

## Description of two new species of Dorylaimoidea from India

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**Summary** – Two new species of Dorylaimoidea are described and illustrated. *Aporcedorus punctatus* n. sp., is 2.4-2.6 mm long; b = 4.8-5.4; c = 5-6; V = 45-48; odontostyle : 15-16  $\mu\text{m}$ ; spicules : 53  $\mu\text{m}$ , differs from *A. filicaudatus* Jairajpuri & Ahmad, 1983 in having punctate cuticle, smaller body size and odontostyle, posterior vulva and smaller c value. The male is reported for the first time in the genus and accordingly the diagnosis of *Aporcedorus* has been amended. *Discolaimus papillatus* n. sp., is 1.7-1.9 mm long; b = 4.2-4.6, c = 54-60; V = 51-57, odontostyle 18-19  $\mu\text{m}$ ; spicules 39  $\mu\text{m}$ ; is related to *D. similis* Thorne, 1939 and *D. silvicolus* Sauer & Annells, 1985 but differs from these species mainly in having ventromedian supplements continuous with adanal pair.

**Résumé** – Description de deux nouvelles espèces de Dorylaimoidea provenant de l'Inde – Deux nouvelles espèces de Dorylaimoidea sont décrites et illustrées. *Aporcedorus punctatus* n. sp. présente les caractéristiques suivantes : L = 2,4-2,6 mm; b = 4,8-5,4; c = 5-6; V = 45-48; odontostyle = 15-16  $\mu\text{m}$ ; spicules = 53  $\mu\text{m}$ . Il diffère de *A. filicaudatus* Jairajpuri & Ahmad, 1983 par la cuticule pourvue de ponctuations, la plus faible longueur du corps et de l'odontostyle, la vulve située postérieurement et la valeur moindre de c. Le mâle est décrit pour la première fois dans le genre ce qui a conduit à amender la diagnose de ce dernier. *Discolaimus papillatus* n. sp. est caractérisé par : L = 1,7-1,9 mm; b = 4,2-4,6; c = 54-60; V = 51-57; odontostyle = 18-19  $\mu\text{m}$ ; spicules = 39  $\mu\text{m}$ . Il est proche de *D. similis* Thorne, 1939 et de *D. silvicolus* Sauer & Annells, 1985 dont il diffère essentiellement par les suppléments ventromédians en file continue avec la paire de suppléments adanaux.

**Key-words** : Nematodes, Dorylaimoidea, *Aporcedorus punctatus* n. sp., *Discolaimus papillatus* n. sp.

Soil samples collected from some localities in India yielded two new species of the order Dorylaimida. The present paper provides the descriptions of two new species, one each belonging to the genera *Aporcedorus* Jairajpuri & Ahmad, 1983 and *Discolaimus* Cobb, 1913. These have been named *Aporcedorus punctatus* n. sp. and *Discolaimus papillatus* n. sp.

The nematodes were killed in hot 4 % formalin and dehydrated by slow method. All measurements were taken and observations made on specimens mounted in anhydrous glycerine.

### *Aporcedorus punctatus* n. sp.

(Fig. 1)

#### DIMENSIONS

*Females* (n = 2) : L = 2.35-2.60 mm; a = 52-58; b = 4.8-5.0; c = 5; c' : 17; V = 46-48; G<sub>1</sub> = 8; G<sub>2</sub> = 9-10; odontostyle 15-16  $\mu\text{m}$ ; odontophore 28-31  $\mu\text{m}$ ; oesophagus 483-515  $\mu\text{m}$ ; cardia 12-15  $\mu\text{m}$ ; prerectum 74-83  $\mu\text{m}$ ; rectum 28-33  $\mu\text{m}$ ; tail 475-498  $\mu\text{m}$ ; ABD 27-29  $\mu\text{m}$ .

*Male* : L = 2.4 mm; a = 56; b = 5.4; c = 5; c' = 16.4; T = 50; odontostyle 15  $\mu\text{m}$ ; odontophore 30  $\mu\text{m}$ ; oesophagus 452  $\mu\text{m}$ ; cardia 15  $\mu\text{m}$ ; spicules 53  $\mu\text{m}$ ; lateral guiding pieces 12  $\mu\text{m}$ ; ventromedian supplement 1; prerectum 152  $\mu\text{m}$ ; rectum 42  $\mu\text{m}$ ; tail 471  $\mu\text{m}$ ; ABD 29  $\mu\text{m}$ .

