

Taxonomy of *Ottolenchus* Husain & Khan, and description of *Coslenchus polonicus* sp. n. (Nematoda : Tylenchidae)

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SUMMARY

The author gives a diagnosis of the genus *Ottolenchus* Husain & Khan, 1967 which contains the following species: *O. parvus* (Siddiqi, 1963), *O. facultativus* (Szczygieł, 1969) comb. n., *O. helenae* (Szczygieł, 1969) comb. n., and *O. vesiculosus* (Knobloch & Knierim, 1969) comb. n. These species are described and a key to *Ottolenchus* females is given. *Coslenchus polonicus* sp. n. is described from Poland. It differs from all *Coslenchus* species by its greater body length, the presence of cuticular ridges (26 at the level of vulva), a robust stylet 14-15 μ m long, and a characteristic tail shape.

RÉSUMÉ

Taxonomie d'Ottolenchus Husain & Khan et description de Coslenchus polonicus sp. n. (Nematoda : Tylenchidae)

L'auteur donne une diagnose du genre *Ottolenchus* Husain & Khan, 1967. Ce genre contient les espèces suivantes: *O. parvus* (Siddiqi, 1963), *O. facultativus* (Szczygieł, 1969) comb. n., *O. helenae* (Szczygieł, 1969) comb. n. et *O. vesiculosus* (Knobloch & Knierim, 1969) comb. n. Ces espèces sont décrites et une clé des femelles d'*Ottolenchus* est donnée. *Coslenchus polonicus* n. sp., trouvé en Pologne, est décrit. Il diffère de toutes les espèces de *Coslenchus* par la plus grande longueur du corps, la présence de crêtes longitudinales (26 au niveau de la vulve), le stylet robuste, long de 14-15 μ m et la forme caractéristique de la queue.

Ottolenchus Husain & Khan, 1967 was proposed as a subgenus of *Tylenchus* Bastian, 1865 for a single species, *T. (O.) equisetus* Husain & Khan, 1967. Wu (1970) raised *Ottolenchus* to full generic status, but her interpretation of this genus was clearly identical with the present diagnosis of *Malenchus* Andrassy, 1968. Siddiqi (1971), Decker (1972), Andrassy (1976), and Hooper (1978) mentioned *Ottolenchus* as a valid genus without generic diagnosis. However, Golden (1971) synonymized *Ottolenchus* with *Aglenchus* Andrassy, 1954, and Bello (1971) considered *Ottolenchus* identical with *Filenchus* Andrassy, 1954.

Ottolenchus has been clearly differentiated from *Malenchus* by Siddiqi (1979), *O. parvus* (Siddiqi, 1963) being the only species included. Some other species needed re-examination to see if they are members of *Ottolenchus*. This work is reported in the present paper.

Genus *Ottolenchus* Husain & Khan, 1967
(Fig. 1)

DIAGNOSIS

Body almost cigar-shaped, except for tail. Cuticle thin, transversely striated. Lateral field with two incisures. Amphidial apertures as longitudinal slit, sometimes bent. Head low. Deirids present. Cephalic framework weak, basal plate not refractive, stylet protractors attached to basal plate. Stylet very thin; conus about one-third of stylet length. Knobs elongated. Median bulb elongated, muscular, with small but distinct thickenings of lumen. Excretory duct narrow. Female genital system prodelphic, spermatheca as an offset pouch, crustaformeria as quadricolumella, vagina with thin walls, vulva closed. Spicules thin, anteriorly

cephalated. Bursa small. Cloacal lips not protruding, without hypopygmata.

