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SHORT COMMUNICATION

THE GENUS *BASIRIA* SIDDIQI, 1959 (NEMATODA: TYLENCHIDAE) FROM DEZFUL REGION, IRAN

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RESULTS AND DISCUSSION

In this study we identified eight species of the genus including *B. aberrans* (Thorne, 1949) Siddiqi 1963; *B. duplexa* (Hagemeyer & Allen, 1952) Geraert 1968; *B. gracilis* (Thorne, 1949) Siddiqi 1963; *B. graminophila* Siddiqi, 1959; *B. jirians* Renubala & Dhanachand, 1992; *B. ritteri* (Baqri & Jairajpuri, 1969) Bernard 1980; *B. similis* (Thorne & Malek, 1968) Bernard 1980, and *B. tumida* (Colbran, 1960) Geraert 1968. Amongst them, three species, *B. jirians*, *B. similis*, and *B. ritteri*, are described and illustrated for the first time from Iran.

Basiria jirians Renubala & Dhanachand, 1992

(Table 1; Figure 1; Image 1)

Description

Female: Body straight to slightly ventrally arcuate following heat fixation. Cuticle annuli 1.0–1.2 μm wide at mid-body. Lateral field with four incisures, 3.4–4.2 μm wide, occupied 28–31 % of body diameter, without areolation. Lip region smooth, continuous with body, at front slightly flatted, 5.2–5.5 μm wide and 2.7–3.1 μm high. Amphidial aperture oblique, slit-like. Stylet with small basal knobs, 1.8–2.0 μm wide. Dorsal pharyngeal gland orifice (DGO) 2.0–2.5 μm posterior to stylet knobs. Median bulb oval, 7.0–7.5 μm wide and 14.0–14.5 μm long, with weakly developed valve, located at anterior half of pharynx. Isthmus slender. Excretory pore at 72–73 μm from anterior end. Nerve ring located at 60–65 μm from anterior end. Hemizonid at level of excretory pore, 71–72 μm from anterior end. Basal bulb pyriform, 6.2–8.9 μm wide and 14.5–18.5 μm long. Cardia indistinct. Reproductive system monodelphic-prodelphic, composed of an outstretched ovary with oocytes arranged in a single row. Spermatheca non-offset, slightly elongated, with rounded sperm, 15–22 μm long, 8.0–9.0 μm wide. Vulva a transvers slit lacking flaps or epiptygma. Vagina 4.0–4.5 μm long. Tail elongate-conoid, about equal to the vulva-anus distance, at tip pointed to filiform.

Male: General characters similar to the female. Spicule tylenchoid, small and slightly curved. Gubernaculum simple, rod-shape. Bursa ad-cloacal, simple. Tail similar to that of female.

Discussion

B. jirians is close to *B. dolichura* Loof, 1971, but it differs by smaller body length (490–530 μm vs. 820–930 μm), stylet length (8.0–9.0 μm vs. 9.0–11.0 μm), spermatheca (non-offset vs. offset), tail length (130–136 μm vs. 220–276 μm), and V ratio (61–62 % vs. 52–57 %).

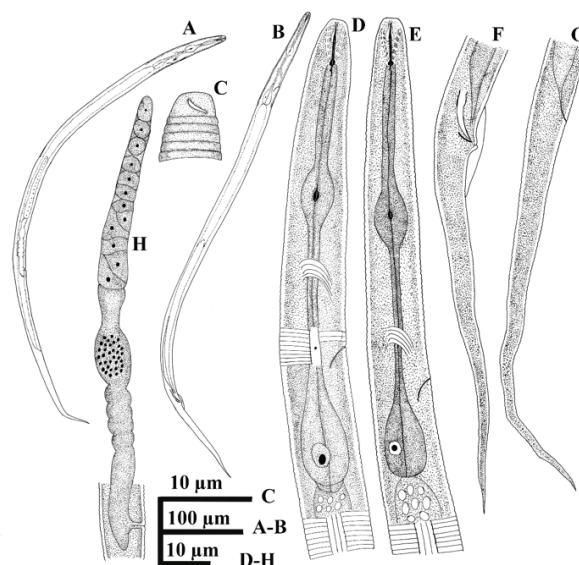


Figure 1. Iranian population of *Basiria jirians*. Female (A, C, E, G & H) and Male (B, D, F): A, B—entire body | C—amphidial aperture | D & E—anterior end | F, G—tail | H—reproductive system.

