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## **Invertebrate Zoology & Parasitology**



**ON INFUNDIBULOSTOMUM ANISOTREMI AND HYSTEROLECITHA  
SOGANDARESI (DIGENEA: TREMATODA) REDESCRIBED FROM THE  
FISH MULLUS SURMULETUS FROM THE MEDITERRANEAN SEA IN  
LIBYA**

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**ABSTRACT**

Two trematode genera: *Infundibulostomum* Siddiqi and Cable, 1959 and *Hysterolecitha* Linton, 1910 were briefly reviewed. *Infundibulostomum anisotremi* and *Hysterolecitha sogandaresi* Hahhas and Cable, 1964 were redescribed from *Mullus surmuletus* from Libya. The present redescription added more details about the excretory vesicle, oral sucker and body length of the two species. Moreover, this study represents new host and locality record. A comparison between the original and the present descriptions is given and discussed.

**INTRODUCTION**

The Mediterranean is a semi-enclosed Sea and almost suffering from several pollutants. In polluted Sea water, oxygen depletion, stress-induced mucus and lamellar lesions which support parasitic infestation on fishes, compounding an already stressful state (Overstreet and Howse, 1977).

The genus *Infundibulostomum* was established by Siddiqi and Cable (1959) with *I. spinatum* from *Haemulon flavolineatum* from Puerto Rico as the type species. Nahhas and Cable (1964) added *I. anisotremi* from *Anisotremus virginicus* from Jamaica. The genus *Hysterolecitha* was established by Linton (1910) with *H. rosea* from 4 species of marine fish in

Florida. Yamaguti (1971) listed 17 species belonging to the genus *Hysterolecitha*. No other species belonging to the present two genera were added hitherto. The aim of the present work is to extend our knowledge on the morphological, morphometrical analysis, prevalence and distribution of the above two species in marine fishes from the middle southern part of the Mediterranean Sea in Libya.

**MATERIAL AND METHODS**

Twelve adult fishes of *Mullus surmuletus* locally called "Trelya" were caught from the Libian Coastal waters near Misurata in Libya. They were examined for helminth parasites



inhabiting the intestine as soon as possible. Trematode parasites were first relaxed, then fixed in hot 70% alcohol or 5% formalin. The parasites were then stained, using aceto-alum carmine stain. Drawings were made to the scale, using a Camera Lucida. Measurements are in millimeters, unless otherwise stated. The identification of fishes as well as methods followed in collection, fixation, staining, clearing and mounting were carried out by the usual way.

## RESULTS AND DISCUSSION

### 1) *Infundibulostomum anisotremi* Nahhas and Cable, 1964 (Fig.1)

Host: *Mullus surmuletus*.

Site: Intestine.

The following description is based on eighteen specimens:

Body elongate, tapering at both ends being 1.25-1.35 long and 0.34-0.40 wide. Cuticle spinose, spines extending to posterior of testis, each spine is 5-8  $\mu$ m in length. Oral sucker terminal and measures 0.12-0.25 long and 0.11-0.17 wide. Prepharynx is 0.039-0.045 in length. Pharynx small, being 0.028-0.034 long and 0.034-0.038 wide. Ventral sucker smaller than oral sucker (0.071-0.074 long and 0.059-0.062 wide). Suckers ratio 1.8-3.3:1. Oesophagus is 0.096-0.098 in length. Intestinal caeca bifurcate in front of cirrus sac and ending just posterior to testis being 0.51-0.55 long and 0.039-0.042 wide. Testis median, situated equatorial, measuring 0.19-0.21 long and 0.14-0.17 wide.

Cirrus sac lies at the left side of ventral sucker, measuring 0.17-0.20

long and 0.060-0.080 wide, containing ovoid internal seminal vesicle and spherical prostatic complex, which measures 0.03-0.039 in diameter. Genital pore median, immediately anterior to acetabulum. External seminal vesicle elongate saccular, being 0.091-0.098 long and 0.037-0.040 wide.

Receptaculum seminis spherical, measuring 0.050-0.057 in diameter. Vitellaria in 2 lateral clusters of 6-7 follicles each, at level of acetabulum. Ovary oval shaped, and 0.11-0.13 long and 0.07-0.09 wide, situated between testis and receptaculum seminis. Uterus occupying the posterior half of the body. Eggs are numerous and each is 19-23  $\mu$ m long and 8-11  $\mu$ m wide. Excretory vesicle v-shaped, extending anteriorly about to ovary and opens posteriorly by terminal excretory pore.