TYPE SPECIES

- O. parvus* (Siddiqi, 1963) Siddiqi, 1979
- = *Tylenchus (Aglenchus) parvus* Siddiqi, 1963
- = *Aglenchus parvus* (Siddiqi, 1963) Golden, 1971
- = *Tylenchus (Ottolenchus) equisetus* Husain & Khan, 1967
- = *Ottolenchus equisetus* (Husain & Khan, 1967) Wu, 1970

OTHER SPECIES INCLUDED

- Ottolenchus facultativus* (Szczygieł, 1969) comb. n.
- = *Tylenchus facultativus* Szczygieł, 1969
- = *Malenchus piahyuensis* Monteiro, 1974
- Ottolenchus helenae* (Szczygieł, 1969) comb. n.
- = *Tylenchus helenae* Szczygieł, 1969
- Ottolenchus vesiculosus* (Knobloch & Knierim, 1969) comb. n.
- = *Tylenchus vesiculosus* Knobloch & Knierim, 1969

The genus *Ottolenchus* is closest to *Malenchus*, from which it differs by having a more cylindrical body, much shallower cuticular striae, less refractive incisures, thinner cuticle, lower cephalic region, weaker stylet, thickenings of oesophageal lumen in median bulb more strongly developed, and closed vulva. Some of these differences are difficult to evaluate and describe, but they support the separation of these genera.

Ottolenchus differs from *Miculenchus* Andrásy, 1959 by having a bursa, smooth striae (striae are described as zig-zag for *M. salvus* Andrásy, 1959), and probably the structure of cloacal lips.

KEY TO FEMALES OF *Ottolenchus*

- 1. Annule width 1.5 μm or more 2
- Annule width 1.2 μm or less..... *O. helenae*
- 2. Head unstriated, genital tract long, reaching oesophageal bulb..... *O. parvus*
- Head with 2-3 annules, genital tract shorter 3

- 3. Stylet 10-11 μm *O. vesiculosus*
- Stylet 6-8 μm *O. facultativus*

Ottolenchus parvus (Siddiqi, 1963) Siddiqi, 1979

No type of this species was seen, and the characters given come from Siddiqi's (1963) and Husain and Khan's (1967) descriptions.

Female : L = 0.38-0.54 mm ; a = 27-33 ; b = 5.4-7.2 ; c = 3.8-4.6 ; c' = 12-14 ; V = 58-64 ; V' = 85 (calculated from holotype measurements) ; MB = 45-46 (calculated from drawings) ; stylet = 7-8 μm .

Cuticular annule width about 2.1 μm . Head apparently smooth. Stylet length 7-8 μm in Siddiqi's (1963) description and 12-14 μm in Husain and Khan's (1967) paper, but the stylet drawn by the latter authors is about 8 μm long. There are 37-45 annules drawn from anterior body end to the excretory pore.

Vagina about half body width long. Female genital tract about 37% of body length, extending up to basal oesophageal bulb. Siddiqi (1963) drew 25 annules between vulva and anus. Tail tip pointed or finely rounded. Spicules 15-17 μm , according to Husain and Khan (1967).

Golden (1971) synonymized *T. (A.) parvus* and *T. (O.) equisetus*, and this action was supported by Siddiqi (1979). Bello (1971) synonymised *T. filiformis* Bütschli, 1873, *T. parvus*, *T. equisetus*, and *T. facultativus*. This action is rejected because the published description of *T. filiformis* is not sufficient for generic classification of this species, according to the present taxonomy of Tylenchidae. Since the type locality is not mentioned and types are not preserved, *T. filiformis* must be declared *species inquirenda*. *T. (Filenchus) filiformis apud* Andrásy, 1954 is a distinctly different species and has been renamed *T. vulgaris* Brzeski, 1963. For differences between *O. parvus* and *O. facultativus* see the below-mentioned species.

Ottolenchus facultativus (Szczygieł, 1969) comb. n.

