

Parkellus parkus gen. n., sp. n. and *Miconchus koreanus* sp. n. (Mononchida), two new predaceous nematodes from Korea

M. Shamim Jairajpuri*, Qudsia Tahseen**, Young Eoun Choi***

*Maulana Azad National Urdu University, Sabza, Tolichowki, Hyderabad- 500 008, India

**Department of Zoology, Aligarh Muslim University, Aligarh – 202002, India

***Department of Agricultural Biology, College of Agriculture, Kyungpook National University, Taegu 701-702, Korea

Abstract. A new genus of Mononchidae, *Parkellus*, with type species, *P. parkus* sp. n., from Korea is proposed and described. Its dorsal tooth is quite posteriorly located in the buccal cavity and this helps in differentiating the new genus from *Coomansus* Jairajpuri, 1977 which has its dorsal tooth situated anterior to middle of dorsal vertical wall. *P. parkus* sp. n. is 2.07-2.50 mm long, buccal cavity 55-62×28-32 µm, cardia without tubercles, female gonads amphidelphic, spicules 82-92 µm long, gubernaculum 30-35 µm, ventromedian supplements 21-25 and tails 85-95 µm or 1.5 to 2.0 anal body-widths long. *Miconchus koreanus* sp. n. is unique in the genus *Miconchus* Andrassy 1958, because of its mono-prodelphic gonad without any trace of posterior sexual branch. Body 1.32-1.68 mm. long, buccal cavity 38-45×26-28 µm, cardia tuberculate and tails 117-142 µm or 3.5-4.0 anal body-widths long. The new species, *M. koreanus* sp. n. comes close to *M. digiturus* (Cobb, 1893) Andrassy, 1958 and *M. tridentatus* Buangsuwon & Jensen, 1966 but has no posterior rudimentary sexual branch or uterine sac.

Keywords. Description, Korea, *Miconchus koreanus* sp. n., Mononchida, *Parkellus* gen. n., *Parkellus parkus* sp. n.

INTRODUCTION

In the nematode collection of one of us (YEC) at Taegu, Korea there were a number of predatory nematodes belonging to the Orders Dorylaimida and Mononchida. A paper entitled "Systematic study of Dorylaimida from Korea 3. Three new and four known species of Dorylaimida from Korea" has already been published by two of us (YEC & MSJ, 1998). This is our first paper on the predatory Mononchida Jairajpuri, 1969, commonly known as the mononchs from South Korea. One new genus *Parkellus* with its type and only species, *P. parkus* sp. n. and a new species of the genus *Miconchus* Andrassy, 1958 are described. The study of these nematodes began in Taegu (MSJ & YEC) when MSJ visited the Department of Agricultural Biology of the Kyungpook National University, Korea in 1997 for about 2 weeks. Detailed study was conducted and the paper was actually finalised in India at the Aligarh Muslim University (MSJ & QT) and later at Maulana Azad National Urdu University, Hyderabad (MSJ & YEC) when YEC came to India in 1999.

MATERIALS AND METHODS

The nematodes were collected from Jiri Mountain and Poeoun district, Chungcheongbuk province in Korea were fixed in hot (70°C) F G 4:1 fixative and dehydrated by Seinhorst's rapid glycerine method. Measurements were made with a drawing tube attachment.

Parkellus gen. n.

Diagnosis: Mononchidae. Body large, labial papillae prominent. Buccal cavity spacious. Dorsal tooth situated in posterior half of buccal cavity, apex directed forward. A thin longitudinal ridge present along ventral vertical walls opposite dorsal tooth. Oesophago-intestinal junction non-tuberculate. Ovaries paired, reflexed. Spicules and lateral guiding pieces prominent, gubernaculum with sleeves. Tail similar in both sexes, short conoid, ventrally arcuate. Caudal glands poorly developed or absent. Spinneret absent.

Type species: *Parkellus parkus* gen. n., sp. n.

