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**ON THE MORPHOLOGY OF PHARYNGODON MAMILLATUS (AN OXYURID NEMATODE) FROM TARENTOLA ANNULARIS FROM FAYOUM GOVERNORATE, EGYPT**

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**Key words :** Oxyurid nematodes - Reptiles- *Tarentola annularis*, *Pharangodon mamillatus*.

**ABSTRACTS**

The morphology of male and female *Pharyngodon mamillatus* (Linstow, 1897) was studied by means of light and scanning electron microscopy. The nematode is redescribed from *Tarentola annularis* from Fayoum governorate in Egypt. The use of both light and scanning electron microscopy offered more morphological details of the worm including the lateral band, cuticular surface, mouth opening, 6 lips possessing 3 papillae, vulva surrounded by two ciliated double walled folds and terminal spike which is longer in female than male. The present work added more details about the cuticular surface, mouth opening, lips, longitudinal ridges and vulval opening.

**INTRODUCTION**

*Pharyngodon mamillatus* was originally described by Linstow (1897) from *Plestiodon aldrovundi* from Algeria. Then it was redescribed by Chabaud and Golvan (1957) from *Eumeces algeroensis* from Morocco. In Egypt, *P. mamillatus* was reported by Baylis (1923), Myers *et al.* (1962) from *Eumeces schneideri* and Moravec *et al.* (1987) from *Chalcides ocellatus* (no illustrations given). Ashour *et al.* (1992) redescribed the same species from *Chalcides ocellatus* from Cairo. Mazen *et al.* (1996) reported *P.*

*mamillatus* from *Chalcides ocellatus*, *Eumeces schneideri* and *Tarentola annularis* from Assiut. It is hoped that the present investigation will help in extending the knowledge about the distribution, morphology and prevalence of the above nematodes in Fayoum Governorate in Egypt.

**MATERIALS AND METHODS**

Several specimens of *Tarentola annularis* were collected from Fayoum Governorate in Egypt. The reptiles were dissected and adult worms were collected from the

duodenum. Nematodes were fixed in 7% formaldehyde.

For light microscope examination, worms were cleared in lactophenol. All the specimens were measured using a graduated eyepiece and their drawing was made by using a Camera lucida.

For SEM, worms were immediately fixed in 4% formaldehyde for 3 hours at room temperature, washed in phosphate buffer for an hour then dehydrated in a graded series of acetone. Finally, they were critical-point dried, mounted on a double-sided tape, while on the stubs, then coated with gold and lastly examined by a JEOL, scanning electron microscope.

#### RESULTS AND DISCUSSION

The cuticular surface of the body is regularly transversely striated, each is 0.026 mm wide (Figs. 9&13). Mouth opening is triangular (Fig. 6&7). The mouth is surrounded with six protrusible lips (Figs. 2, 5, 8, 10). The 6 lips possess 3 oral papillae (Figs. 6&7). The tail is ending with a terminal spike in both sexes (Figs. 18&19). On each side of the body, the lateral ala is represented by two longitudinal and parallel ridges separated by a smooth cuticular band (Figs. 12&13). About 10-12 longitudinal ridges start from cervical region and run posteriorly to end slightly anterior to the bursa in the male or behind the level of the vulva in the female (Figs. 5&8&12&15).

**Male:** 1.75-2.24 mm long and 0.19-0.25 mm wide (Figs. 1&4). Oesophagus is separated from the rest

by a slight constriction, 0.36-0.45 mm long with a 0.08 mm wide bulb (Fig. 1). Nerve ring and excretory pore lie 0.32-0.36 mm and 0.52-0.58 mm, respectively from anterior extremity of the worm (Figs. 1&5). Single lateral ala starts at cervical region and extends posteriorly to post male bursa (Figs. 12&19). Bursa is ventrally forming a projecting part (Figs. 1&19). At the centre of this projection, the cloaca is present (Fig. 12). Three pairs of cloacal papillae occur; one pair is precloaca and two pairs postcloaca (Figs. 1&12). The male tail ends in a smooth short terminal spike that is 0.15-0.21 mm long (Figs. 1&19). A very small pore was seen on the dorsal surface of the base of the terminal spike (Fig. 14).