Females (n = 38) : L = 0.48 (0.42-0.55) mm ; a = 30 (25-36) ; b = 6.1 (5.0-6.7) ; c = 4.6 (3.7-5.5) ; c' = 10 (7-14) ; T/VA = 1.8 (1.2-

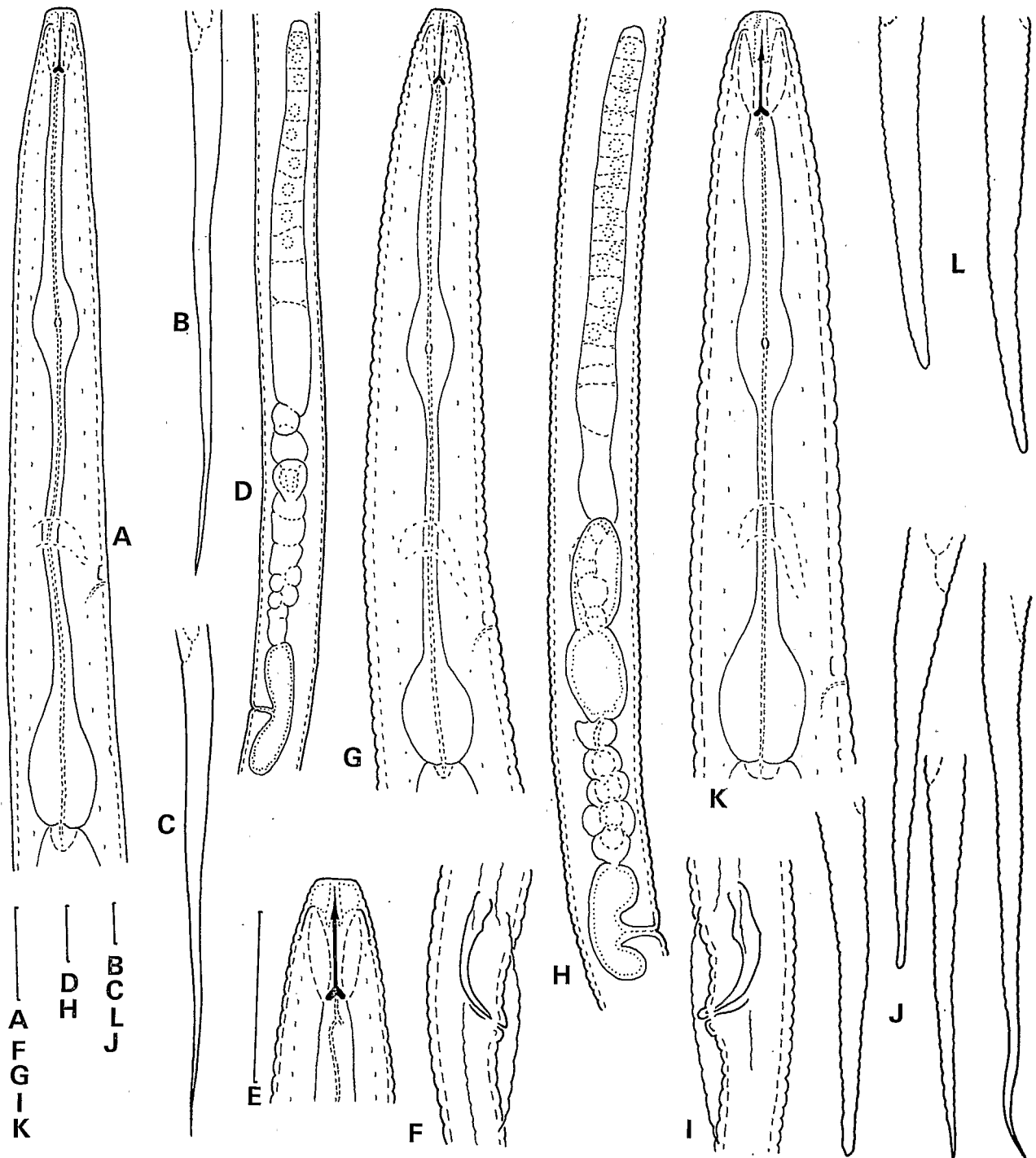


Fig. 1. A-F *Ottolenchus helenae*; A : anterior body end, B and C : variation of female's tail ; D : female's gonad ; E : head ; F : male cloacal region. G-J *Ottolenchus facultativus*; G : anterior body end ; H : female gonad ; I : male cloacal region ; J : variation of female tail. K and L *Ottolenchus vesiculosus*; K : anterior body end ; L : variation of female's tail. Scale bars 10 μ m.