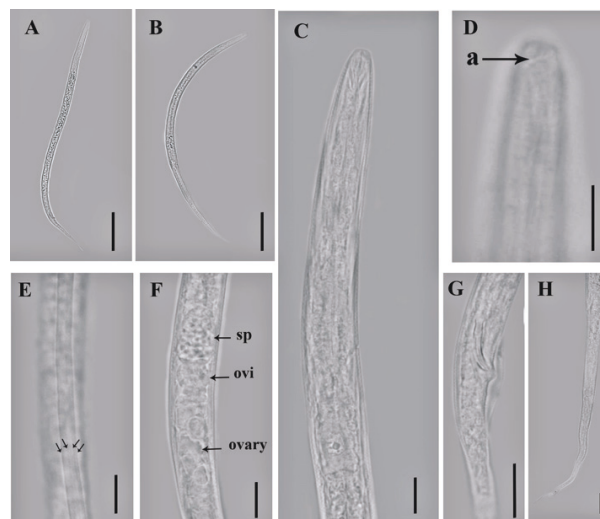


Image 1. Iranian population of *Basiria jirians*. Female (B, C, D–F & H) and Male (A & G): A, B—entire body | C—anterior end | D—amphidial aperture | E—lateral field | F—spermatheca and reproductive system | G, H—tail | A, B—100 μm | C–H—10 μm .

It differs from *B. birjandiensis*, by smaller stylet length (8.0–9.0 μm vs. 11–12 μm), DGO (2.0–2.5 μm vs. 6.0–9.0 μm), non-offset spermatheca (vs. offset), from *B. khouzestanensis* by smaller stylet (8.0–9.0 μm vs. 9.3–12.5 μm), DGO (2.0–2.5 μm vs. 4.0–6.0 μm) and position of median bulb (40–42 vs. 48–56.2), and from *B. elegans* (Khan & Khan 1975) Bajaj & Bhatti 1979 by smaller body (490–530 μm vs. 750–900 μm), cephalic region (smooth vs. annulated), stylet length (8.0–9.0 μm vs. 11–13 μm),

Table 1. Morphometric characters of *Basiria jirians* and *B. similis* population from Dezful region (measurements in μm) and in the form: mean \pm s.d. (range).

Character	<i>B. similis</i>		<i>B. jirians</i>		
	Present study	Geraert 2008	Present study		Renubala & Dhanachand 1992
	Female	Female	Female	Male	Female
n	3	?	3	1	4
L (μm)	700 \pm 49.3 (644–736)	680–700	490 \pm 45 (445–535)	485	490–530
a	37.2 \pm 2.4 (34.4–39)	42	37.6 \pm 0.5 (37–38.2)	41.1	33–39
b	5.5 \pm 0.2 (5.3–5.7)	-	5.1	16.1	6.1–7.3
c	7.5 \pm 0.1 (7.5–7.6)	8.2	5.2 \pm 0.2 (5.0–5.4)	5.3	3.7–3.9
c'	8.6 \pm 0.5 (8.0–9.0)	-	10.8 \pm 0.2 (10.6–11.1)	8.8	10–17
V	73.2	71.5–73	64.7 \pm 1.3 (63.1–65.6)	-	61–62
V'	84.3 \pm 0.1 (84.2–84.4)	82–83	80 \pm 1.8 (78–81.7)	-	83
Stylet (μm)	10.6 \pm 0.3 (10.3–11)	11–13	9.1 \pm 0.1 (9.0–9.2)	9.3	8.0–9.0
Conus (μm)	3.7 \pm 0.1 (3.7–3.8)	-	3.0 \pm 0.2 (2.9–3.2)	3.1	-
O	92 \pm 4.9 (86.4–95.4)	-	25.7 \pm 3.0 (22.2–27.7)	37.6	-
Pharynx (μm)	125 \pm 3.7 (121–128)	122–125	94.6 \pm 8.5 (86–103)	102	76–80
Median bulb (μm)	46 \pm 1.1 (45–47)	-	38.5 \pm 1.5 (37–40)	46	40–43
MB	36.9 \pm 0.2 (36.7–37.1)	40	40.7 \pm 2.1 (38.8–43)	45	39.6–42.0
Deirids	95 \pm 1.5 (94–97)	-	74 \pm 1.0 (73–75)	81	-
Head-vulva (μm)	513 \pm 35.9 (472–539)	-	317 \pm 30.7 (291–351)		-
Head-anus (μm)	608 \pm 42 (560–638)	-	396 \pm 40.5 (356–437)	393	-
Vulva-anus (V-A)(μm)	95 \pm 6.0 (88–99)	-	79 \pm 12.4 (65–87)	-	61.7–70.4
Tail/V-A	0.9	0.8–0.9	1.1 \pm 0.1 (1.0–1.3)	-	2.0
Body width (μm)	18.8 \pm 0.1 (18.7–19)	16.5–18	13 \pm 1 (12–14)	11.8	-
Vulval body width (VBW) (μm)	15.8 \pm 0.2 (15.5–16)	-	12.2 \pm 0.2 (12.0–12.5)		-
Anal body width (μm)	10.7 \pm 0.1 (10.5–10.8)	-	8.6 \pm 0.6 (8.0–9.2)	10.4	-
Annulus width (μm)	1.2 \pm 0.1 (1.1–1.4)	-	1.1 \pm 0.1 (1.0–1.2)	1.0	-
PUS	10.8 \pm 0.3 (10.6–11.2)	12	10 \pm 0.5 (9.5–10.5)	-	-
PUS/VBW (%)	68 \pm 3.3 (66–72)	80	82 \pm 2.4 (79–84)	-	-
Tail length	92 \pm 7.3 (84–98)	85–87	93 \pm 4.5 (89–98)	92	128–136
Spicules	-	-	-	13.8	14.5–15
Gubernaculum	-	-	-	5.5	3.0
Bursa	-	-	-	25.0	21