Differential diagnosis and relationship: *Parkellus* gen. n.

is close to *Coomansus* Jairajpuri & Khan, 1977 but differs in having a comparatively larger and spacious buccal cavity, posteriorly placed dorsal tooth and a complex gubernaculum in the male.

***Parkellus parkus* gen. n., sp. n.**

(Figs 1 & 2)

Measurements

Female (Holotype): L=2.31 mm; a=28; b=3.6; c=26; c'=1.8; V=62.

Female (Paratypes n=8): L=2.2-2.5 mm (2.4±0.19); a=26-30 (28±2.1); b=3.5-3.8 (3.6±0.2); c=25-29 (27±2.4); c'=1.5-1.8 (1.6±0.1); V=61-74 (68±4.2).

Male (Paratypes n=4): L=2.07-2.49 mm (2.29±0.20); a=27-31 (29±1.8); b=3.4-3.7 (3.6±0.2); c=23-29 (26±3); c'=1.2-1.5 (1.4±0.1).

Female: Body large, ventrally curved upon fixation, 80-88µm wide at middle. Cuticle smooth, about 2.5 µm thick. Lip region slightly demarcated, 43-48 µm wide and 14-18 µm high, labial papillae slightly raised. Amphid apertures oval, located in anterior region (5-8 µm) of sclerotized buccal cavity, 17-20 µm from anterior end.

Buccal cavity 55-62 µm long, 28-32 µm wide, strongly sclerotized. Dorsal tooth prominent, 6-8 µm long, 4-5 µm wide, located in posterior half with its apex lying at 61-65% from anterior end of buccal cavity. A thin longitudinal ridge opposite dorsal tooth present on subventral walls. Stoma 1/8-1/10th of oesophageal length which is 600-668 µm long. Dorsal oesophageal gland orifice located at 58-62% and the orifice of the second pair of subventral glands at 96-98% of oesophageal length. Nerve ring at about 27-30% of oesophageal length. Excretory duct and excretory pore clearly visible, 207-220 µm from anterior end of body or 30-45% of oesophageal length. The ventral oesophageal wall with pearl-shaped bodies, 45-51 in number extending between nerve ring and oesophageal base. Cardia 20-25 µm long, non-tuberculate. Intestine composed of large pentagonal or hexagonal cells. Rectum 36-45 µm long or about 1.0-1.5 anal body-widths long.

Vulva a transverse slit, inconspicuous vulval papillae often present, vagina sclerotized, nearly half body-width long. Gonad amphidelphic with reflexed ovaries. Uteri often filled with spermatozoa. Oviduct with enlarged proximal and narrow distal ends and with a distinct flexure in between. Tails 85-90 µm or about 1.5-2.0 anal body-widths long, conoid, ventrally curved, gradually tapering with a pointed terminus. Caudal glands rudimentary, spinneret absent.

Male: Sclerotized buccal capsule measuring 55-62×28-30 µm. Apex of tooth at 32-38 µm or 58-62% of sclerotized buccal capsule. Gonads with opposed testes containing spermatozoa. Spermatozoa spindle-shaped, 5-8 µm long. The junction of vas deferens with ejaculatory duct shows narrowing. Spicules 82-92 µm long, arcuate. Gubernaculum

30-35 µm long with forked pincer-shaped proximal part and with a prominent sleeve. Lateral guiding pieces 22-25µm long. Ventromedian supplements 21-25 in number, regularly spaced. Rectum 35-43 µm or about 1.5-2.0 anal body-widths long.

Type habitat and locality: Forest soil around roots of *Euonymus oxyphyllus* Miq., Cheonwangbong, Jiri Mountain.

Type Specimens: Holotype and paratype female on slide Forest 214 deposited in the nematode collection of the Department of Agricultural Biology, College of Agriculture, Kyungpook National University.