**Female:** 3.6-4 mm long and 0.40-0.46 mm wide (Fig. 2). Oesophagus is 0.48-0.50 mm long with a 0.09-0.013 mm wide posterior bulb. Nerve ring and excretory pore lie 0.34-0.38 and 0.50-0.65 mm respectively from anterior extremity (Fig. 2). On each side of the worm a lateral ala is present (Fig. 13). Vulva lies 0.45-0.72 mm from anterior extremity (Fig. 2). The vulval opening is transversely, oval shaped and possesses double walled anterior and posterior cuticular lips (Figs. 15&16&17). The inner border of each lip is provided with a cilia like structure (Fig. 16). A narrow cuticular transverse groove possessing anterior and posterior cuticular folds is present at a short distance behind the vulva (Fig. 17). In live worm the vagina was seen as a straight muscular tube measuring 1.38 mm long. The uterus

occupied most of the body and contains large number of eggs (Fig.2). The eggs are smooth elongate 115-135  $\mu$  long and 45-53  $\mu$  wide each with two opercula ; one on each pole of the egg (Fig.3) . Tail measures 0.56-0.60 mm long, of which 0.30-0.35 mm represent a caudal projection spike ( Figs.2&18 )

*Pharyngodon mamillatus* was originally described by Linstow (1897) from *Plestriodon aldrovandi* from Algeria . Chabaud and Golvan (1957) redescribed the same species from *Eumeces algeriensis* from Morocco . Moravic *et al.* (1987) and Ashour *et al.* (1992) redescribed the same species from *Chalcides ocellatus* from Cairo in Egypt . In 1996 Mazen *et al.* reported *P. mamillatus* from *Chalcides ocellatus* , *Eumeces schneideri* and *Tarentola annularis* from Assiut in Egypt(no scanning electron micrographs given) .

The present work agrees with the description given by Ashour *et al.* (1992) except that the adult worms in the present description were generally larger than those given by the latter authors whose description lacks details about the mouth, vulval opening and the cuticular ridges . This variation can be attributed to the host difference . The present description adds more details about mouth opening, lips, oral papillae, vulva and longitudinal cuticular ridgs. Moreover, Fayoum Governorate represents a new locality record for this nematode in Egypt.

