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An Unrecorded Species *Ditylenchus myceliophagus* and Descripton *of Ditylenchus* acutus (Nematoda : Anguinidae) from Korea

Joong-Hwan Lee*, Sang-Jo Park[1] and Seong-Yong Choi

Department of Agricultral Environment, Gyeongsangbuk-do Agricultural Research and Extention, Dongho-dong, Daegu, 702-708, Republic of Korea

[1]Institute for Natural Products Research, Gyeongsangbuk-do Agricultural Research and Extention, Uiseong, Gyeongbuk, 760-803, Republic of Korea

한국 미 기록종 *Ditylenchus myceliophagus*와 *Ditylenchus acutus* (Tylenchida : Anguinidae)의 기재

이중환* · 박상조[1] · 최성용

경상북도 농업기술원 농업환경연구과, [1]경상북도 농업기술원 신물질연구소

ABSTRACT: The measurements of *Ditylenchus acutus* is similar to Fortuner & Maggenti's 1987 *D. acutus* (Khan, 1965) except the body length was much longer (L=0.65-0.71 mm vs. L=0.39-0.50 mm) and body width was thinner (a=40-49.2 vs. a=22-28). In addition, *Ditylenchus myceliophagus* was recorded for the first time in Korea. Thus, both species were described in this paper.

Key words: Taxonomy, *Ditylenchus acutus*, *Ditylenchus myceliophagus*, Description

초 록: 한국에서 채집된 *Ditylenchus acutus*는 긴 체장 (L=0.65-0.71 mm vs. L=0.39-0.50 mm)과 가는 체폭을 제외하고는 *Ditylenchus acutus* (Khan, 1965) Fortuner & Maggenti, 1987 과 같다. *Ditylenchus myceliophagus* 는 우리나라 미 기록 종이다. 따라서 두 종을 기재한다.

검색어: 분류, *Ditylenchus acutus*, *Ditylenchus myceliophagus*, 기재

.Nine species belonging to *Ditylenchus* has been reported from Korea (Park, 1963; Choi, 1975, 1976; Geraert and Choi, 1988, 1990; Choi *et al.*, 1991; Park *et al.*, 1992; Kim *et al.*, 2005). During the survey on plant parasitic nematodes, two species of in the genus, *D. acutus* and *D. myceliophagus* were collected soil around the roots of *Thuja orientalis* L. at Dodong, Daegu and *Dioscorea batatas* Decaisn at Pungsan-myoun, Andon, Gyeongbuk province, respectively. Althouth *acutus* was reported by Park *et al* (1992) in Korea, there was no description about the species. *Ditylenchus myceliophagus* was collected for the first time in Korea. Thus, we described both species in detail.

*Corresponding author: ljh8888@korea.kr
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Materials and Methods

Nematodes were extracted by modified sieving method. The nematodes were fixed with hot (80℃) F:G=4:1 (890 ml distilled water+100ml formalin 40%+10 ml glycerin) fixative and then transferred to anhydrous glycerine by Seinhorst's rapid glycerin method (Seinhorst, 1959). Then nematodes were mounted using paraffin ring double cover glass method (De grisse, 1969). Measurements and drawings were made using a drawing tube attached to a microscope.

Photographs were taken using differential interference contrast attachments.

Description

Ditylenchus acutus(Khan, 1965) Fortuner & Maggenti, 1987

(도동줄기선충 신칭) (Fig. 1, 2)

Nothotylenchus allii Khan & Siddiqi, 1986; =*Notylenchus indicus* Saxena, Chhabra & Joshi, 1973; =*Nothotylenchus paramonovi* Gagarin, 1974; =*Nothotylenchus srinagarensis* Fotedar & Mahajan, 1974; =*D. saxenai* Fortuner & Maggenti, 1987; *D. alliphilus* Fortuner & Maggenti, 1987.

Measurements: Female (n = 8). L = 686.6 ㎛ ± 18.4 (658 - 712); a = 44.9 ± 3.8 (40 - 49.2); b = 5.2 ± 0.2 (4.9 - 5.3); b' = 5.2 ± 0.3 (4.8 - 5.7); c = 8.8 ± 0.5 (8.2 - 9.5); c' = 6.9 ± 0.7 (5.7 - 8.1); V = 76.6% ± 0.9 (75 - 78); Stylet = 6.3 ㎛ ± 1.3 (5.0 - 8.5); Body width = 14.9 ㎛ ± 1.6 (13.5 - 17.5); Oesophagus length = 130.7 ㎛ ± 7.3 (123.5 - 143.5); Anal body width = 10.8 ㎛ ± 0.9 (9.5 - 12.0); Head end to excretory pore = 94.2 ㎛ ± 4.8 (87.5 - 102); Tail length = 78.3 ㎛ ± 3.7 (70.0 - 82.0); Vulva body width = 14.5 ㎛ ± 2.6 (10.5 - 17.5); Post-vulval uterine sac = 38.4 ㎛ ± 3.8 (33.5 - 43.0); Post-vulval uterine sac/vulval body diameter = 2.7 ± 0.5 (2.2 - 3.4); Post-vulval uterine sac/% vulva-anus distance = 43.4 ± 2.6 (38.4 - 46.4).