Nahhas and Cable (1964) described a single mature specimen of *Infundibulostomum anisotremi* from *Anisotremus virginicus* in Jamaica. They did not mention the shape of the excretory vesicle and the oral sucker. Siddiqi and Cable (1959) established the genus *Infundibulostomum* for those fellodistomid trematodes, having external seminal vesicle, single testis, and vitellaria in acetabular zone. *Infundibulostomum spinatum* from *Haemulon flavolineatum* from Puerto Rico was designated as the type species of the genus. Gaevskaya and Kovaleva (1977) described *I. patagonicum* from *Notothenia ramsayi* fish from the Atlantic ocean.

The present work revealed that no other species could be added to the genus *Infundibulostomum*. The present material is similar to the single specimen described by Nahhas and Cable (1964) but the present description is based on 18 specimens and provides more details about the body length, oral sucker, excretory vesicle and cirrus sac (Table 1).

Moreover, the present species is recorded for the first time from Libya and from the fish host *Mullus surmuletus* as well.

**2) *Hysterolecitha sogandaresi* Nahhas and Cable, 1964 (Fig.2)**

Host: *Mullus surmuletus*

Site: intestine

The following description is based on eighteen specimens:

The body is elongate, oval, truncate posteriorly, tapering anteriorly, unspined, 1.15-2.55 long and 0.36-0.42 wide. Oral sucker subterminal, 0.061-0.072 long and 0.073-0.078 wide. Acetabulum 0.13-0.16 long and 0.14-0.18 wide. Suckers ratio 0.43-0.60 : 1. Prepharynx absent and pharynx relatively small, 0.024-0.027 long and 0.028-0.031 wide. Oesophagus usually short or absent. Caeca swollen, bifurcate immediately posterior to pharynx and terminate blindly at 0.22-0.26 from posterior extremity where each caecum measures 0.61-0.69 in length.

Testes are 2, intercaecal and diagonal (nearly tandem). Right testis 0.082-0.086 long and 0.061-0.067 wide. Left testis 0.049-0.051 long and 0.022-0.062 wide. Cirrus sac oval,

0.077-0.080 long and 0.041-0.048 wide. External seminal vesicle long, coiled tube mostly anterior to ventral sucker. Internal seminal vesicle saccular and surrounded with prostatic cells. Genital pore situated at level with caecal bifurcation.

Ovary oval, lying posttesticular, 0.10-0.12 long and 0.061-0.071 wide. Uterus extending to near tips of caeca. Metraterm simple, joining with prostatic duct and opened together in hermaphroditic duct. Vitelline follicles 7, subglobular in shape, situated immediately postovarian. Eggs numerous, each measuring 26-32  $\mu$  long and 16-19  $\mu$  wide. Excretory vesicle v-shaped, tubular and coiled occupying the last fourth of the body and opens by terminal excretory pore.

*Hysterolecitha sogandaresi* was originally described by Nahhas and Cable (1964) from the small intestine of *Acanthurus coeruleus* in Jamaica. They did not detect the excretory vesicle. Yamaguti (1971) considered *Hysterolecitha* as a valid genus. Mehra *et al.*, (1984) described *H. ophiocephali* from *Ophiocephalus punctatus* caught from Allahabad in India. Wang (1989) described *H. ovarilobulus* from the marine fish *Navodon septentrionalis* from Fujian province.

The present material is similar to the specimens described by Nahhas and Cable (1964) but the present description added more details about the body length, oesophagus and excretory vesicle (Table 2). It is worthy mentioning that *H. sogandaresi* was reported for the first time in Libya. The



species was also recorded from a new host *Mullus surmuletus*.

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**(Table.1):** A comparison between the present description of *Infundibulostomum anisotremi* and that of Nahhas and Cable, 1964:

Characters	(Nahhas and Cable, 1964) (Single specimen)	The present description (18 specimens)
Body shape	Spinose, ovoid, 0.67×0.37	Elongate, spinose, 1.25-1.35 ×0.34-0.40
Oral sucker	Subterminal, 0.078×0.083	Terminal, 0.12-0.25×0.11-0.17
Perpharynx	0.013 in length	0.034-0.045 in length
Ventral sucker	About equatorial, 0.063×0.069	0.071-0.074×0.059-0.062
Suckers ratio	1 : 0.71	1 : 1.8-3.3
Pharynx	0.040 × 0.033	Small, 0.028-0.034×0.034-0.038
Oesophagus	Short	0.096-0.098 in length
Caeca	Ending posterior to vitellaria	0.51-0.55 × 0.039-0.042
Testis	Irregular, 0.105×0.159	0.19-0.21 × 0.14-0.17
Crrus sac	Lies left to ventral sucker	0.17-0.20 × 0.060-0.080
Internal seminal vesicle	Large	Ovoid
External seminal vesicle	Posterior to ventral sucker	0.091-0.098 × 0.037 – 0.040
Vitellaria	2 lateral clusters (6-7) follicles	2 lateral clusters 6-7 follicles
Uterus	Occupying posttesticular space	Occupying posterior half of the body
Ovary	0.111×0.075	Anterior to testis 0.11-0.13×0.07-0.09
Receptaculum seminis	Median to ovary	0.050-0.057 in diameter
Eggs	18-21×10-13 u	Numerous 19-23×8-11u
Excretory vesicle	Not observed	v-shaped extending to ovary
Hosts	<i>Anisotremus virginicus</i>	<i>Mullus surmuletus</i>
Site	Intestine	Intestine
Locality	Jamaica	Libya

**(Table 2):** a comparison between the original and present descriptions of *Hysterolecitha sogandaresi* Nahhas and Cable, 1964:

Characters	Original description (3 specimens)	Present description (18 specimens)
Body shape	Elongate, unspined 1.54-2.22 × 0.46-0.53	Elongate, unspined, 1.15- 2.55×0.36-0.42
Oral sucker	Sub terminal 0.14-0.17 × 0.16-0.22	Subterminal 0.061- 0.072×0.073-0.078
Ventral sucker	0.36-0.43×0.38-0.40	0.13-0.16×0.14-0.18
Suckers ratio	2.14-2.33 : 1	0.43-0.60 : 1
Prepharynx	Absent	Absent
Pharynx	0.060-0.070×0.070- 0.090	0.024-0.027×0.028-0.039
Oesophagus	Short	Usually short or absent
Caeca	Swollen, anteriorly	Swollen, ending at 0.22-0.26 from posterior extremity
Testes	Diagonal, 0.082-0.12 in diameter	Diagonal, Right 0.082-0.086 × 0.061-0.067. Left 0.049- 0.051 × 0.022-0.062
Cirrus sac	Spherical	0.077-0.080 × 0.041-0.048
Genital pore	Median	At level with cecal bifurcation
Ovary	Oval, 0.068-0.10 in diameter	Oval 0.10-0.12 × 0.061-0.071
Vitellaria	7 follicles, postovarian	7 follicles, postovarian
Eggs	26-31 × 15-19u	26-32 × 16 – 19 u
Excretory vesicle	Not observed	v-shaped tubular occupying the last fourth of the body
Hosts	<i>Acanthurus coeruleus</i>	<i>Mullus surmuletus</i>
Locality	Jamaica	Libya