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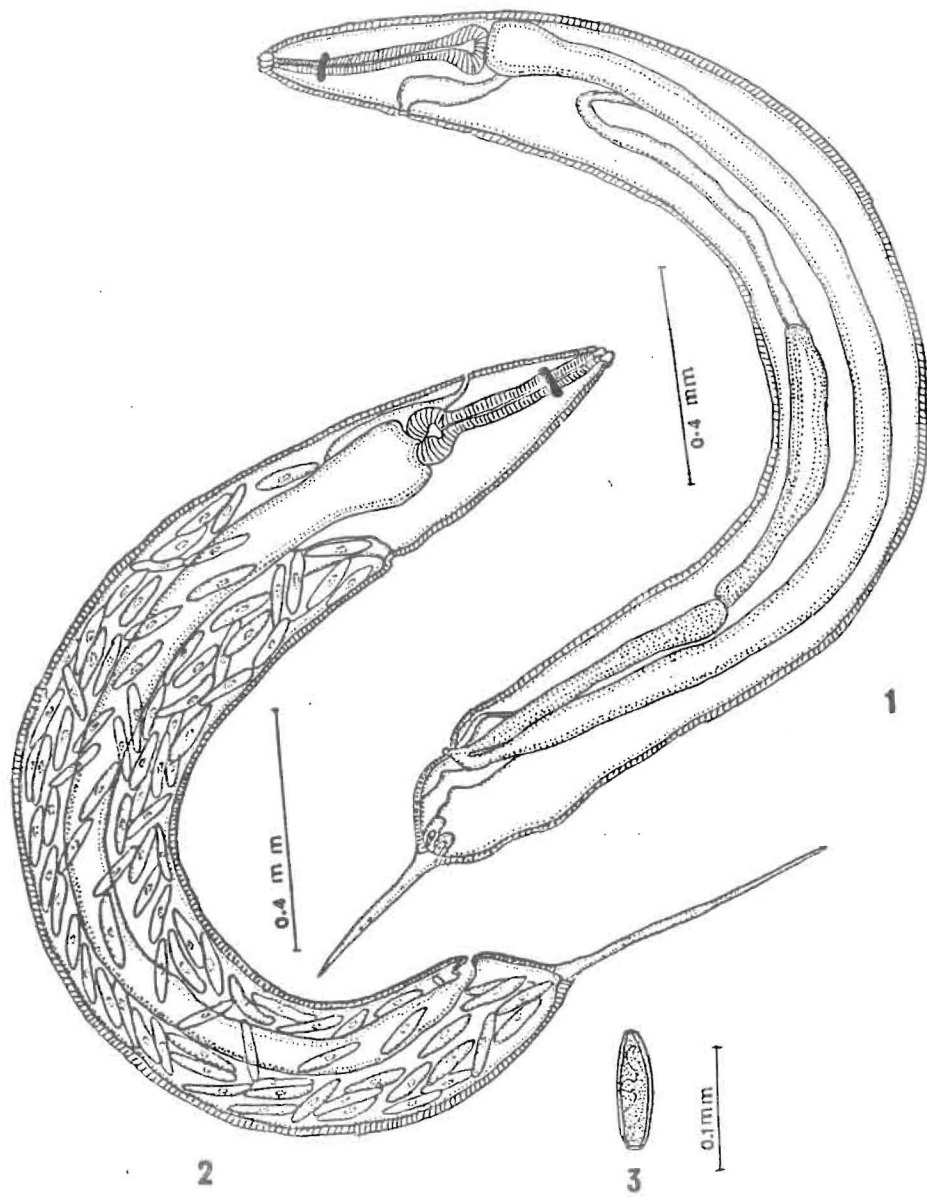
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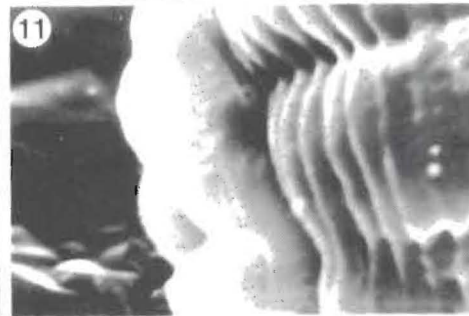
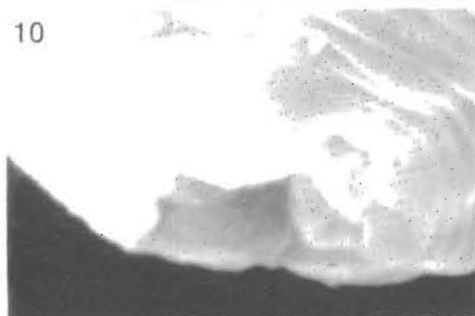
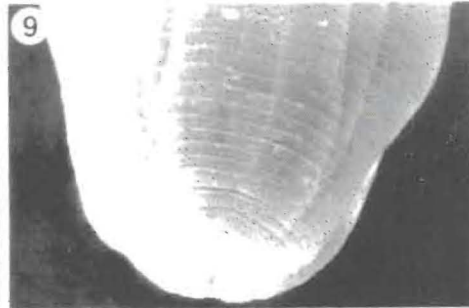
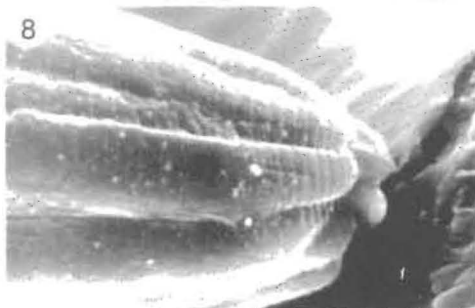
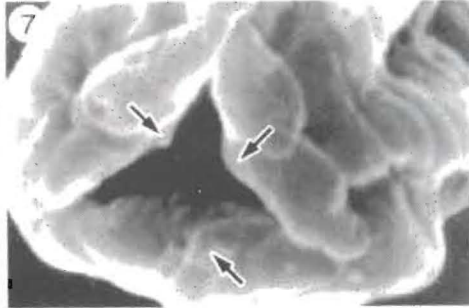
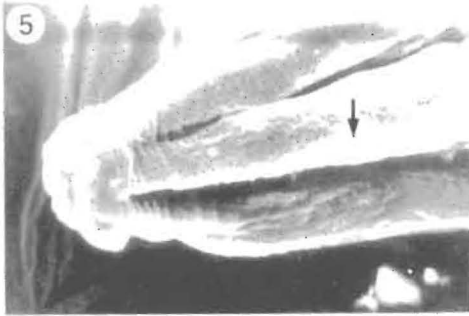
#### EXPLANATION OF FIGURES