*Holotype* (female) : L = 2.60 mm; a = 54; b = 5.3; c = 6; c' = 16.5; V = 45; G<sub>1</sub> = 8; G<sub>2</sub> = 10; odontostyle 16  $\mu\text{m}$ ; odontophore 30  $\mu\text{m}$ ; oesophagus 494  $\mu\text{m}$ ; cardia 16  $\mu\text{m}$ ; prerectum 115  $\mu\text{m}$ ; rectum 33  $\mu\text{m}$ ; tail 471  $\mu\text{m}$ ; ABD 29  $\mu\text{m}$ .

#### DESCRIPTION

*Adults* : Body ventrally curved upon fixation, tapering only slightly anteriorly but markedly towards posterior end to form a long filiform tail. Cuticle finely striated with distinct punctations on entire body, 2-3  $\mu\text{m}$  thick at mid-body and 3-4  $\mu\text{m}$  on tail. Lateral chords about one-third of corresponding body-width wide at mid-body. Lip region off set from body by constriction, about 2.5 times as wide as high. Lips conoid, anterior sensilla protruding above lip contour. Amphids stirrup-shaped, apertures 7-8  $\mu\text{m}$  or about half lip region-width wide. Odontostyle about one lip region-width long, with aperture about half of its length. Guiding ring single, plicated, located at 7-8  $\mu\text{m}$  or about half of lip region width from anterior end. Odontophore simple, rod-like about twice as long as odontostyle. Nerve ring at 136-150  $\mu\text{m}$  from anterior end. Oesophagus beginning to widen at 45-50 % and attaining its full width at 48-54 % of its length from anterior end. Cardia short hemispheroid, 15-16  $\mu\text{m}$  long. Oesophageal gland nuclei and their orifices located as follows : DO = 49-55; DN = 51-57; DO-DN = 1.5-2.3; S<sub>1</sub>N<sub>1</sub> = 73-77; S<sub>1</sub>N<sub>2</sub> = 74-78; S<sub>2</sub>N = 81-84; S<sub>2</sub>O = 84-86.

**Female:** Reproductive system amphidelphic; vulva transverse, slit-like; vagina 20-23  $\mu\text{m}$  or about half of corresponding body-width deep. Both sexual branches equally developed; ovaries well developed, reflexed, 72-86  $\mu\text{m}$  long with oocytes arranged in a single row except near tip. Oviduct 75-133  $\mu\text{m}$  long; sphincter present at oviduct-uterus junction. Uterus 105-120  $\mu\text{m}$  long. Pre-rectum 2.7-3.0 anal body-widths long. Rectum 0.7-1.2 anal body-widths long. Tail very long, filiform with acute terminus, 16.5-17.5 anal body-widths long with two caudal pores on each side.

**Male:** Testes paired, opposed, dorylaimoid; sperms spindle-shaped, 5-7  $\mu\text{m}$  long. Spicules dorylaimoid, 1.8 anal body-widths long. Lateral guiding pieces simple, rod-like about one-fifth of spicule length. Supplements, an adanal pair and a single weakly developed ventromedian. Prerectum 5.5 anal body-widths long. Rectum 1.5 anal body-widths long. Tail dorsally convex conoid then tapering to become long and filiform, 16.5 anal body-widths long with three caudal pores on each side.

#### TYPE SPECIMENS

**Holotype:** Female on slide *Aporcedorus punctatus* n. sp/1; deposited in the Nematodes Collection of the Department of Zoology, Aligarh Muslim University, Aligarh. **Paratypes:** Females and male on slides *Aporcedorus punctatus* n. sp/2 and 3; deposited in the nematode collection of the Department of Zoology, Aligarh Muslim University, Aligarh. A paratype female deposited at Muséum National d'Histoire Naturelle, Paris, France.

#### TYPE HABITAT AND LOCALITY

Soil around roots of coffee (*Coffea arabica* L.) plants from Chickmagalur, Karnataka State, India. Collected in November, 1989.

#### DIAGNOSIS AND RELATIONSHIP

*Aporcedorus punctatus* n. sp. has a long body, long filiform tail and distinctly punctate cuticle.