Parkellus parkus gen. n., sp. n. was earlier described as *Iotonchus zshokkei* (Menzel, 1913) Altherr, 1955 in Choi & Choi (1997) but after re-examination of the specimens it was concluded that the species besides showing morphometric similarities possesses a non-tuberculate type of oesophago-intestinal junction and hence instead of belonging to the genus *Iotonchus* Cobb, 1916, it has been assigned to the new genus, *Parkellus*.

***Miconchus* Andrassy, 1958**

All species belonging to the genus *Miconchus* Andrassy, 1958 are didelphic, amphidelphic, except the type *M. digiturus* (Cobb, 1893) Andrassy, 1958 and *M. tridentus* Buangsuwon & Jensen, 1966, which are monodelphic, prodelphic. *M. digiturus* has a posterior uterine sac which is about as long as the corresponding body width, while *M. tridentus* has pseudo-monodelphic gonad with its posterior ovary being present though strongly reduced, extending almost to two body-widths. The present species from Korea though similar to *Miconchus* species, in particular, *M. digiturus* has got mono-prodelphic gonad with no trace of posterior gonad or uterine sac and hence it is regarded as a new species of the genus *Miconchus* that is different from all other species.

***Miconchus koreanus* sp. n.**

(Figs 3 & 4)

Measurements

Female (Holotype): L=1.53 mm; a=23; b=3.5; c=11; c'=4.2; V=71.

Female (Paratypes n=5): L=1.32-1.68 mm (1.51±0.18); a=23-29 (26±3); b=3.5-3.8 (3.6±0.1); c=10-12 (10.6±0.6); c'=3.5-4.2 (3.9±0.3); V=69-72 (70±1.8).

Female Juveniles (Paratypes): L=1.39-1.40 mm; a=31-35; b=3.6-3.9; c=11-12; c'=2.6-3.4; buccal cavity (sclerotized part of stoma) =32-35×17-19 µm, tail= 112-118 µm.

Female: Body ventrally arcuate upon fixation tapering slightly anteriorly but markedly posteriorly, 46-62 µm wide at its middle. Cuticle smooth about 2.5 µm thick. Lip region slightly marked off, 38-40 µm wide, 14-16 µm high, slightly wider than adjoining body. Amphids small, oval apertures, 4-6 µm wide, situated at 13-15 µm from anterior end of body.