Male (n = 8). L = 676.3 ㎛ ± 27.6 (640 - 722.5); a = 48.2 ± 5.7 (38.2 - 55.5); b = 5.3 ± 0.2 (5.2 - 5.5); b'= 5.0 ± 0.2 (4.8 - 5.4); c = 8.4 ± 0.9 (7.1 - 10.3); c' = 6.8 ± 0.5 (6.0 - 7.9); Body width = 13.6 ㎛ ± 2.3 (9.0 - 17.5); Anal body width = 11.7 ㎛ ± 0.4 (11.0 - 12.5); Stylet = 5.4 ㎛ ± 0.7 (4.5 - 6.5); Oesophagus length =

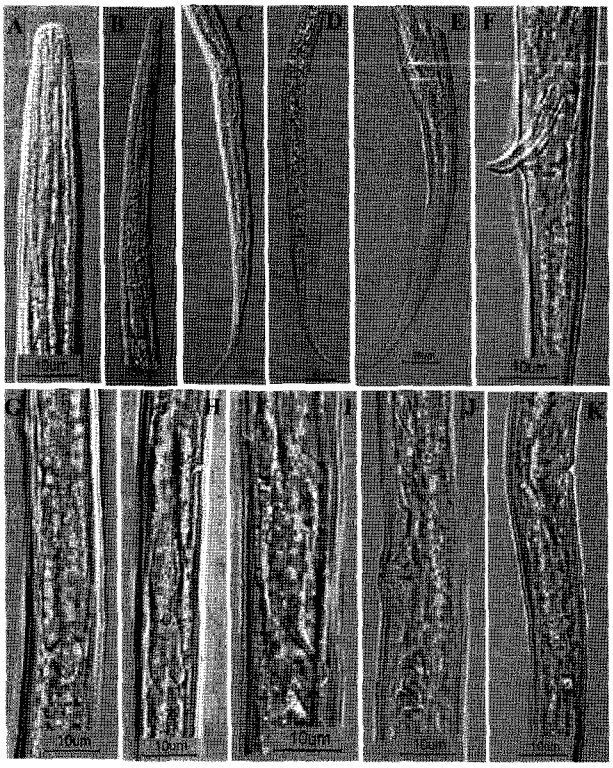

Fig. 1. *Ditylenchus acutus*: **A: Female head region; B: Female anterior part; C, D: Female posterior part; E: Male posterior part; F: Spicule region; G-I: Oesophago-intestinal junction region; J, K: Vulva region.**

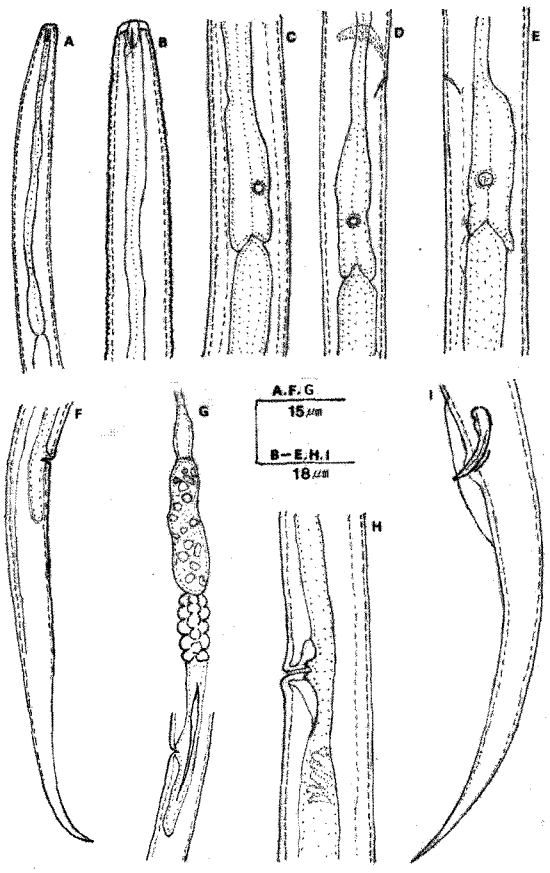

Fig. 2. ***Ditylenchus acutus*: A: Female anterior part; B: Female head region; C-E: Oesophago-intestinal junction; F: Female tail; G: Part of female reproductive system; H: Vulva region; I: Male posterior region.**

