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First Report of *Ektaphelenchoides compsi* Baujard, 1984 (Nematoda: Aphelenchoididae) from Iran

¹Hamidreza Rafiee, ¹Esmat Mahdikhani Moghadam and ²Mousa Najafinia

¹Department of Plant Protection, Ferdowsi University of Mashhad, Iran

²Agricultural Research Center of Jiroft and Kahnoj, Iran

*Corresponding Author: Hamidreza Rafiee, Department of Plant Protection, Ferdowsi University of Mashhad, Iran
Tel: +989132484644*

ABSTRACT

Forty five soil and root samples were collected from different areas of Jiroft and Kahnoj regions in Iran during 2007 and 2008. Our main objective was to identify plant parasitic nematodes present in cucumber that are not reported in Iran before. During the course of our investigation a new nematode species, *Ektaphelenchoides compsi*, was identified. This nematode was collected from rhizosphere regions of cucumber in soil samples collected from three areas. *E. compsi* belong to the family Aphelenchoididae and subfamily Ektaphelenchinae. Major characteristics of this genus include rounded, high lips without offset and tail of both sexes are conical with elongated terminus, rectum and anus absent in female. According to our knowledge this is the first report of this nematode species from Iran.

Key words: Cucumber, plant parasitic nematodes, Aphelenchoididae, *Ektaphelenchoides compsi*, *Cucumis sativus*, Jiroft

INTRODUCTION

Vegetables are one of the most important components of our daily diet as well as a high value cash crop for small and large growers alike. Plant parasitic nematodes are extremely important limiting factor in vegetable production, including cucumber (*Cucumis sativus* L.) (Sikora and Fernandez, 2005). Cucumber is one of the most important greenhouse vegetable crops grown in southeast Iran. In this study genus *Ektaphelenchoides* identified addition to others genus. Genus of *Ektaphelenchoides* belong to suborder Aphelenchina (Newly belong to order Rhabditida and suborder Tylenchina), family Aphelenchoididae and subfamily Ektaphelenchinae. Body 0.5-0.9 mm long, Lips high, rounded, not offset. Stylet slender, 17-26 μ m long, anterior part cylindrical, shorter than posterior portion, with basal thickening, posterior part cylindrical, long, approximately five-eighths of total spear length, without basal knobs or thickenings. Constriction present at the junction between procorpus and metacarpus. Metacarpus rectangular with prominent valve plates at the posterior part. Rectum and anus absent in female. Post uterine sac present. Spicule with elongated rostrum and rounded prominent apex. Tail of both sexes conical with elongated terminus. Male tail arcuate, with two to four pairs of caudal papillae in ventral and sub-ventral of tail. Bursa absent. In few species of this genus, males with long mucron in tail terminus (Baujard, 1984; Nickle, 1991).

MATERIALS AND METHODS

In order to identify the plant parasitic nematodes of cucumber fields and greenhouses in Jiroft and Kahnoj region, forty five soil and root samples were collected from different areas during 2007 and 2008. All soil samples were collected from rhizosphere of cucumbers. Soil samples were washed and nematodes were extracted by centrifugal flotation technique, killed, fixed and transferred to glycerin by using the method described by De Grisse (1969) and Seinhorst (1959). The permanent slides were prepared and the nematodes were studied by light microscopy. Figures and measurements were done by drawing tube. All measurements are in μm unless otherwise specified.

RESULTS

Among forty five soil samples recovered only three soil samples collected from Calarod, Bansaraji and Hoseinabad anbarabad areas had *Ektaphelenchoides compsi* (Fig. 1, 2).

