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

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Abstract. A new genus of Mononchidae, Parellus, 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, spicles or 22-72 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 Andrássy 1958, because of its mono-amphidelphic 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. digitatus (Cobb, 1893) Andrássy, 1958 and M. iridontus Buangsuwon & Jensen, 1966 but has no posterior rudimentary sexual branch or uterine sac.

Keywords. Description, Korea, Miconchus koreanus sp. n., Mononchida, Parellus gen. n., Parellus 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 Parellus with its type and only species, P. parkus sp. n. and a new species of the genus Miconchus Andrássy, 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 Poenun district, Chungeheongbuk 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.

Parellus gen. n.


Type species: Parellus parkus gen. n., sp. n.

Differential diagnosis and relationship: Parellus gen. n.

98
is close to *Coomanus* 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; e=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); e=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); e=1.2-1.5 (1.4±0.1).

**Female**: Body large, ventrally curved upon fixation, 80-88 μm 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 pear-shaped bodies, 45-51 in number extending between nerve ring and oesophageal base. Cardia 20-25 μm long, non-tuberculate. Intestine composed of large polygonal 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, spineret absent.


**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 *Iotochus zhokkai* (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 *Iotochus* Cobb, 1916, it has been assigned to the new genus, *Parkellus*.

**Miconchus Andrássy, 1958**

All species belonging to the genus *Miconchus* Andrássy, 1958 are didelphic, amphidelphic, except the type *M. digitatus* (Cobb, 1893) Andrássy, 1958 and *M. tridonus* Buangsruow & Jensen, 1966, which are monodelphic, prodelphic. *M. digitatus* has a posterior uterine sac which is about as long as the corresponding body width, while *M. tridonus* 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. digitatus* 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; e=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); e=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; e=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.
Buccal cavity measuring 38-45×26-28 μm. 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 1/7-1/8th 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 125×50 μm. 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 spineret 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. digitus (Cobb, 1893) Andrassy, 1958 and M. tridontus Buangsuvon & 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. tridontus 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.

LITERATURE CITED