The new species differs from the only one other species in the genus *Aporcedorus filicaudatus* Jairajpuri & Ahmad, 1983, in having punctations on the cuticle, smaller body size, smaller odontostyle and odontophore, comparatively posterior vulva, smaller  $c'$  value and shorter prerectum ( $L = 3.05\text{-}3.45$  mm; odontostyle 18-20  $\mu\text{m}$ ; odontophore 32-34  $\mu\text{m}$ ;  $c' = 20\text{-}27$ ,  $V = 40\text{-}44$ ; prerectum 150-220  $\mu\text{m}$  and cuticle without punctations in *A. filicaudatus*).

#### REMARKS

Jairajpuri and Ahmad (1983) proposed *Aporcedorus* with *A. filicaudatus* based on females only and placed it under the family Aporcelaimidae Heyns, 1965 because of its dorso-ventral slit-like oral opening, wide odontostyle with large aperture and plicated guiding ring. It was mainly differentiated from the existing genera of Aporcelaimidae in the possession of long filiform tail. An-

drassy (1988) however, placed the genus under Dorylaimidae because of tail shape. The nature of oral aperture and guiding ring is similar to aporcelaimids, but the tail shape is like Dorylaimidae. With the discovery of a male which has weakly developed ventromedian supplements like that of *Amphidorylaimus* Andrassy, 1960 the placement of this genus under Dorylaimidae near *Amphidorylaimus Prodorylaimus* Andrassy, 1969, etc., appears more reasonable as was proposed by Andrassy (1988) rather than in Aporcelaimidae as conceived by Jairajpuri and Ahmad (1983). The amended diagnosis of *Aporcedorus* is given below.

### *Aporcedorus* Jairajpuri & Ahmad, 1983

#### DIAGNOSIS (AMENDED)

Body large, 2.3-3.5 mm long, cuticle with fine transverse striations. Oral opening a dorso-ventral slit. Lip region offset from body, lips conoid. Amphids stirrup-shaped with slit-like apertures. Odontostyle small but wide, aperture more than half of its length. Guiding ring single, plicated, fold-like. Odontophore simple, rod-like. Oesophagus dorylaimoid, enlarging near middle to form basal expanded portion. Cardiac disc present. Reproductive system amphidelphic; vulva a transverse slit. Males with dorylaimoid spicules; lateral guiding pieces and a single weakly developed ventromedian supplement in addition to adanal pair. Tail very long and filiform, similar in both sexes.

#### TYPE SPECIES

*Aporcedorus filicaudatus* Jairajpuri & Ahmad, 1983.

#### OTHER SPECIES

*Aporcedorus punctatus* n. sp.

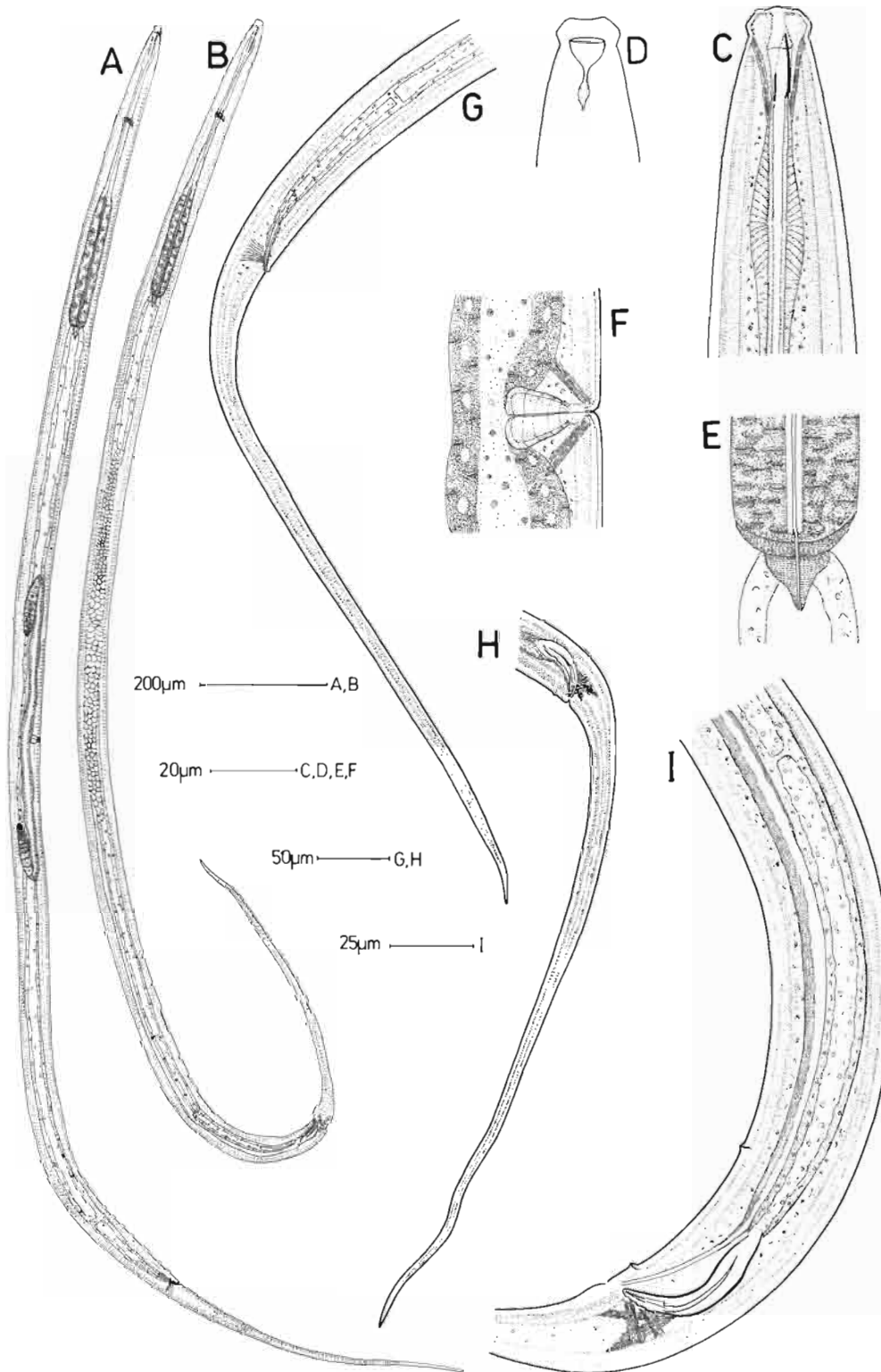
### *Discolaimus papillatus* n. sp.

