مكتبة البنين
قسم الدوريات

University of Qatar

QATAR UNIVERSITY SCIENCE BULLETIN

(Qatar Univ. Sci. Bull.)

VOL. 10 1990

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Published by the Faculty of Science
University of Qatar

Qatar Univ. Sci. Bull. (1990), 10: 263–270

THE MORPHOLOGY OF *SYNHIMANTUS (DISPHARYNX) PASSERI SP.* NOV., NEMATODA (ACUARIIDAE)

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Key words : Synhimantus (D) *passeri sp.* nov. *Passer domesticus niloticus* Egypt.

ABSTRACT

A new species of the nematode genus *Synhimantus recovered* from *Passer domesticus niloticus* at Cairo is described using both light and scanning electron microscopy. The taxonomy of the new species is discussed and compared with the other related species of the genus *Synhimantus.*

INTRODUCTION

The two subgenera *Synhimantus and Dispharynx* were established by Railliet, Henry and Sisoff (1912) and placed by Yorke and Maplestone (1926) within the genus *Acuaria* Bremser, 1811 of the family Acuariidae Seurat, 1913. Yorke and Maplestone differentiated the two subgenera on the basis of the cordon structure, being recurrent and anastomosing in *Synhimantus* and recurrent and not anastomosing in *Dispharynx.*

Chabaud (1954) studied the larval characteristics of all the spirurid nematodes and made a distinction between the members of the subfamily Acuariidae, based upon the structure of the cephalic cordons. Chabaud and Petter (1959) divided the genus *Synhimantus* into three subgenera: *Synhimantus,* in which the cordons are anastomosing and the vulva lies at middle of the body; *Dispharynx,* in which the cordons are anastomosing and *Desportesius* in which the cordons are anastomosing and enlarged posteriorly and the vulva lies near the posterior extremity of the female. Yamaguti (1961) supressed the subgenus *Desportesius,* whereas Chabaud (1975) raised the family Acuariidae to a superfamily level.

Four male and 3 female worms, collected from the proventriculus of the Egyptian sparrow *Passer domesticus niloticus* in Cairo, were identified as belonging to the genus *Synhimantus* and described herein as *Synhimantus (Dispharynx) passeri* sp. nov.

MATERIALS AND METHODS

Two male and female worms, fixed in hot 70 alcohol and cleared in lactophenol, were measured and drawn with the aid of Camera lucida. For observation with the scanning electron microscope, one male worm was fixed in 10 formaldehyde, dehydrated in series of ethanol, critical point-dried and coated with gold before examination with a Cambridge JSM-2 SEM at the Department of Zoology, Royal Holloway College, Egham, U.K. All measurements are in millimeters unless stated otherwise.

DESCRIPTION

The worms are medium-sized and cylindrical with the anterior region of the body ornamented with 4 wavy cordons. These extend posteriorly from the base of the two lateral lips till they reach slightly behind the excretory pore, then they turn laterally and forward on both lateral sides of the body. Each cordon which projects slightly from the body surface is formed of several cuticular thickenings. The width of the cordons is the same throughout their length and each has a longitudinal furrow at its middle (Figs. 1, 2 & 3).

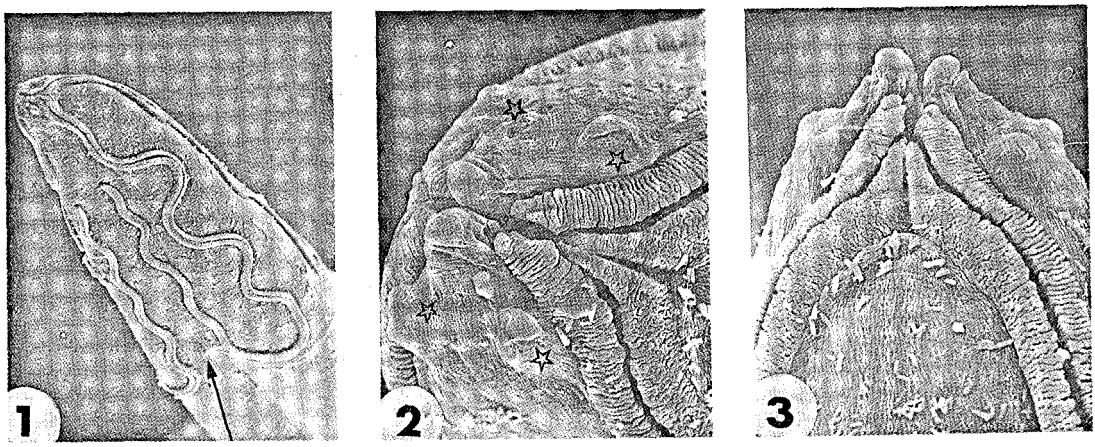
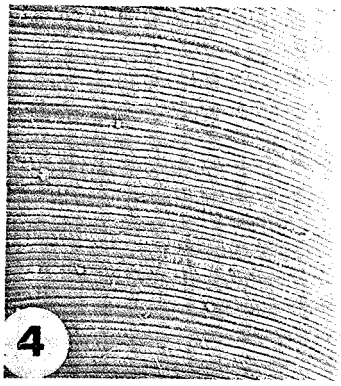