2.5); V = 65 (60-70); V' = 84 (78-86); MB = 42 (39-48); stylet = 6-8 μm .

Males (n = 5) : L = 0.45 (0.40-0.53) mm; a = 33 (30-36); b = 5.8 (5.5-6.0); c = 4.1 (3.5-4.8); MB = 43 (39-45); stylet = 6 μm ; spicules = 16 (15-18) μm ; gubernaculum = 3-5 μm .

Annule width 1.7-2.3 μm . Head not demarcated or slightly narrower than neck, with two (seldom three) annules. Stylet 6-7 μm in European populations, and 7-8 μm in Australian ones. Median bulb ovate, posterior bulb short, occasionally slightly elongated. Length of oesophagus 77 μm (70-89). Excretory pore 40 (35-45) annules posterior to head end.

Vagina more than half of body width. Spermatheca up to 34 μm long. Sperm in spermatheca rounded, 1.5-2.0 μm in diameter. Posterior uterine sac shorter than body width. Between vulva and anus there are 28 (23-35) annules.

Tail variable, mostly rounded at the end. Tail length 108 μm (79-133); often no annulation on posterior part of tail.

Males rare. Bursa delicately crenated, small, begins near anterior end of spicules.

The above description is based on specimens from several collections in Poland, Ischia island in Italy, several places in south-western part of New South Wales, and from South Australia. The measurements are combined from all these populations.

Malenchus piahyuensis is synonymized with *O. facullativus* because studies of the holotype and the paratype as well as the comparison with the description did not show any differences. The type specimens of *M. piahyuensis* are preserved in such a state that many characters are not visible.

O. facullativus can be differentiated from *O. parvus* by its annulated head and shorter female genital tract that does not reach the oesophagus. It differs from *O. vesiculosus* by a shorter stylet. However, further studies of morphological variability of single female progenies may demonstrate that these differences are not significant at specific level.

Ottolenchus helenae (Szczygieł, 1969) comb. n.

Females (n = 21) : L = 0.43 (0.35-0.49) mm; a = 35 (28-45); b = 5.0 (4.7-5.3); c = 3.7

(3.0-5.3); c' = 15 (10-20); T/VA = 2.0 (1.6-2.6); V = 58 (53-61); V' = 80 (78-82); MB = 39 (36-43); stylet = 6-7 μm .

Males (n = 2) : L = 0.35-0.50 mm; a = 31-42; b = 5.5-5.7; c = 3.5-4.3; MB = 36-45; stylet = 6 μm ; spicules = 12-14 μm ; gubernaculum = 3 μm .

Annules rounded, the widest annules measured were 1.2 μm , in most specimens these were 0.8-0.9 μm , sometimes annules were too small to be measured. Head annules very obscure. Stylet knobs tend to be little less elongated than in other *Ottolenchus* species. Median bulb elongated ovate, posterior bulb elongated. Length of oesophagus 86 μm (70-95).

Vagina less than half of body width. Spermatheca a rounded, small pouch. Uterus unusually spacious, posterior uterine sac usually as long as the body width. Number of annules between vulva and anus could be counted in seven females only, and varied from 47 to 57. Tail long, conical, needle like at the end. Tail length 119 μm (94-163). Annulation invisible on posterior part of tail.

Male with a small crenate bursa.

The above description is based on paratypes, six collections from various localities in Poland, and one collection from Thalwil, Switzerland.

O. helenae differs from the other species of the genus by a delicate cuticular annulation, longer tail and spacious uterus with relatively long posterior uterine sac.

Two undescribed species bridging *O. helenae* and other *Ottolenchus* species were examined from Iowa and Western Australia. These are not described because I had too few specimens.