(Fig. 2)

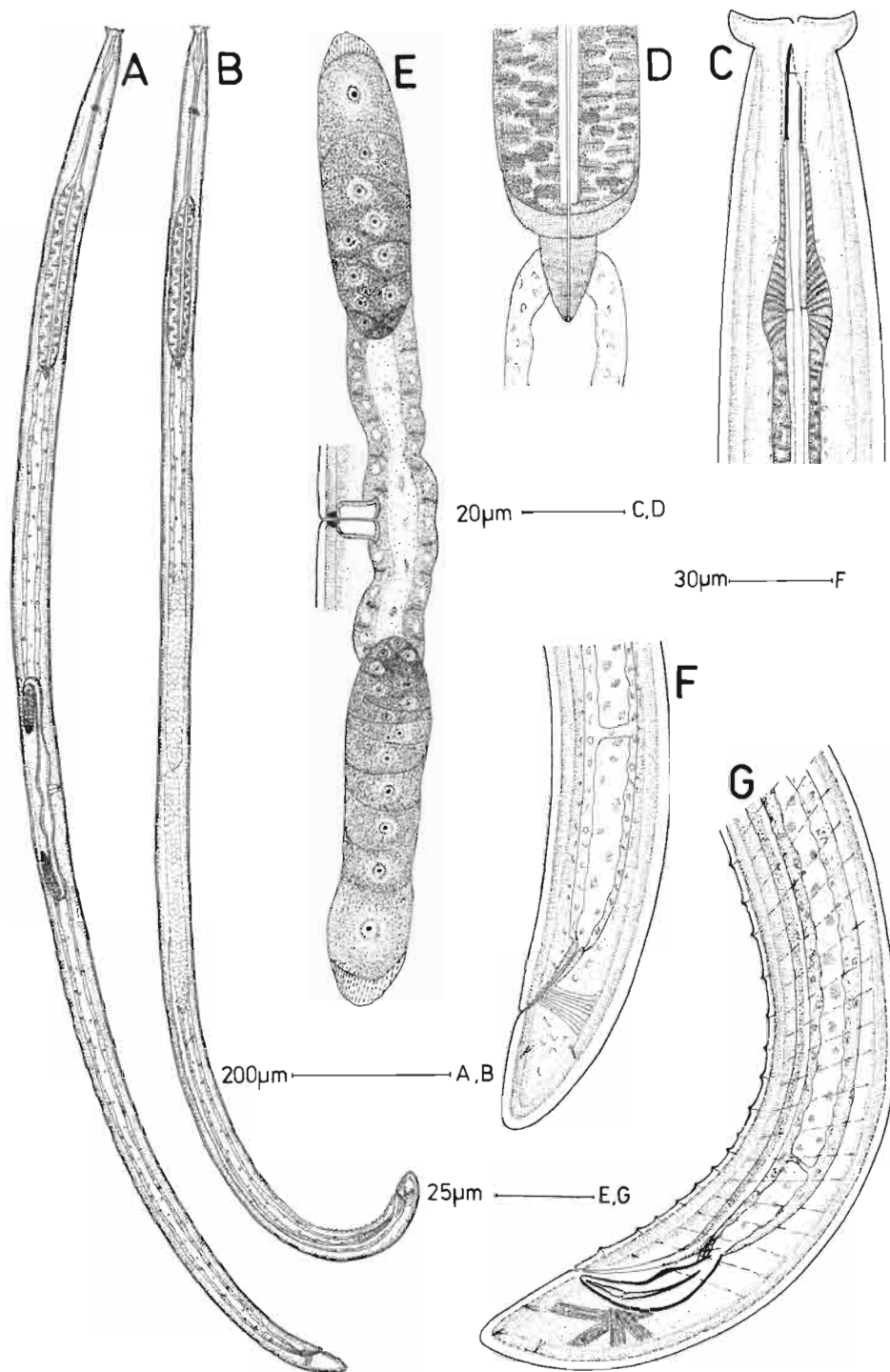
#### DIMENSIONS

**Females** ( $n = 4$ ):  $L = 1.70\text{-}1.90$  ( $1.81 \pm 0.07$ ) mm;  $a = 44\text{-}47$  ( $46.1 \pm 1.18$ );  $b = 4.2\text{-}4.6$  ( $4.4 \pm 0.13$ );  $c = 54\text{-}60$  ( $57.0 \pm 2.04$ );  $c' = 1.2\text{-}1.3$  ( $1.3 \pm 0.06$ );  $V = 51\text{-}57$  ( $53 \pm 2.1$ );  $G_1 = 6\text{-}8$  ( $7.3 \pm 1.2$ );  $G_2 = 7\text{-}8$  ( $7.4 \pm 0.99$ ); odontostyle 18-19 ( $18.4 \pm 0.54$ )  $\mu\text{m}$ ; odontophore 33  $\mu\text{m}$ ; oesophagus 395-437 ( $417 \pm 16.87$ )  $\mu\text{m}$ ; cardia 16-23 ( $19 \pm 3.12$ )  $\mu\text{m}$ ; prerectum 45-60 ( $54 \pm 6.82$ )  $\mu\text{m}$ ; rectum 26-29 ( $27.4 \pm 1.1$ )  $\mu\text{m}$ ; tail 31-33 ( $32.1 \pm 0.82$ )  $\mu\text{m}$ ; ABD 25-27 ( $26 \pm 0.84$ )  $\mu\text{m}$ .