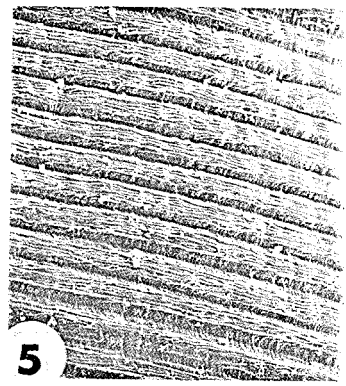
Fig. 1: Anterior extremity ventro-lateral view, showing the cordons, excretory pore and cervical papilla (long arrow).

Fig. 2: Anterior extremity to show two lateral lips mouth opening, and four double cephalic papillae (*).

Fig. 3: Anterior extremity ventral view, showing the lips, cephalic papillae and the surface of the cordons.

The cuticular surface of the worm is transversely annulated and each annulus is further divided into 10-12 transverse striations; the surface of the latter is ornamented with a number of irregular transverse folds (Figs. 4, 5 & 6).





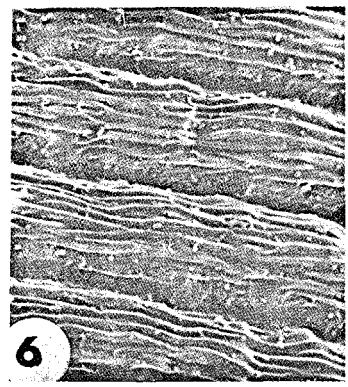
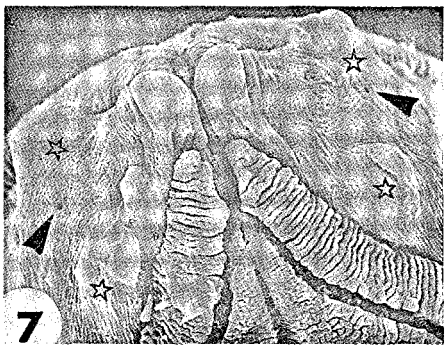


Fig. 4: Body surface to show cuticular annulations and striations.
Fig. 5: Body surface to show one cuticular annulus with striations.
Fig. 6: Surface of the striations with transverse cuticular folds.

The mouth opening is simple and provided with two narrow conical lips; the pharynx is cuticular and funnel-shaped and the oesophagus is divided into an anterior short muscular portion and a posterior long glandular portion (Figs. 9 & 10). There are four pairs of cephalic papillae, each pair being formed of two closely situated papillae, lying near the base of the lips (Fig. 2 and 7). Two lateral minute pores which represent the two lateral amphids, lie medially at the base of each lip (Fig. 7). The excretory pore which is small and circular is surrounded by an elevated cuticular rim (Fig. 8). Two tricuspid cervical papillae lie at the level of the excretory pore (Figs. 1, 9 and 10).