132.8 ㎛ ± 4.6 (122.0 - 138.0); Head end to excretory pore = 96.6 ㎛ ± 7.9 (86.0 - 113.5); Tail length = 80.8 ㎛ ± 6.7 (69.0 - 91.0); Spicule = 18.4 ㎛ ± 1.6 (16.0 - 20.5); Gubernaculum = 4.9 ㎛ ± 0.7 (4.0 - 6.0); Bursa percent of tail length = 25.1 ± 4.06 (19.3 - 31.4).

Female: Body slightly ventrally arcuate to almost straight when fixed, more curved in posterior part. Lateral field with four incisures. Head low, not offset with one or two annuli. Stylet delicate. Dorsal oesophageal gland orifice difficult to see. Median bulb without lumen wall thickening, mostly fusiform. Posterior bulb either offset or overlaps intestine slightly. Excretory pore opposite posterior part of isthmus, 94.2 ㎛ (87.5 - 102) from anterior end. Vulva transverse slit, located at 76.6% (75 - 78) of body from the anterior end. Vagina with thick walls. Ovary monodelphic, prodelpic out stretched. Spermatheca elongated filled with sperm. Post uterine sac length 2 - 3 times vulva body width long, extending in the body a half to one third the distance from vulva to anus. Tail ventrally arcuate, tip pointed.

Male: Body similar to female. Bursa extends 25.1% (19.3 - 31.4) of tail length.

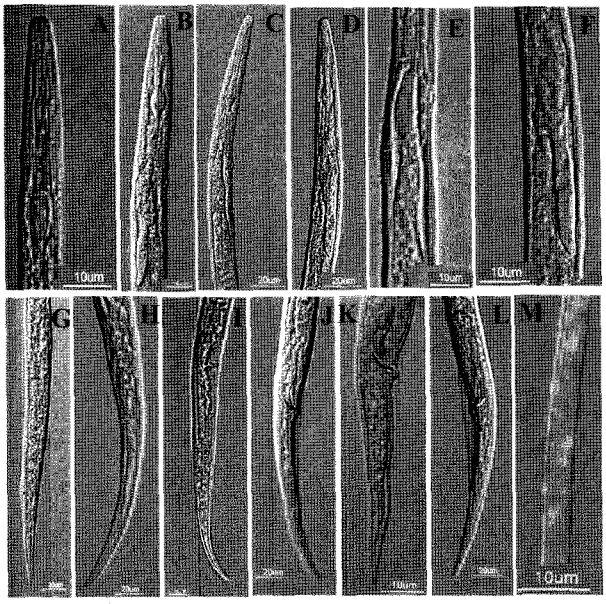

Fig. 3. ***Ditylenchus myceliophagus*****: A: Female head part; B-D: Anterior part; E, F: Oesophago-intestinal junction; G-I: Female posterior part; J-L: Male posterior part; M: Lateral field.**

Discussion: This nematode was previously reported by Park *et al* in 1992 from *Remonnia glutinosa* at Bukhu-myeon, Andong-gun, Korea without description. The specimen was corresponded with the description by Khan (1965) except much longer body (L = 0.65 - 0.71 mm vs. L = 0.39 - 0.50 mm) and thinner body width (a = 40 - 49.2 vs. a = 22 - 28). The measurements of Korean specimens were more close to the Polish specimens (Brzeski, 1991).

Locality and habitat: Soil around the roots of the *Thuja orientalis* L. at Dodong, Daegu.

Ditylenchus myceliophagus Goodey, 1958

(풍산줄기선충 신칭) (Fig. 3, 4)

Measurements: Female (n = 18): L = 581.9 ㎛ (499.8 - 647.5); a = 38.1 (31 - 44); b = 5.2 (4.4 - 5.8); b' = 4.4 (3.8 - 5.0); c = 10.4 (8.9 - 12.7); c' = 5.7 (5 - 6.8); V = 79.4 (76.1 - 81.2); Stylet = 7.3 ㎛ (5.6 - 9.1); Post uterine sac length = 25.4 ㎛ (21.7 - 30.1); Vulva body