**Male:**  $L = 1.77$  mm;  $a = 42$ ;  $b = 4.3$ ;  $c = 54$ ;  $c' = 1.2$ ;  $T = 50$ ; odontostyle 18  $\mu\text{m}$ ; odontophore 33  $\mu\text{m}$ ; oesophagus 414  $\mu\text{m}$ ; cardia 18  $\mu\text{m}$ ; spicules 39  $\mu\text{m}$ ; lateral guiding pieces 9  $\mu\text{m}$ ; ventromedian supplements 15; prerectum 32  $\mu\text{m}$ ; rectum 33  $\mu\text{m}$ ; tail 33  $\mu\text{m}$ ; ABD 28  $\mu\text{m}$ .



**Fig. 1.** *Aporcedorus punctatus* n. sp. **A** : Entire female; **B** : Entire male; **C** : Anterior region; **D** : Anterior region showing amphid; **E** : Oesophago-intestinal junction; **F** : Vulval region; **G** : Female posterior region; **H** : Male posterior region; **I** : Male posterior region showing ventromedian supplements.



**Fig. 2.** *Discolaimus papillatus* n. sp. A : Entire female; B : Entire male; C : Anterior region; D : Oesophago-intestinal junction; E : Female gonads; F : Female posterior region; G : Male posterior region.