Ottolenchus vesiculosus (Knobloch & Knierim, 1969) comb. n.

Females (n = 4; paratypes) : L = 0.50-0.54 mm; a = 28-32; b = 5.9-6.3; c = 5.0-5.2; c' = 8-9; T/VA = 1.5-1.7; V = 67-69; V' = 84-86; MB = 39-45; stylet = 10-11 μm .

Annules rounded to flat, annule width 2.2-2.5 μm . Head with two annules. Median bulb ovate, posterior bulb short. Length of oesophagus equals 84-87 μm . Excretory pore 37-38

annules from head end. Vagina more than half of body width long. Spermatheca elongated up to 35 μm . Sperm 2.0-2.5 μm in diameter. Posterior uterine sac shorter than body width. Between vulva and anus there are 24-27 annules. Tail conical, thick, with rounded tip, 99-105 μm long. Posterior third of tail without striae.

This description agrees well with the original one of this species. It is based on four paratype females and two additional females collected at the type locality. *O. vesiculosus* is known from Michigan, U.S.A., only.

O. vesiculosus differs from *O. facultativus* by having a longer stylet, a thicker tail, and a slightly larger sperm. It can be differentiated from *O. parvus* by its annulated head and shorter female genital tract.

Bello (1973) synonymized *O. vesiculosus* and *Tylenchus cylindricollis* Thorne & Malek, 1968. I have compared the paratypes of both species and found that they are members of different subfamilies: *O. vesiculosus* belongs to Duosulciinae, while *T. cylindricollis*, having four incisures, must be placed within Tylenchinae.

Coslenchus polonicus sp. n.

(Fig. 2)

MEASUREMENTS

Holotype, female: L = 0.72 mm; a = 41; b = 5.6; c = 5.9; c' = 11; T/VA = 0.9; V = 64; V' = 78; MB = 47; stylet = 15 μm .

Females (n = 9, paratypes): L = 0.75 (0.68-0.79) mm; a = 41 (37-45); b = 6.2 (5.2-7.0); c = 6.0 (5.2-7.0); c' = 11 (9-12); T/VA = 0.9 (0.8-1.0); V = 65 (64-66); V' = 78 (76-79); MB = 46 (43-48); stylet = 14-15 μm .

Paratype male: L = 0.64; a = 42; b = 5.6; c = 5.6; MB = 50; stylet = 14 μm ; spicules = 18 μm ; gubernaculum = 6 μm .

DESCRIPTION

Female | Body straight when relaxed. Cuticle less than 1 μm thick, annules flat, striae very shallow. Annule width 2.8 μm (2.4-3.3). 26

longitudinal ridges at middle of body plus the lateral field, but 22 at the level of median bulb. Head with four annules, continuous with body contour in lateral view, and slightly offset on dorso-ventral view. Deirids slightly posterior to excretory pore. Stylet robust, both parts of equal length or conus slightly shorter than shaft. Dorsal oesophageal gland orifice 1-3 μm posterior to knobs. Procorpus wide, median bulb ovate, isthmus narrow, posterior bulb about 1.5-2.0 times as long as median bulb. Cardia small, conical. Excretory pore 49 (45-53) annules from anterior end. Genital tract short. Epiptygma present in vulval cavity. Uterus with very small posterior sac. Between uterine sac and crustaformeria there are small rounded cells, four or six in number, but it is difficult to see them in glycerine mounted specimens. Spermatheca up to 31 μm long. Sperm about 2 μm in diameter. Oocytes arranged as illustrated. Between vulva and anus there are 53 (48-58) annules. Female tail 124 μm (115-130) long. Annulation on tail irregular.

Male: similar to female, except for genital system. Spicules curved, slightly cephalated. Bursa large. Cloacal lips with very peculiar hypopygma.

DIAGNOSIS

C. polonicus sp. n. differs from all known *Coslenchus* species by its greater length, larger number of cuticular ridges, longer stylet, and shape of female tail.