**Figs. 1-5** : Camera lucida drawing of *Pharyngodon mamillatus* Linstow, 1897.

**Fig. 1** : Lateral view of male, showing anterior end and lateral view of bursa.

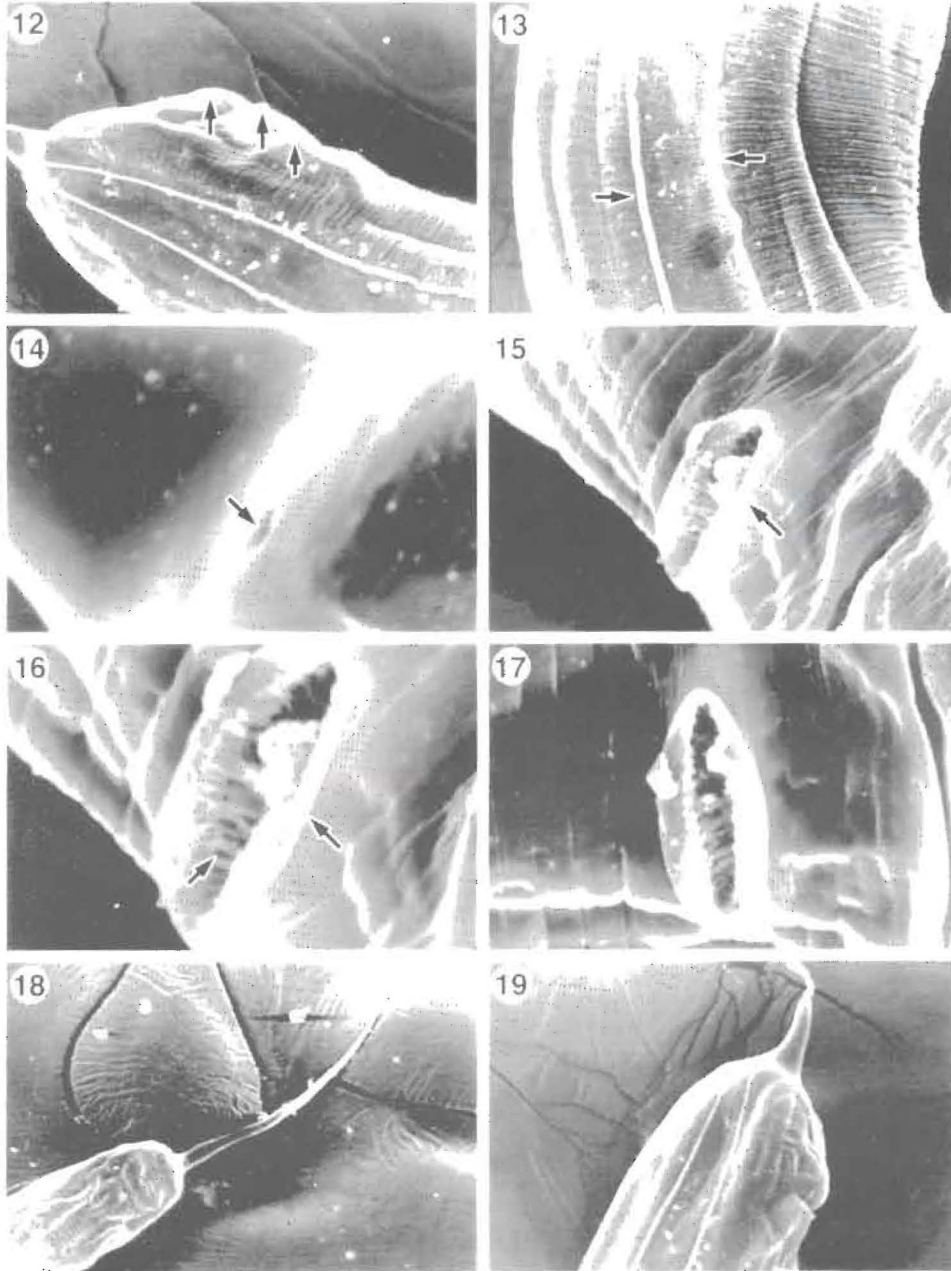
4 On the morphology of *Pharyngodon mamillatus* (An Oxyurid Nematode) from *Tarentola annularis* from Fayoum governorate, Egypt