*Holotype* (female) : L = 1.83 mm; a = 47; b = 4.4; c = 58; c' = 1.2; V = 52; G<sub>1</sub> = 6; G<sub>2</sub> = 7; odontostyle 18 µm; odontophore 33 µm; oesophagus 418 µm; cardia 18 µm; prerectum 59 µm; rectum 27 µm; tail 32 µm; ABD 27 µm.

#### DESCRIPTION

*Adults* : Body straight to slightly ventrally curved upon fixation, more prominently in the posterior region especially in males. Cuticle finely transversely striated, 2-3 µm thick at mid-body and 3-4 µm on tail. Lateral chords occupying about one-third of corresponding body width at mid-body; lateral organs 68-75. Ventral and dorsal body pores distinct, spaced irregularly; 13-17 ventral and 11-16 dorsal pores in oesophageal region. Lip region discoid and offset by a deep constriction, about five times as wide as high. Lips with distinct papillae, six liplets surrounding stoma. Amphids stirrup-shaped, apertures 7-8 µm or about half of corresponding body width wide. Odontostyle about three-fourths of lip region width long, aperture about half of its length. Guiding ring single, 8-9 µm or 0.3-0.4 lip region widths from anterior end. Odontophore rod-like, 1.7-1.8 times odontostyle length. Nerve ring 105-111 µm from anterior end. Oesophagus widening at 41-43 % of its length from anterior end. Cardia elongate conoid, cardiac disc present. Oesophageal gland nuclei and their orifices located as follows : DO = 47-49; DN = 49-51; DO-DN = 1.8-3.6; S<sub>1</sub>N<sub>1</sub> = 68-74; S<sub>1</sub>N<sub>2</sub> = 70-76; S<sub>2</sub>N = 90-92; S<sub>2</sub>O = 90-93.

*Female* : Reproductive system amphidelphic. Vulva a transverse slit; vagina 12-14 µm or about one-third of corresponding body-width deep. Sexual branches equally developed; ovaries 93-109 µm and oviduct 52-66 µm long. Sphincter present at oviduct-uterus junction. Uterus 120-133 µm long. Prerectum 1.6-2.3 anal body-widths long. Rectum equal to anal body-width. Tail short conoid, 1.2-1.3 anal body-widths long with 2-3 caudal pores on each side.

*Male* : Sperms spindle-shaped, 6-8 µm long. Spicules dorylaimoid, 1.4 anal body-widths long. Lateral guiding pieces simple, rod-like about one-fifth of spicule length. Supplements, an adanal pair and 15 ventromedians. The latter are contiguous with adanal pair with no preloacal space but supplements themselves are 9-13 µm apart. Prerectum short, 1.2 anal body-widths long. Rectum 1.1 anal body-widths long. Tail short, conoid, about 1.2 anal body-widths long, with 2-3 caudal pores on each side.

#### TYPE MATERIAL

*Holotype* : Female on slide *Discolaimus papillatus* n. sp/1; deposited in Nematode Collection of the Department of Zoology, Aligarh Muslim University, Aligarh.

*Paratypes* : Females and male on slides *Discolaimus papillatus* n. sp/2-4; deposited in the nematode collection of the Department of Zoology, Aligarh Muslim University, Aligarh. A paratype female deposited at Muséum National d'Histoire Naturelle, Paris, France.

#### TYPE HABITAT AND LOCALITY

Soil around roots of pea (*Pisum sativum* L.) from Quarsi, Aligarh district, Uttar Pradesh, India; collected in March, 1992.

#### DIAGNOSIS AND RELATIONSHIP

*Discolaimus papillatus* n. sp. is characterized by its moderately large, but slender body, distinct body pores, a short conoid tail and the male having ventromedian supplements contiguous with adanal pair.

The new species is closely related to *D. similis* Thorne, 1939, and *D. silvicolus* Sauer & Annells, 1985, but differs from the former in the size of prerectum and spicules, in the number and arrangement of ventromedian supplements and in having comparatively shorter male tail (prerectum less than one anal body-width long, spicules 40 µm, ventromedian supplements 4 and the posterior supplements far from adanal pair, c = 43 in *D. similis*). From *D. silvicolus* it differs in having comparatively slender body, smaller odontostyle and odontophore, lesser number of lateral organs and in having a longer prerectum (a = 37-42; odontostyle 20-22 µm; odontophore 35-39 µm; lateral organs 90 and prerectum equal to anal body-width in *D. silvicolus*). It further differs from *D. silvicolus* in the presence of males.

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