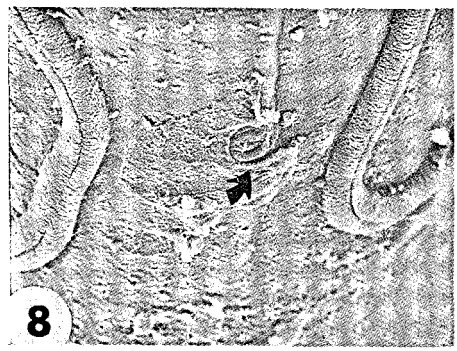


Fig. 7: Anterior extremity to show cephalic papillae (⋆) and amphids (arrow head).
Fig. 8: Excretory pore (short arrow)

Male

The male worm is shorter than female, measuring 4.0-4.8 in length and 0.23 - 0.25 in maximum width. Cordons extend 0.32 - 0.36 from the anterior extremity before they are recurved back. The recurrent loops reach as far as 0.17 - 0.18 from the anterior extremity and are not anastomosing. Cervical papillae and excretory pore lie 0.28 and 0.29 - 0.32 respectively from the anterior extremity of the worm. The muscular portion of the oesophagus measures 0.47 long and 0.07 wide, while the glandular portion is 1.94 long and 0.14 wide.

There are four pairs of pedunculated precloacal papillae, four pairs of postcloacal papillae and a group of six small sessile papillae on the tip of the tail. The two spicules are unequal and dissimilar, the left is 0.46 long and 0.09 wide; the right spicule which is much shorter, being 0.11 - 0.13 long and 0.02 wide has a blunt rounded tip. The male tail is 0.32 - 0.35 long and curved centrally (Fig. 10).

Female

The female worm is 6.25 - 6.44 long and 0.53-0.58 in maximum width. The cordons extend 0.45 - 0.52 from the anterior extremity of the worm, before they are recurved back. The recurrent loops reach as far as 0.21 from the anterior extremity, and are not anastomosing. In one female worm, the tips of two recurrent cordons on only the left surface of the worm appear anastomosing, but the margins of the tips of the arms do not meet but lie very close (Fig. 11).

The cervical papillae and excretory pore lie 0.39 and 0.42 respectively from the anterior extremity of the worm. The muscular portion of the oesophagus is 0.42 long and 0.08 wide and the glandular portion is 1.23 long and 0.14 in maximum width. The vulva opens at the beginning of the last fourth of the body length, at a distance of 1.37 - 1.50 from the tip of the tail (Fig. 12). The female anal opening is situated 0.14 - 0.15 from the tail tip. The eggs measure 42 u by 25 u.

DISCUSSION

Because of the presence of four cordons which are not anastomosing, the present nematode species has been assigned to the subgenus *Dispharynx* of the genus *Synhimantus*. The separation of the cordon tips which is a generic characteristic, is enhanced by the electron microscope.

Of the *Synhimantus* species described from Egypt, *S. sirry* Khalil, 1931, recovered from *Pelecanus onocrotalus* may be related to the new species. Apart from the host difference, *S. sirry* still differs from *S. passeri* in being larger in size, measuring 9.0 in the female and 6.8 in the male, and in possessing anastomosing