6 On the morphology of *Pharyngodon mamillatus* (An Oxyurid Nematode) from *Tarentola annularis* from Fayoum governorate, Egypt

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- Fig. 2 : Lateral view of female, showing anterior end and tail.
- Fig. 3 : Egg with two opercula.
- Figs. 4-19 : Scanning electron micrographs of *Pharyngodon mamillatus*.
- Fig. 4 : Lateral view of male, showing lateral band and terminal spike (x 75)
- Fig. 5 : Anterior part of worm, showing cuticular ridges and excretory pore (x1500)
- Fig. 6 : En-face view, showing triangular mouth opening and 6 lips (x2000)
- Fig. 7 : Enlarged part of Fig.6, showing six lips provided with 3 papillae (x5000).
- Fig. 8 : Anterior end, showing cuticular ridges and protrusible lips (1500).
- Fig. 9 : Anterior end, showing cuticular surface (x1500).
- Fig. 10 : Enlarged part of Fig. 9, showing inverted lips (x5000).
- Fig. 11 : Anterior extremity, showing 6 lips and cuticular surface (x5000).
- Fig. 12 :Lateral view of bursa, showing 3 pairs of pre and postcloacal papillae (x500)
- Fig. 13 : Cuticular surface, showing regular transverse striations and lateral band with its smooth surface (x750).
- Fig. 14 : Small pore showed on the dorsal base of terminal spike of male (x5000).
- Fig. 15 : Ventrolateral view of female, showing vulval opening surrounded by two double walled anterior and posterior lips (x2000)
- Fig. 16 : Enlarged part of Fig. 15, showing transverse, oval shaped vulval opening (x3500).
- Fig. 17 : Ventral view of female, showing the inner border of vulva provided with cilia like structure and a narrow groove behind the vulva (x2000).
- Fig. 18 : Ventral view of female, showing long terminal spike (x200).
- Fig. 19 : Lateral view of male, showing short terminal spike and lateral band (x350).



**دراسة الشكل الظاهري لدودة *فارنجودن ماملاتس* (أوكسورويد نيمبا تودا) من البرص  
تا رنتولا انيولارس من محافظة الفيوم في مصر**

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تم في هذا البحث دراسة الشكل الظاهري لذكر وانثى دودة *فارنجودن ماملاتس* (لنستون ١٨٩٧) من الخيطيات التي جمعت من البرص من محافظة الفيوم بمصر وذلك بواسطة المجهرين الضوئي والالكتروني الماسح كما تم اعادة وصف تلك الديدان و ابراز العديد من تفاصيلها المورفولوجيه وقد اظهر استخدام المجهرين الضوئي والالكتروني معا العديد من الصفات الظاهرية للدودة التي شملت الشريط الجانبي ، سطح الجسم ، فتحة الفم ، ٦ شفاة تحتوي علي ٣ حلقات كما شملت وصف الفتحة التناسلية للانثى المحفوظة بشيئين مبدئين كما ينتهي الجسم بزائدة تكون اطول في الانثى عنيا في الذكر. كما تم مناقشة النتائج السابقة . وقد اضاف هذا البحث العديد من التفاصيل المتعلقة بسطح الجسم ، فتحة الفم، الشفاة، الحواف الجانبية للجسم والفتحة التناسلية للانثى .

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