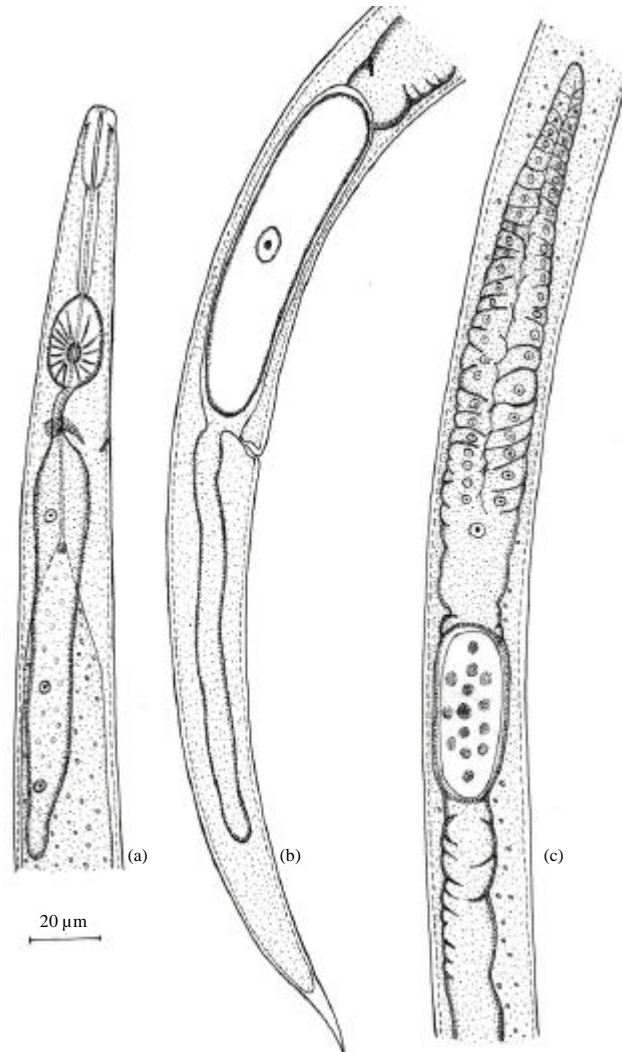


Fig. 1: Female of *Ektaphelenchoides compsi*. a: Part front of body, b: Egg, vulva and tail terminus, c: Ovary structure