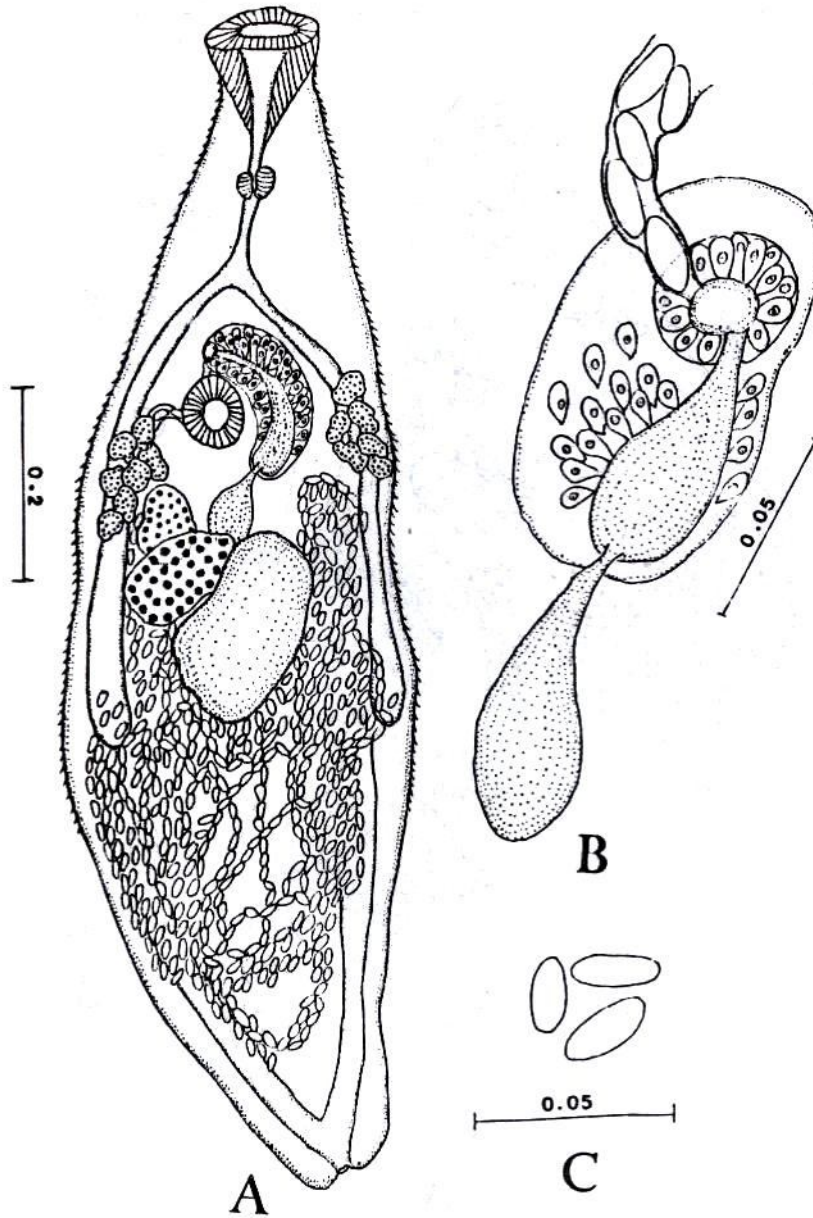


Fig.1

*Infundibulostomum anisotremi* Nahhas and Cable, 1964

A) Ventral view

B) Cirrus pouch

C) Eggs



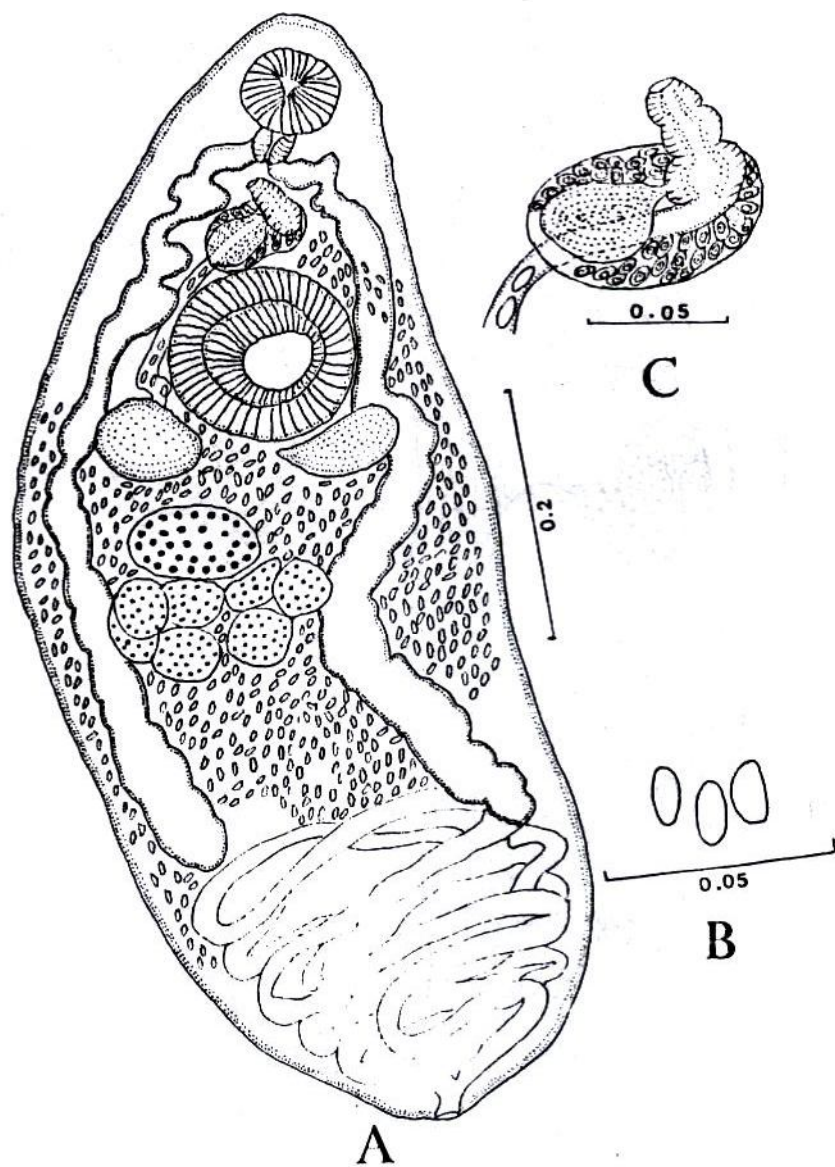


Fig.2

*Hysterolecitha sogandaresi* Nahhas and Cable, 1946

A) Ventral view

B) Eggs

C) cirrus pouch

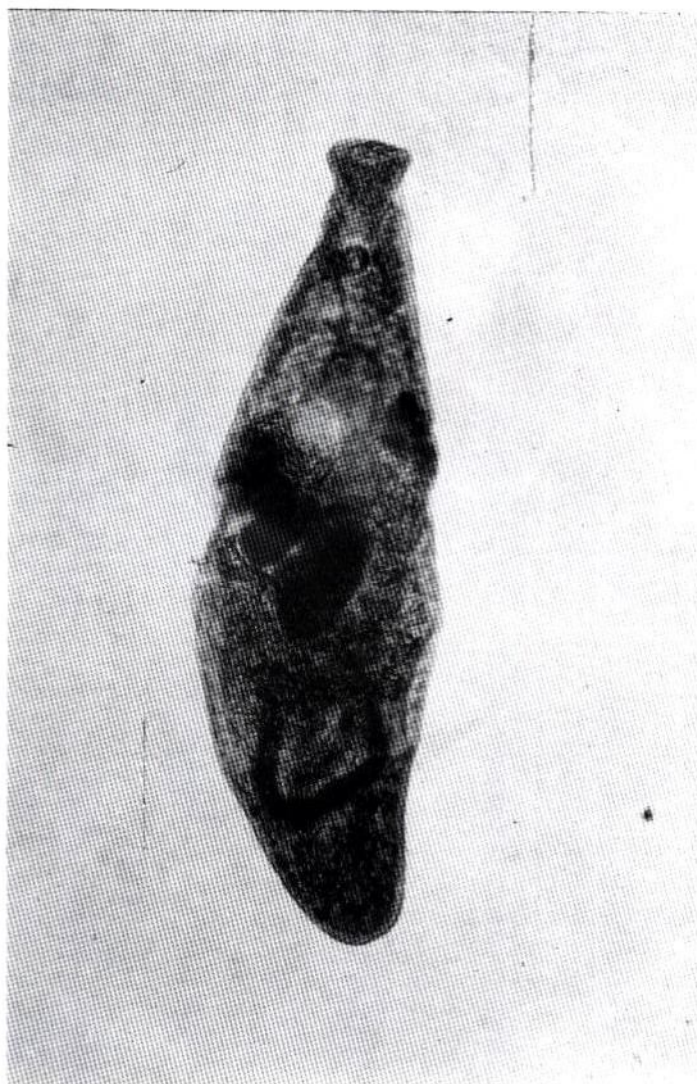


Fig.1

Photo to show the ventral view of *Infundibulostomum anisotremi*  
Nahhas and Cable, 1964





Fig.2

Photo to show the ventral view of *Hysterolecitha sogandaresi* Nahhas and  
Cable, 1964

**إعادة الوصف أنفنديولوجستومم أنيزوتريمي و هستيروليسيثا سوجندريزي (تريماتودا -  
ثنائية العائل) من أسماك ميلاس سيرميوليتس من البحر المتوسط في ليبيا**

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في هذا البحث تم عمل مراجعة مختصرة لجنسين من التريماتودا هما *أنفنديولوجستومم* و *هستيروليسيثا* ، كما تم إعادة وصف نوعين هما *أنفنديولوجستومم أنيزوتريمي* و *هستيروليسيثا سوجندريزي* من أسماك *ميلاس سيرميوليتس* من البحر المتوسط في ليبيا، وهذه الأنواع تسجل لأول مرة من ذلك النوع من الأسماك لأول مرة من ليبيا، وتم عمل مقارنة ومناقشة بين الوصف الأصلي لهذين النوعين من التريماتودا والعمل الحالي.



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