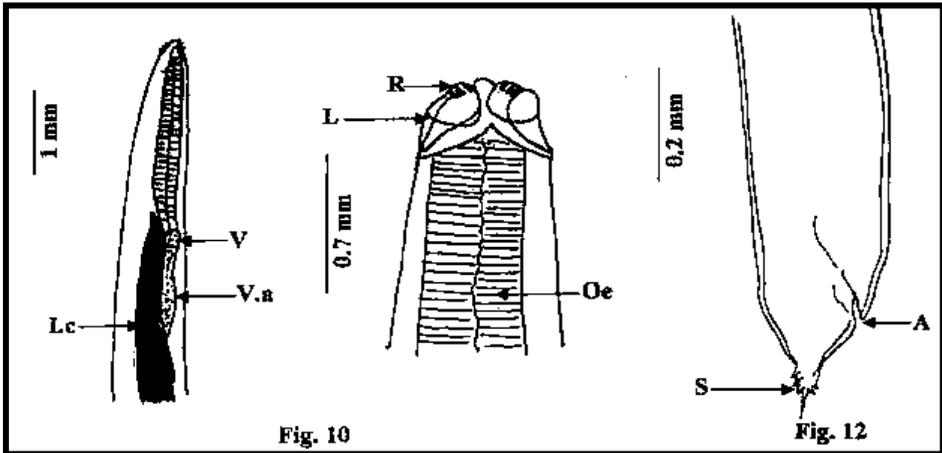
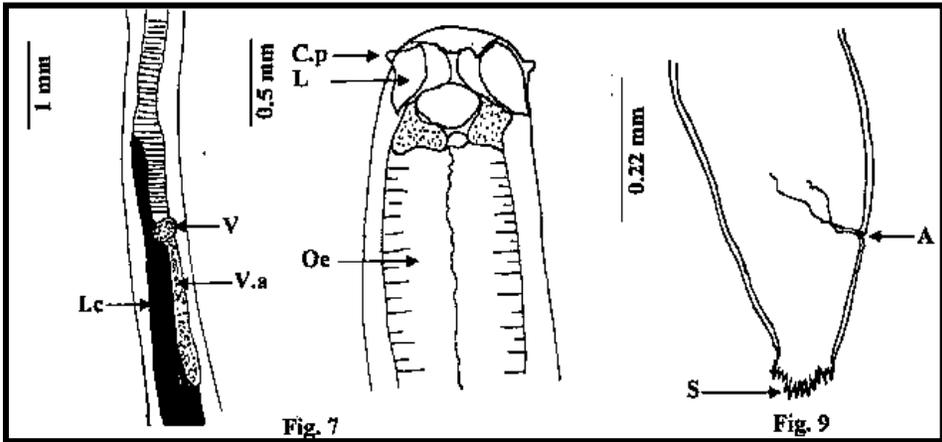
List of abbreviations:L (lips); N(Nerve ring);C.p Cephalic process; (papillae);R(ridges);E(Excretory pore);Oe(oesophagus);V (Ventriculus); V.a (Ventricular appendix);I.c (intestinal caecum);S (spine);Sp (Spicule); A (anal opening).

LEGEND FIGURES

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|--|--------------------------|--------------------------|
| Fig. 1-3: <i>Goezia spinulosa</i> | 1,2- nterior end (x400) | 3-Male caudal end (x400) |
| Fig. 4 - 6: <i>Hysterothylacium reliquens</i> | 4-Anterior end (x40) | 5-Female tail(x40) |
| | 6- Male caudal end (x40) | |
| Fig.7-9:<i>Hysterothylacium geschei</i>. | 7-Anterior end (x40) | 8- Female tail (x40) |
| | 9-Female tail (x100) | |
| Fig. 10-12: <i>Hysterothylacium sp.</i> | 10- Anterior end (x40) | 11- Female tail (x40) |
| | 12- Female tail (x100) | |
| Fig.13-14: <i>Hysterothylacium sp. larvae</i> | 13-Anterior end(x100) | 14- tail (x100) |







DISCUSSION

A survey of gastrointestinal nematodes in marine fishes from the local fish market in Port Said city was done during the period from October 2002 till September, 2003. Nematodes of family Anisakidae were the most prevalent parasites.

The present study revealed that ten (5.26 %) out of 190 examined fishes at Port Said city were infected with nematode parasites. Bull head (*Cottus gobio*) and Red Mullet (*Mullus barbatus*) were infected with nematodes (3.12 % and 14.3 % respectively) while, Dusky perch (*Epinephelus gigas*) and Sea Bass (*Morone laborax*) were free from parasitic infection. The total prevalence rate was higher than that reported by **Raef, (1994)** for nematode larvae in marine fish. It was lower than that mentioned by **Sey & petter, (1997)** for Ascaridiod larvae in Kuwauiti food fish. The prevalence of round worms was higher in Bull head (*Cottus gobio*) and Red Mullet (*Mullus barbatus*) and lower in Dusky perch (*Epinephelus gigas*) and Sea Bass (*Morone laborax*) than that reported by **Raef, (1994)**. The low prevalence of nematode parasites in the present study may be attributed to high salinity of sea water which unfavourable media for the development of infective larvae.

Five species of nematodes; *Goezia spinulosa*, *Hysterothylacium reliquens*, *Hysterothylacium geschei*, *Hysterothylacium sp.* and *Hysterothylacium sp. larva* belonged to family Anisakidae were detected in the present study.

There are several species belonged to genus *Goezia*, *G. braziliensis*, *G. brevicaeca* (**Moravec et al., 1994**), *G. anguillae* (**Lebre et Petter, 1983**) and *G. spinulosa* (**Diesing, 1839**). *G. ascaroides* (**Goeze, 1728**). The present species which characterized by presence of conspicuous plicated ring possessing posteriorly directed spine, inconspicuous caudal papillae and equal spicules was morphologically identical to *Goezia spinulosa* described by **Baylis, (1927)**.

There are about 55 species of genus *Hysterothylacium* have been described from the estuarine and freshwater fishes (**Bruce et al., 1994; Moravec et al., 1997**). The present work revealed four species of *Hysterothylacium* (*H. reliquens*, *H. geschei*, *Hysterothylacium* sp. and *Hysterothylacium* sp. larva).

Hysterothylacium reliquens which recovered from intestine of *Mullus barbatus* was characterized by presence of equal alate spicules at male caudal end and conical spinosed tail in female. The measurement and main characteristic features including lips, oesophagus, ventricular appendix, spicule and female tail were identical to that described by **Norris & Overstreet, (1975); Deardorff & Overstreet, (1981) and Petter & Cabaret, (1995)**.

Hysterothylacium geschei was recovered from intestine of *Mullus barbatus*. The presence of two cephalic process at its anterior end and spines at the end of female tail; length of oesophagus and ventricular appendix were similar to that described by **Torres et al., (1998)**. It should be differentiated from *H. gadi* described by **Raef & Abdel whaab, (1999)** by presence of cephalic process and short tail.

Hysterothylacium sp. was detected from intestine of *Mullus barbatus*. This species differ from other species of *Hysterothylacium* in having of three pairs of ridges at its anterior extremity and tapered tail carrying sub-terminal spines.

Hysterothylacium sp. larva was recovered from intestine of *Mullus barbatus* This larva characterized by presence of two papillae at anterior extremity and conical tail. Their dimension and shape of tail were similar to *Hysterothylacium* sp. larvae C china type I of **Sun et al., (1992)** *Hysterothylacium* sp. larvae type KF of **Petter & Sey, ((1997)** and *Contracaecum* larvae B from red sea (**Shiraki 1974**).

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