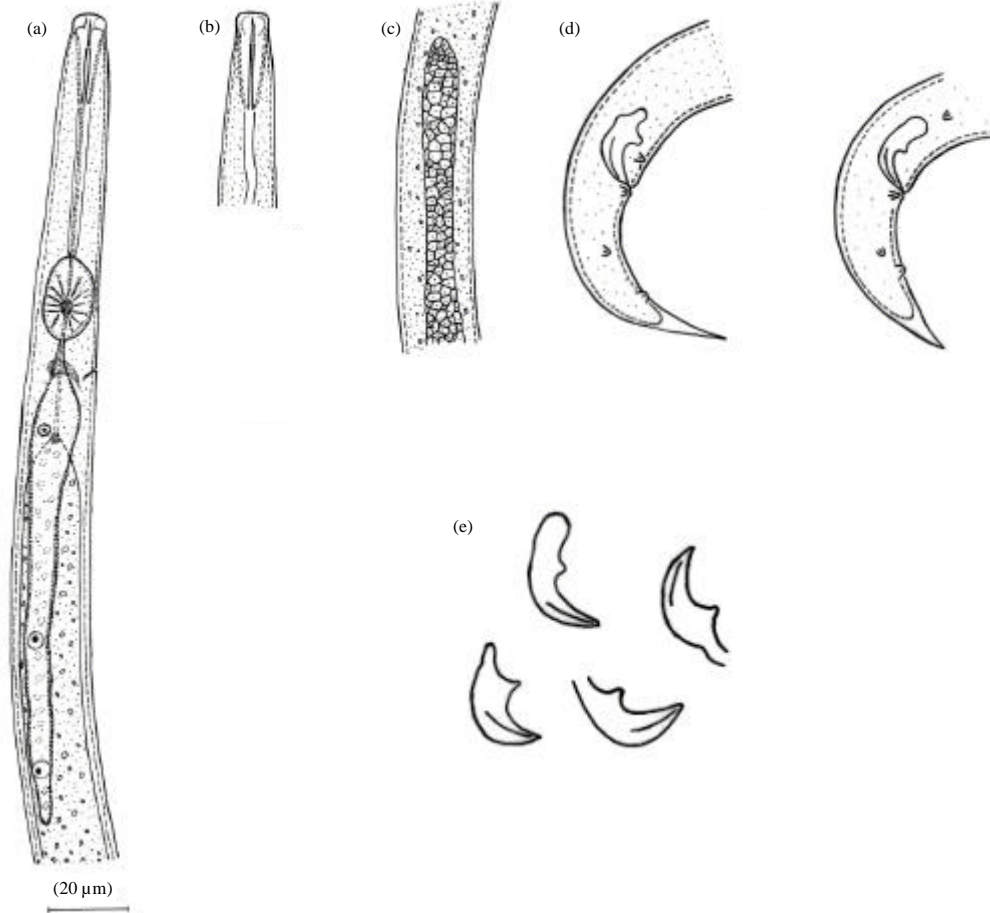


Fig. 2: Male of *Ektaphelenchoides compsi*. a: Part front of body, b: Stylet, c: Terminus of testis, d: Spicule, caudal papillae and tail terminus, e: Types of spicule

***Ektaphelenchoides compsi* Baujard, (1984)**

Measurements:

- **Female:** N = 6, L = (0.635-0.83) 0.74 mm, a = (23.78-32) 27.54, b = (4.09-8.3) 6.5, Stylet = (20-25) 22.8 μm, m = 50%, M.B = (34.09-76.64) 59.04%, V = (76.80-79.37) 78.54%, G₁ = (45.67-61.38) 51.83%, P.V.S = (77-101) 88 μm
- **Male:** N = 8, L = (0.56-0.76) 0.70 mm, a = (33-35.71) 34.55, b = (4.76-7.42) 6.52, c = (13.85-20.94) 17.06, c' = (2.55-3.42) 3.07, Stylet = (20-24) 22.06 μm, Spicule = 18-21 μm
- **Female:** L = (0.7-0.9) 0.78 mm, a = (38-49) 42, b = 8-10, Stylet = (18-24) 21, V = 73.5-77%, P.V.S = 28-93 μm. (Derivation from Baujard, 1984)
- **Male:** N = 19, L = (0.61-0.84) 0.72 mm, a = (41-57) 48, b = (7-10) 8, c = (14-18) 15, c' = (2.9-3.9) 3.3, Stylet = (17-23) 20 μm, Spicule = (19-24) 22 μm. (Derivation from Baujard, 1984)
- **Holotype (female):** L = 0.822 mm, a = 41, b = 8, V = 76%, Stylet = 23 μm (Baujard, 1984)
- **Allotype (male):** L = 0.74 mm, a = 43, b = 8, c = 15, c' = 3, Stylet = 20 μm, Spicules = 24 μm (Baujard, 1984)

Description

Female: Body long 0.635-0.83 mm, ventrally arcuate when relaxed. Cuticule with fine coarse annulations. Head long 4-5 and 7-9 μm width. Cylindrical stylet, 20-25 μm long, without basal knobs. Anterior part cylindrical half to posterior portion. Esophageal 88-198 μm long. Constriction present at the junction between corpus and metacarpus. Metacarpus with prominent posteriorly located valve plates. Isthmus short, esophageal gland lobe overlapping intestine dorsally. Distance of excretory pore from head 68-89 μm . Rectum and anus absent in female. Post uterine sac 77-101 μm long, ovary outstretched. Vulva usually a transverse slit at 78% of body length. Vagina oblique, tail terminus with tapering mucron (Fig. 1).

Male: Similar to female in front of body, body arcuate when relaxed, particularly caudal region. Spicule thorn-shaped, 18-21 μm long, tail with four pairs of caudal papillae and with tapering mucron at the terminus (Fig. 2).