TYPE LOCALITY AND HABITAT

Holotype, one male and three females paratypes found in Strekowa Góra (EE-4-5d), in low peat under meadow. Additional paratypes females found also in meadows of Bukowno-Wies (CA-3-4c), Gilowice (CA-4-2a), and Wizna (ED-3-5a). All soils were either low peat or had high organic matter contents. All localities are in Poland, and the symbols in brackets correspond to the grid system accepted in the studies of distribution of nematodes in Poland (Kornobis, 1980).

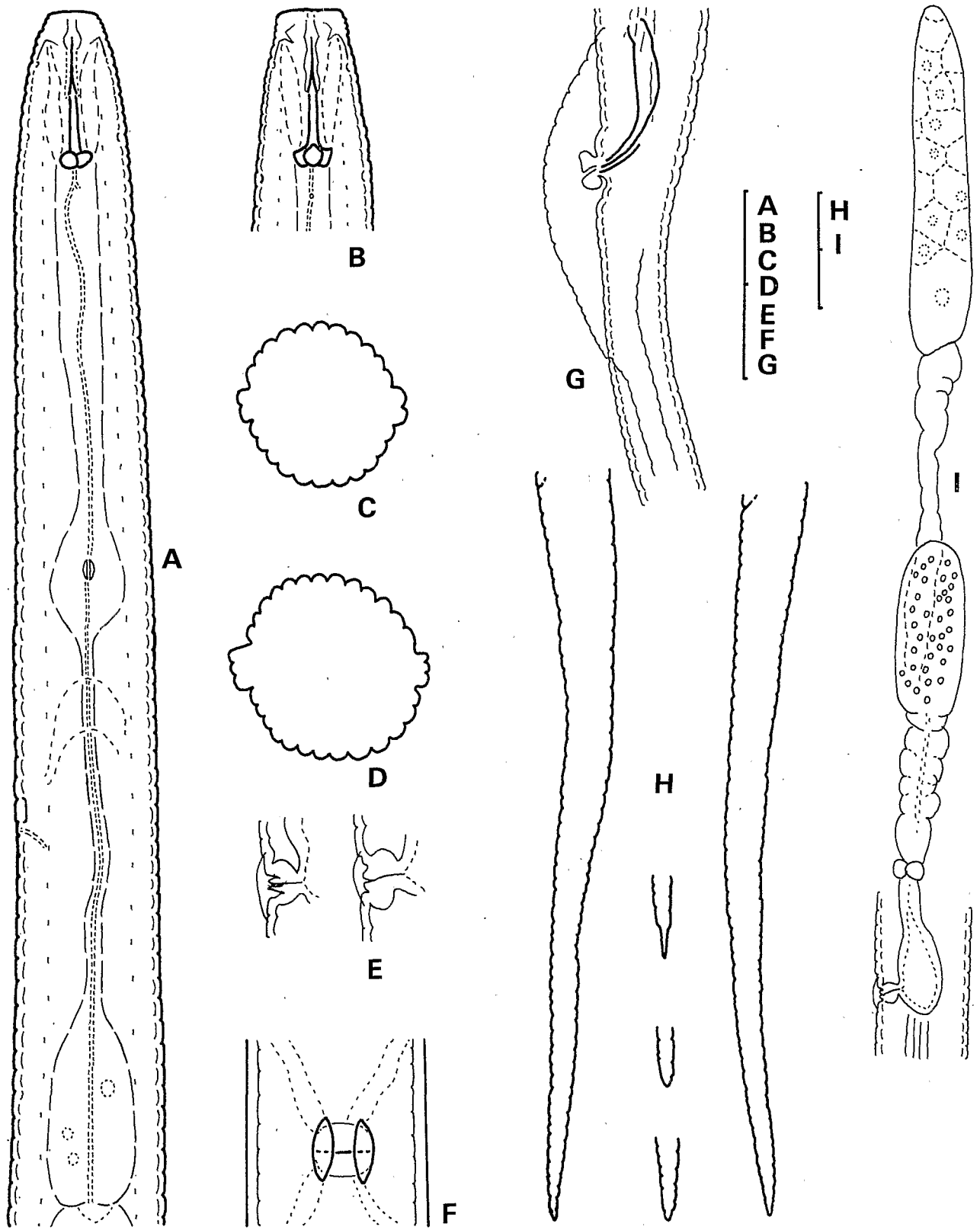


Fig. 2. *Coslenchus polonicus* sp. n. ; A : anterior body end, lateral ; B : head, dorso-ventral ; C : cross section near median bulb ; D : cross section near middle of body, E : vagina, lateral ; F : vulva, ventral, G : male cloacal region, H : variation of female tail, I : female gonad. Scale bars 20 μ m.

TYPE MATERIAL

Holotype, paratype male, and five paratype females deposited in the Polish Collection of Nematodes, Institute of Zoology of Polish Academy of Sciences, Warszawa, Poland. Two paratype females in the collection of the Research Institute of Vegetable Crops, Skierniewice, Poland, and one paratype female in each of the following : Rothamsted Experimental Station, Nematology Department, Harpenden, England, and Nematology Laboratory, Agricultural University, Wageningen, the Netherlands.

REFERENCES

- ANDRÁSSY, I. (1976). *Evolution as a basis for the systematisation of nematodes*. Budapest, Akademiai Kiado : 288 p.
- BELLO, A. (1971). El género *Tylenchus* (Nematoda, Tylenchina). *Boln R. Soc. esp. Hist. nat. Biol.*, 69 : 279-301.
- BELLO, A. (1973). Étude taxonomique du genre *Tylenchus* Bastian, 1865 (Nematoda : Tylenchinae). *Nematol. medit.*, 1 : 1-7.