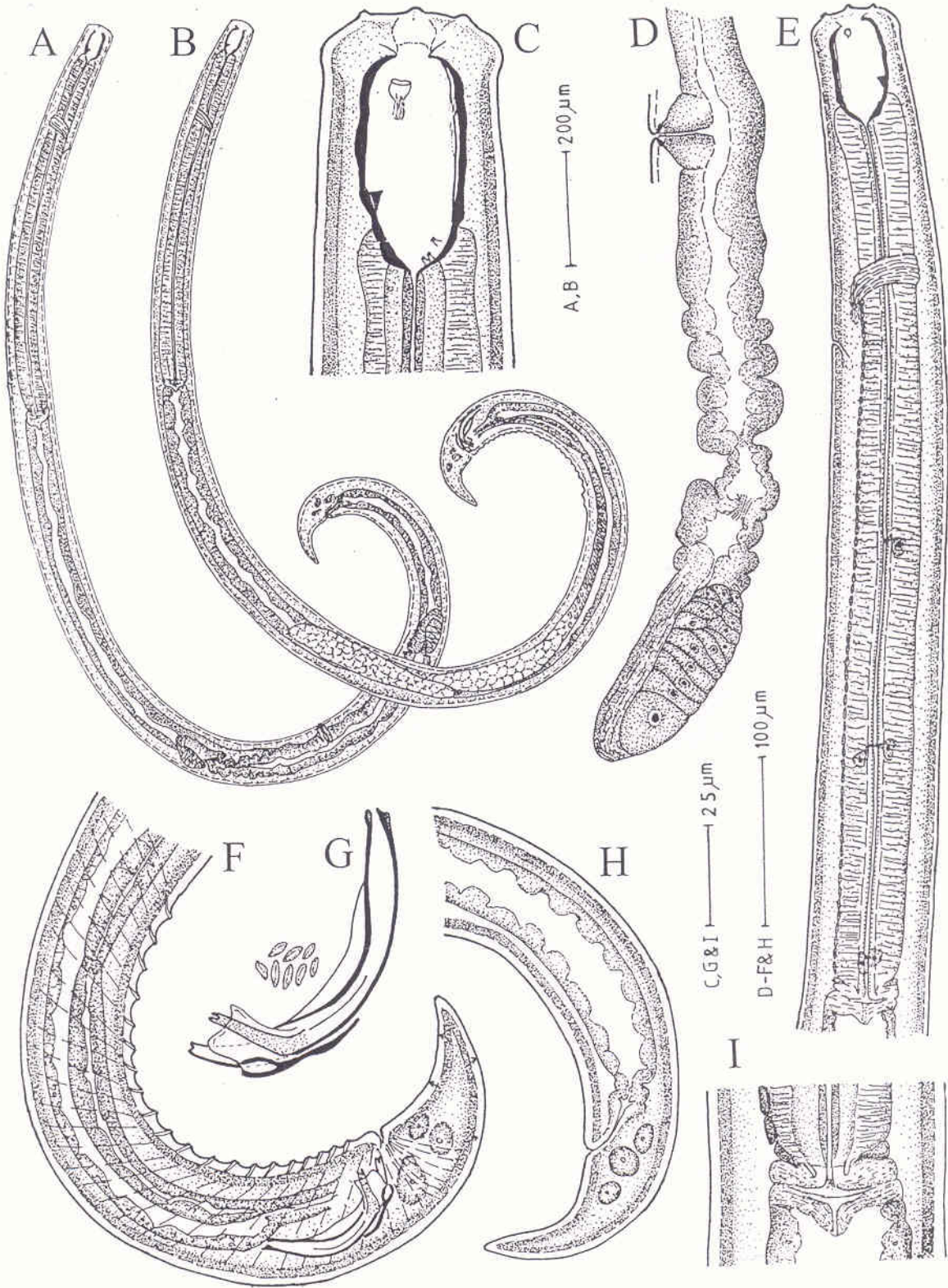


Fig. 1. *Parkellus parkus* gen. n., sp. n.: A: Female, B: Male, C: Anterior end showing buccal cavity, D: Female sexual branch, E: Oesophageal region, F: Posterior end of male, G: Male Capulatory complex and sperms, H: Female posterior end, I: Oesophago-intestinal junction (non-tuberculate)