tail length (130–136 μm vs. 192–218 μm) and spicule length (14–15 μm vs. 25–26 μm).

Our population is very close to *B. jirians*, but differs from the type population in tail length (89–98 μm vs. 130–136 μm), pharynx length (86–103 μm vs. 76–80 μm) and position of vulva (63.2–65.6 % vs. 61–62 %). These differentiations, however, maybe related to habitat and associated host. In this study, it was found from the rhizosphere of *Nerium oleander* in Dezful region.

***Basiria similis* (Thorne & Malek, 1968) Bernard, 1980**
(Table 1; Figure 2; Image 2)

Description

Female: Body straight to slightly ventrally curved. Body annuli delicate, 1.1–1.4 μm wide at mid-body. Lateral field with four incisures, 5.4–6.0 μm occupying 29–32 % of body wide. Cephalic region with four annuli at body contour, 6.3–6.5 μm width and 3.1–3.4 μm high. Cephalic framework weakly sclerotized. Amphidial aperture obligate, slit-like. Stylet delicate with distinct

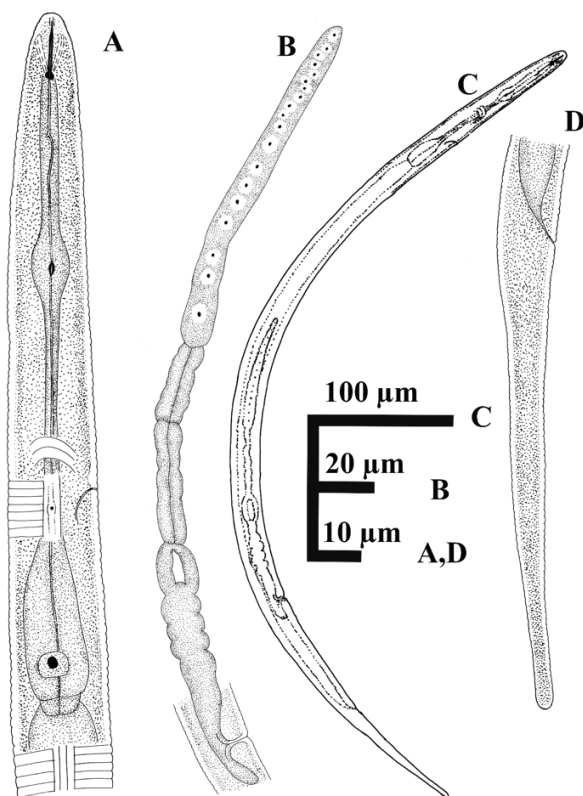


Figure 2. Iranian population of *Basiria similis*. Female (A–D): A—anterior end | B—reproductive system | C—entire body | D—tail.