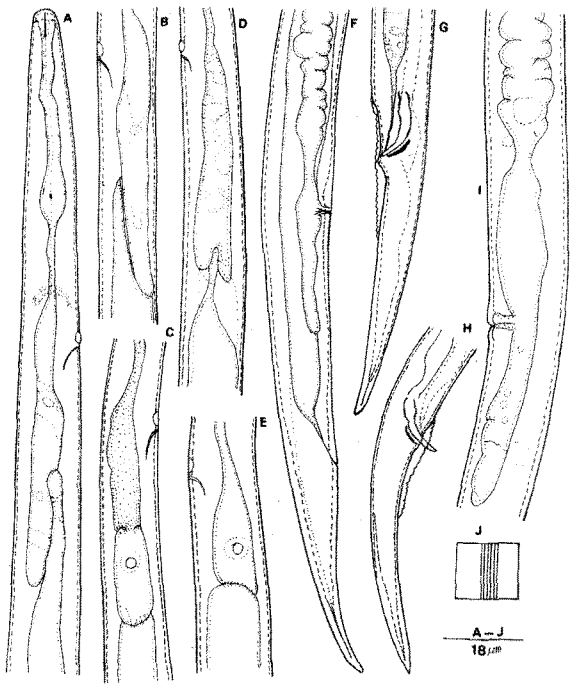

Fig. 4. ***Ditylenchus myceliophagus*****: A: Anterior part of female; B-E: Various shape of oesophageal gland lob overlapping intestine; F: Female posterior part; G, H: Male Posterior part; I: Vulva region; J: Lateral line.**

diameter = 14.5 ㎛ (13.3 - 18.2); Vulva anus distance = 61.0 ㎛ (45.5 - 69.3); Post-vulval uterine sac/vulval body diameter = 1.7 (1.5 - 2.0); Post-vulval uterine sac/% vulva-anus distance = 42.6 (35.5 - 63.8); Tail length = 58.1 ㎛ (45.5 - 66.5); Oesophagus length = 131 ㎛ (117.3 - 147.7); Head end to excretory pore = 80.5 ㎛ (73.5 - 86.8);% MB = 32.0 (28.0 - 37.6); Body width = 15.4 ㎛ (13.3 - 17.5).

Male (n = 12): L = 554 ㎛ (487.9 - 623); a = 39.8 (31.6 - 53.9); b = 5.2 (4.6 - 6.0); b' = 4.3 (3.6 - 5.2); c = 10.0 (8.6 - 11.1); c' = 5.1 (4.4 - 5.8); Stylet = 6.2 ㎛ (4.9 - 9.1); Tail length = 55.8 ㎛ (48.3 - 65.1);% bursa = 53.7 (40.0 - 69.3); Head end to excretory pore = 77.7 ㎛ (69.7 - 88.2); Oesophagus length = 127.7 ㎛ (112.2 - 143.5);% MB = 31.6 (28.7 - 35.7); Body width = 14.4 ㎛ (9.8 - 18.2); Spicule = 17.0 ㎛ (14.7 - 19.6); Gubernaculum = 6.4 ㎛ (5.6 - 8.4)

Female: Head continuous with body contour, with fine annuli, diameter 6.3 ㎛. Stylet thin and delicate. Median bulb oval in outline, muscular with small thickening of lumen walls. Oesophageal glands overlap intestine. Lateral field with six incisures. Post-vulval uterine sac 25.4 ㎛ (21.7 - 30.1) long; 1.7 (1.5 - 2.0) PUS/VBD; or 42.6 (35.5 - 63.8) PUS% VA. Tail mostly ventrally bent, tip rounded.

Male: Usually slightly shorter than female. Male bursa usually extending along less than half of the tail length; Bursa reaches 53.7% (40.0 - 69.3) of tail length. Tail terminus rounded.

Discussion: Korean specimens were similar to the characteristics of *D. myceliophagus* redescribed by Brzeski (1991). The cephalic skeleton has crescentic and refractive margins. The length of overlapping intestine varies from few micron to 70 ㎛ long. Spicule length slightly shorter (14.7 - 19.6 ㎛ vs. 15 - 23 ㎛), bursa slightly longer extending of the tail (% bursa tail 40 - 69.3 vs. 20 - 55) and most Korean specimens had long lobe of oesophageal glands. Differs from *D. anchilisoposomus* having crescentic and refractive margins of cephalic skeleton and longer post-vulval uterine sac (35.5 - 63.8% VA vs. 24 - 34% VA in *D. anchilisoposomus*).

Locality and habitat: Soil around the *Dioscorea batatas* Decaisn at Pungsan-myoun, Andong, Gyeongbuk province.

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