- DECKER, H. (1972). Zur Systematik der Phytonematoden der Ordnung Tylenchida Thorne, 1949. In : Ulrich, (Ed.) *Probleme der Phytonematologie*, Gross Lüsewitz, Akad. Landwirt. DDR : 51-75.
- GOLDEN, A. M. (1971). Classification of the genera and higher categories of the order Tylenchida (Nematoda). In : Zuckerman, B. M., Mai, W. F., Rohde, R. A. (Eds) *Plant Parasitic Nematodes*, Vol. I, New York, Academic Press : 191-232.
- HOOPER, D. J. (1978). Structure and classification of nematodes. In : Southey, J.F. (Ed.) *Plant nematology*, London, Min. Agric. Fish. and Food GD1, H.M.S.O. : 3-45.
- HUSAIN, S. K., KHAN, A. M. (1967). A new subfamily, a new subgenus and eight new species of nematodes from India belonging to superfamily Tylenchoidea. *Proc. helminth. Soc. Wash.*, 34 : 175-186.
- KORNOBIS, S. (1980). Zastosowanie europejskiego systemu rejestracji danych faunistycznych w badaniach nad nicieniami glebowymi w Polsce. *Zesz. probl. Post. Nauk Roln.*, 232 : 143-146.
- SIDDIQI, M. R. (1963). Four new species of the genus *Tylenchus* Bastian, 1865 (Nematoda) from north India. *Z. ParasitKde*, 23 : 170-180.
- SIDDIQI, M. R. (1971). Structure of the oesophagus in the classification of the superfamily Tylenchoidea (Nematoda). *Indian J. Nematol.*, 1 : 25-43.
- SIDDIQI, M. R. (1979). Seven new species in a new nematode subfamily Duosulciinae (Tylenchidae), with proposals for *Duosulcius* gen. n., *Zanenchus* gen. n. and *Neomalenchus* gen. n. *Nematologica*, 25 : 215-236.
- WU, L.-Y. (1970). Genus *Ottolenchus* n. rank and *Ottolenchus sulcus* n. sp. (Tylenchidae : Nematoda). *Can. J. Zool.*, 48 : 249-251.

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