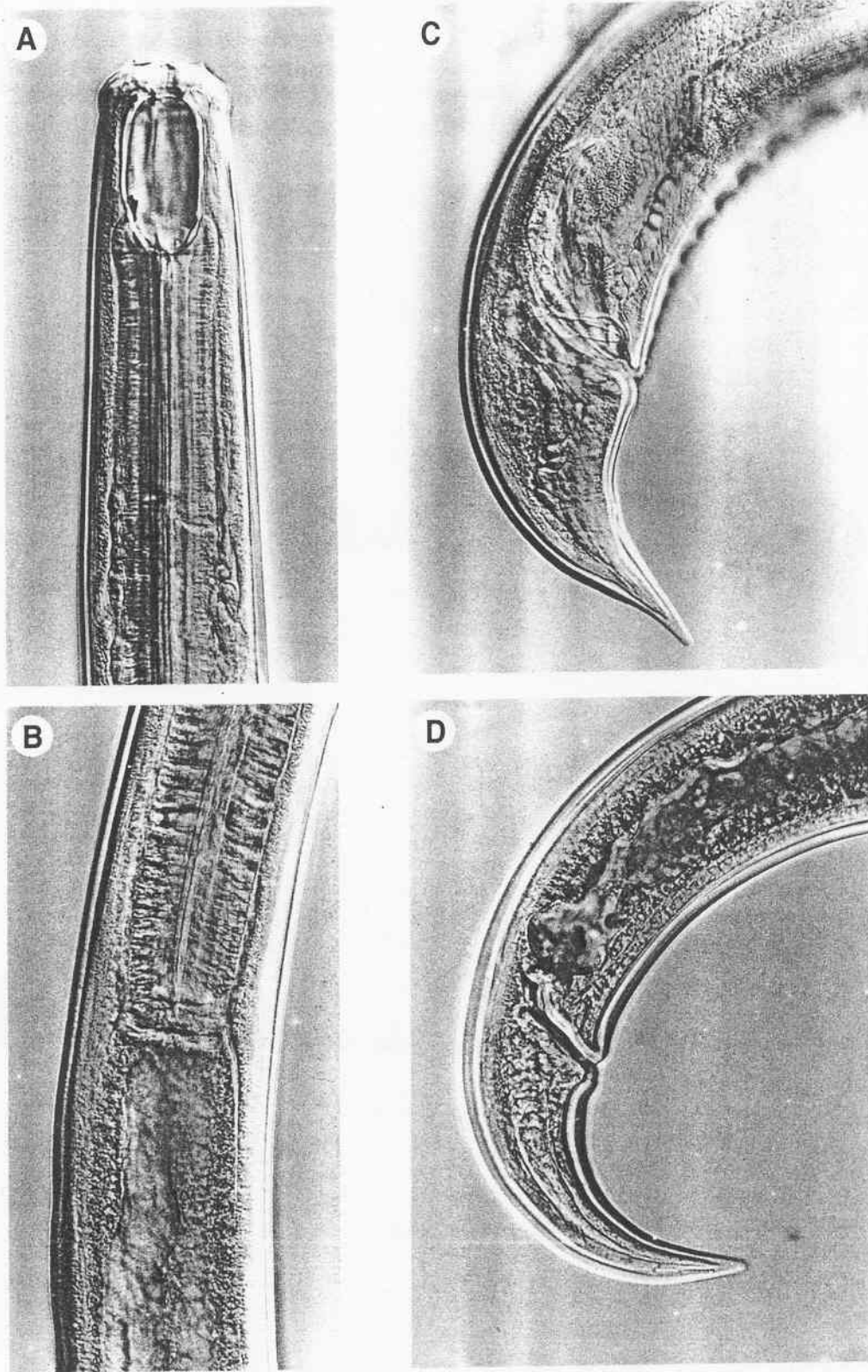


Fig. 2. A-D. *Parkellus parkus* gen. n., sp. n.: A: Anterior part of female, B: Oesophago-intestinal junction, C: Posterior end of male, D: Posterior end of female.