DISCUSSION

Species of *E. compsi* differ from those of species for having a flat head and continuous, longer post uterine sac and shorter tail terminus mucron. Comparison of *E. compsi* and other species of this genus showed significant differences (Table 1, 2).

Ektaphelenchoides pini has parameters a shorter in male and female, c shorter in male, longer stylet (21-26 μm as opposed to 17-23 μm), longer spicule (22-28 μm as opposed to 19-24 μm), tiny mucron, two pairs caudal papillae, shorter post uterine sac (6-25 μm as opposed to 88-93 μm) differ from species of *E. compsi*. Species of *E. attenuata* with having parameters b larger (12-13 μm opposite 8-10 μm), V smaller (61-63 μm as opposed to 73.5-77 μm), shorter stylet (17-19 μm as opposed to 18-24 μm), shorter post uterine sac (23-28 μm as opposed to 28-93 μm) and tail terminus hairy long, differ from species of *E. compsi*. Species of *E. musae* with having smaller long body (0.5-0.7 μm as opposed to 0.7-0.9 μm), parameters a smaller (28-33 μm as opposed to 38-49 μm), smaller parameter V (64-69 μm as opposed to 73.5-77 μm), excretory pore opposite base metacarpus, post uterine sac very shorter (9-19 μm as opposed to 28-93 μm) and tail terminus hairy long differ from species of *E. compsi*. This species reported from a pine in France for the first time by Baujard on 1984 and in this research this genus collected from cucumber and reported for Iran for first time.

Table 1: Measurements characteristics of *Ektaphelenchoides compsi* female

Female	Holotype	<i>E. pini</i> (Massey, 1966)	<i>E. attenuate</i> (Massey, 1974)	<i>E. musae</i> (Baujard, 1984)	<i>E. compsi</i> (Baujard, 1984) (μm , mm)	<i>E. compsi</i> (Present study) (μm , mm)
N	–	1	2	25	–	6
Length(mm)	0.822	0.72	0.87, 0.88	(0.5-0.7)0.57	(0.7-0.9)0.78	(0.635-0.83)0.74
a	41	33	34, 42	(28-33)31	(38-49)42	(23.78-32)27.54
b	8	9	12, 13	(7.4-9.8)8.1	8-10	(4.09-8.3)6.5
Stylet(μm)	23	23	17, 19	(18.5-22)20	(18-24)21	(20-25)22.8
M(%)	–	–	–	–	–	50
M.B(%)	–	–	61, 63	(64-69)67	–	(34.09-76.64)59.04
V(%0)	76	74	–	–	73.5-77	(76.80-79.37)78.54
G1(%)	–	–	–	–	–	(45.67-61.38)51.83
P.V.S (μm)	–	–	–	–	28-93	(77-101)88

All measurements are in μm unless otherwise specified

Table 2: Measurement characteristics of *Ektaphelenchoides compsi* male

Male	Allotype	<i>E. pini</i> (Massey, 1966)	<i>E. attenuate</i> (Massey, 1974) and <i>E. attenuata</i> (Baujard, 1984)	<i>E. compsi</i> (Baujard, 1984)	<i>E. compsi</i> (Present study)
N	-	10	No data	19	8
L (mm)	0.74	0.73-0.98	No data	(0.61-0.84) 0.72	(0.56-0.76) 0.70
a	43	28-38	No data	(41-57) 48	(33-35.71) 34.55
b	8	7-9	No data	(7-10) 8	(4.76-7.42) 6.52
c	15	13-17	No data	(14-18) 15	(13.85-20.94) 17.06
c'	3	2.6-3	No data	(2.9-3.9) 3.3	(2.55-3.42) 3.07
Stylet (µm)	20	21-26	No data	(17-23) 20	(20-24) 22.06
Spicules (µm)	24	22-28	No data	(19-24) 22	18-21

All measurements are in µm unless otherwise specified

Type host and locality: Associated with rhizosphere of *Cucumis sativus* in greenhouses of Jiroft, Iran.

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