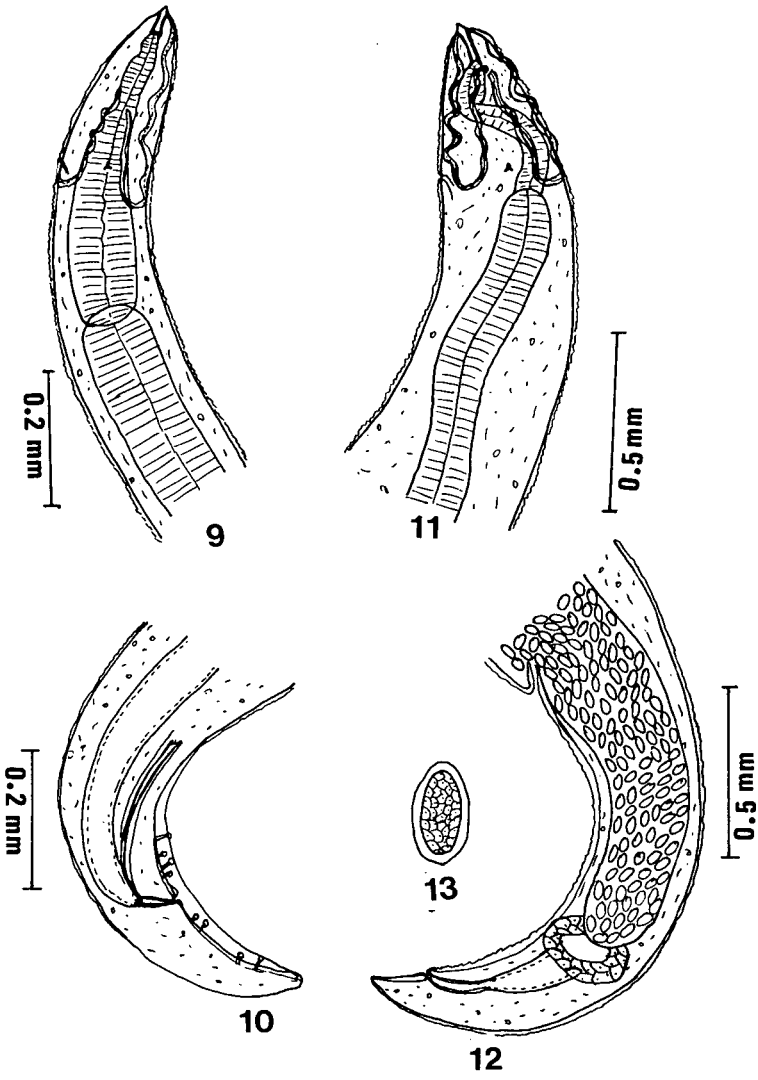


Fig. 9: Anterior extremity of the male
Fig. 10: Posterior extremity of the male
Fig. 11: Anterior extremity of the female
Fig. 12: Posterior extremity of the female.
Fig. 13: Embryonated egg.

cordons. *S. sirry* was placed within the subgenus *(Synhimantus)* by Chabaud and Campana (1949).

The following three species were also reported from Egypt by Myers, Kuntz and Wells (1962): *S. invaginatus* from *Ardeola i. ibis* and both *S. laticeps* and *S. robertdollfusi* from the falcon. *S. invaginatus* Linstow, 1901 differs from *S.*

passeri being larger in size, 10-12 in the male and 12-13 in the female, and in having the vulva situated close to the anal opening of the female.

S. laticeps (Rudolphi, 1819) differs from *S. passeri* in having the vulva situated anterior to the middle of the body, whereas *S. robortdollfusi* Desportes, 1947 differs from *S. passeri* in having anastomosing cordons.

S. passeri differs from all related species of the genus *Synhimantus* either in the size or in the position of the vulva, which is smaller than in *S. raillieti* Skrjabin 1924 (13-15 long), *S. equispiculatus* Wu and Liu 1943 (6.0 - 9.9 long) *S. suraiyae* Ali 1968 (7-10 long), *S. hyderabadensis* Ali, 1968 (9-10 long).

The vulva opens in close proximity to the anal opening in *S. sagittatus* (Rud. 1809), *S. orientalis* (Wu, 1933), *S. equispiculatus* Wu and Liu 1943 and *S. canadensis* Gendre, 1921, the vulva lies near or anterior to the middle of the body, whereas in *S. passeri* the vulva lies 1.3 anterior to the anal opening. *S. groffi* Li, 1934 differs from *S. passeri* in having spines on the cordons.

Host : *Passer domesticus niloticus*
Location : Pro-ventriculus.
Locality : Cairo, Egypt.
Type : Deposited in the Helminthological collection, Department of Zoology, Faculty of Science, University of Ain Shams, Egypt.

ACKNOWLEDGEMENT

The author expresses his deep gratitude and sincere thanks to Prof. Dr. M.F.A. Saoud, Professor of Parasitology and Dean, Faculty of Science, University of Qatar for kindly revising the manusscript. Thanks are also due to Dr. John W. Lewis, Royal Holloway and Bedford New College, University of London who kindly provided facilities for Scanning Electron Microscopy.

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دراسة مورفولوجية لنوع جديد من الديدان الخيطية سينهيمانتس (دسفارنكس) باسرى

أمين عبد الباقي عاشور

يتضمن البحث وصف نوع جديد من الديدان الخيطية والتي وجدت في مريء العصفور النيلي . وقد تم إستخدام المجهر الضوئي والمجهر الإلكتروني الماسح في وصف هذا النوع الجديد من الديدان ، كما تم مناقشة ومقارنة الوضع التصنيفي لهذه الديدان مع غيرها من الديدان المشابهة والمصنفة في الجنس نفسه من عائلة الأكيوريدي .