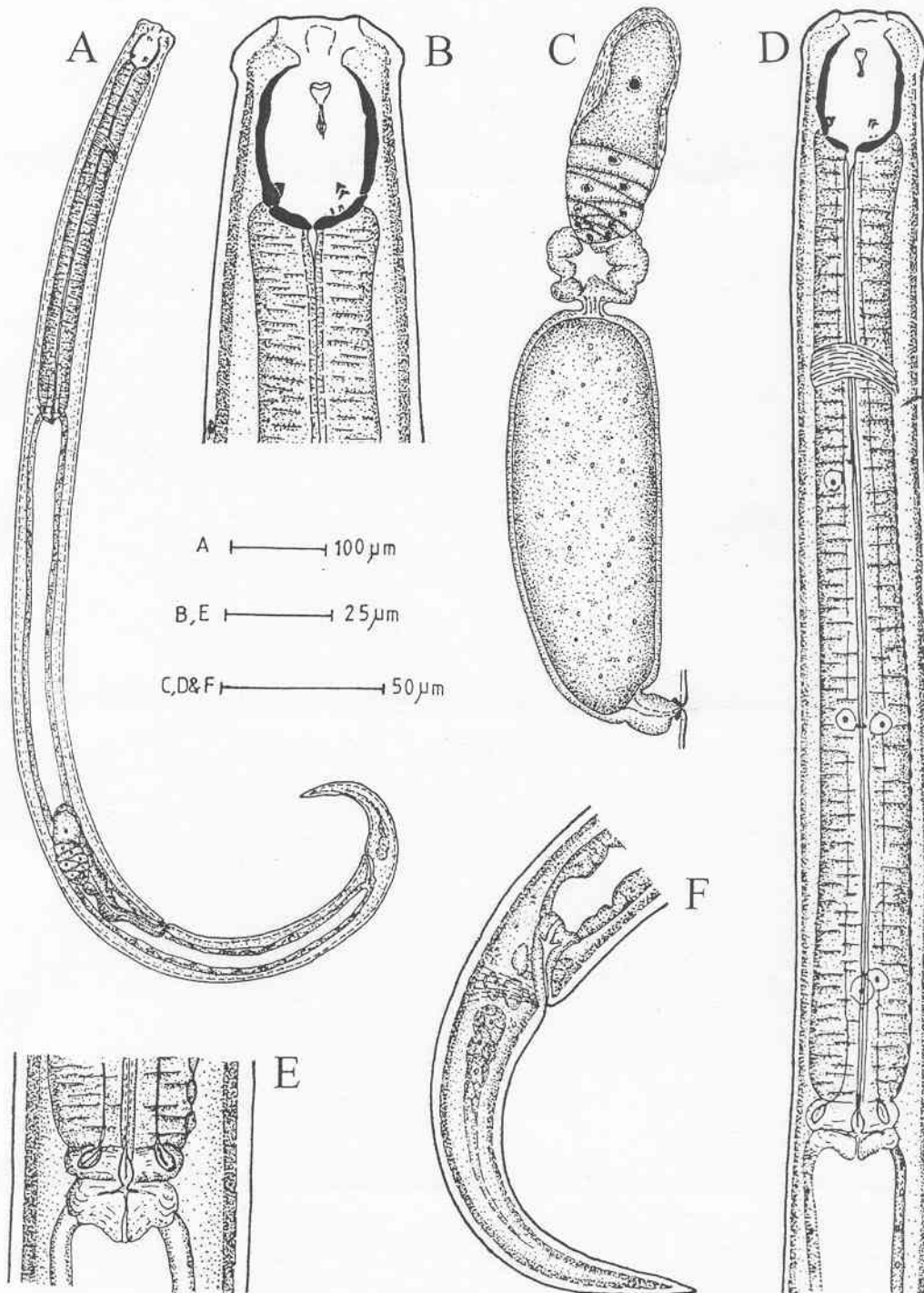


Fig. 3. A-F. *Miconchus koreanus* sp. n.: A - Female, B - Anterior end showing buccal cavity, C - Female sexual branch, D - Oesophageal region, E - Oesophago-intestinal junction (tuberculate), F - Female posterior end.

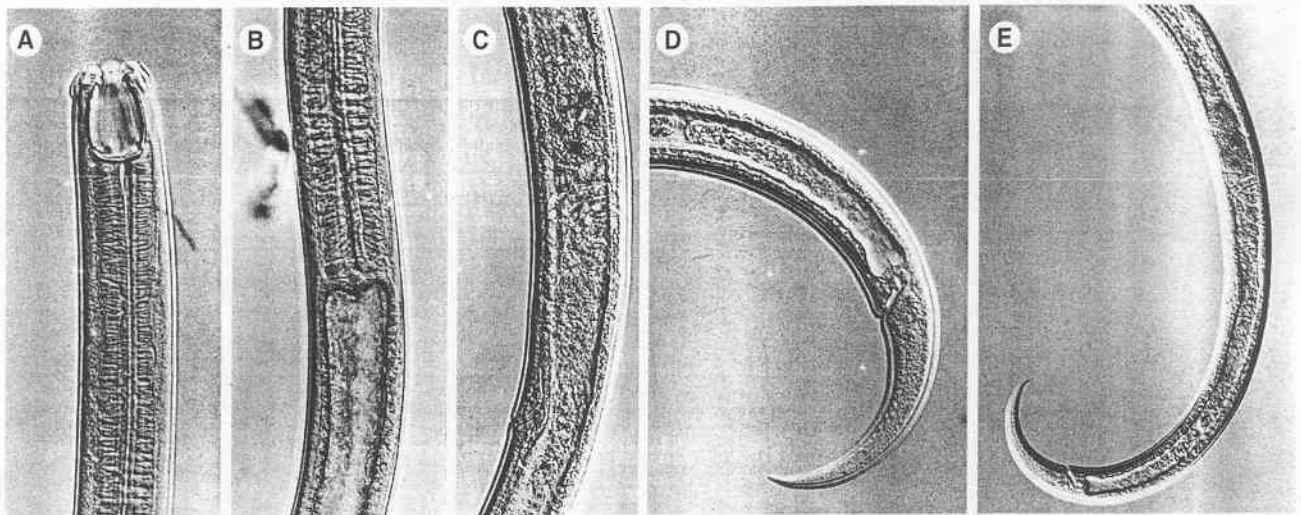


Fig. 4. *Miconchus koreanus* sp. n.: A – Anterior part of female, B: Oesophago-intestinal junction, C: Vulva region, D: Female tail, E: Female posterior end.

Buccal cavity measuring $38-45 \times 26-28 \mu\text{m}$. Dorsal tooth basal, at 71-73% of buccal cavity from anterior end or about 10-13 μm from base. Dorsal and subventral vertical walls with a tooth each, equal in size, their apices nearly at same level. Oblique subventral walls with two foramina each. Stoma $1/7^{\text{th}}-1/8^{\text{th}}$ of oesophageal length which measures 343-353 μm . Dorsal oesophageal gland orifice located at 55-60% of oesophageal length and orifices of first and second pair of subventral glands at 71-75% and 96-97% of oesophageal length respectively. Nerve ring 132-141 μm from anterior end, at 32-35% of oesophageal length. Excretory pore at level of nerve ring, not conspicuous. Ventral oesophageal wall with small pearl-shaped bodies extending from nerve ring up to oesophageal end. Cardia 23-28 μm long, tuberculate. Intestine 6-8 cells in circumference. Rectum 21-25 μm or less than one anal body-width long.

Vulva a transverse slit, vagina with sclerotized pieces, anteriorly directed. Gonad mono-prodelphic, no trace of posterior gonad, or post-uterine sac. Anterior ovary reflexed, oviduct with a narrow distal and swollen proximal part, sphincter present at junction of oviduct and uterus. Uterine egg measuring $125 \times 50 \mu\text{m}$. Tail 117-142 μm or about 3.5-4.0 anal body widths long, ventrally arcuate, gradually tapering to a pointed terminus. Caudal glands present but terminal pore or spinneret absent.

Male: not known.

Type habitat and locality: Soil around roots of *Solanum*

tuberosum L., Ridong, Namhae, Kyungsangnam Province.

Type specimens: Holotype and paratype female on slide Potato 33, deposited in the nematode collection of the Department of Agricultural Biology, College of Agriculture, Kyungpook National University.

Differential diagnosis: *Miconchus koreanus* sp. n. resembles *M. digiturus* (Cobb, 1893) Andrassy, 1958 and *M. triodontus* Buangsuwon & Jensen, 1966 in having functional monodelphic gonad but differs from the former in having much posteriorly placed dorsal tooth and in absence of the posterior intestine sac. It differs from *M. triodontus* in the position of dorsal tooth and also in lacking a rudimentary posterior ovary, pre- and postvulval papillae, caudal gland opening, and caudal pores. No males were found in the new species as also in the two species similar to it.

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