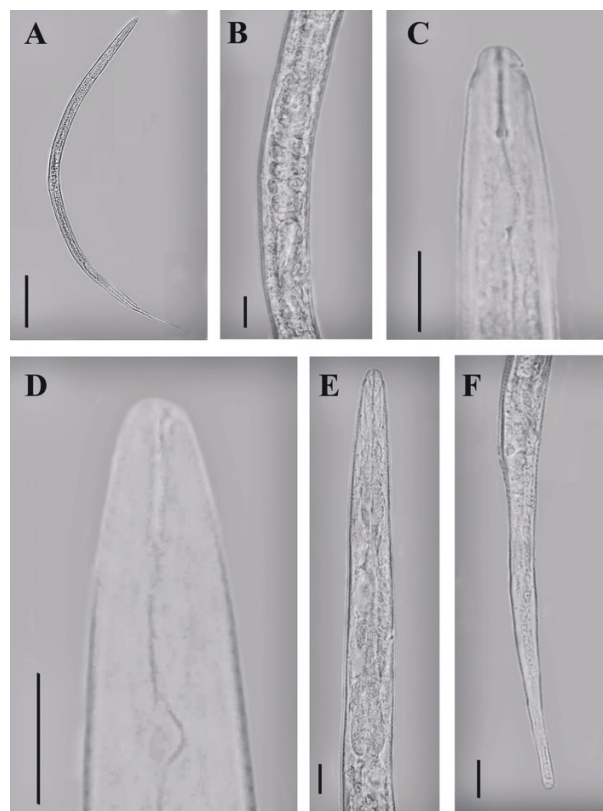


Image 2. Iranian population of *Basiria similis*. Female (A–F): A—entire body | B—reproductive system | C, D—stylet and DGO | E—anterior end | F—tail | A—100µm | B–F—10µm.

knobs, 1.5–2.1 µm wide, conus 33–37% of total stylet length. Dorsal pharyngeal gland orifice (DGO) 8.9–10.5 µm posterior to stylet knobs. Median bulb oval, 7.0–8.5 µm, occupied 49–55 % of body wide, with distinct valve, located at first half of pharynx. Isthmus slender. Excretory pore at 85–94 µm from anterior end. Nerve ring located at 77–82 µm from anterior end. Hemizonid 1–3 annuli anterior to excretory pore, 84–93 µm from anterior end. Basal bulb cylindroid, 10.0–12.0 µm wide and 27–29 µm long. Deirids at level of excretory pore. Cardia large and rounded. Reproductive system monodelphic-prodelphic, ovary long. Spermatheca non-offset, elongated and rectangular, without sperm. Vulva a transvers slit lacking flaps or epiptygma. Vagina 6.0–6.5 µm long that occupied 26–30 % of corresponding body wide in length. Tail elongate-clavate.

Male: Not found.

Discussion

B. similis is very close to *B. diversicauda* Khan 1993, *B. tumida*, and *B. ritteri*. It differs from *B. ritteri* by clavate tail (vs. notch at tip), annulation at posterior half of tail indistinct (vs. annuli at entire tail distinct) and DGO (10–11 µm vs. less than 4.0µm). It can be distinguished from

B. tumida by DGO (10–11 µm vs. 1.5–4.5 µm), and from *B. diversicauda* by only tail shape (clavate vs. elongate-conoid to a rounded terminus). *B. diversicauda* probably is a synonym of *B. similis* (Karegar & Geraert 1997). This species has been described only from an apple orchard in South Dakota, USA (Thorne & Malek 1968). Morphological and morphometric characteristics of our population fit well with those of *B. similis*. In this study, it was recovered from the rhizosphere of wild grasses in Dezful region.

***Basiria ritteri* (Baqri & Jairajpuri, 1969) Bernard, 1980**
(Table 2; Figure 3; Image 3)

Description

Female: Body straight to slightly ventrally curved. Body annuli delicate, 1.3–1.5 µm wide at mid-body. Lateral field with four incisures, 5.7–6.2 µm that occupied 25–27 % of body wide. Cephalic region with four to five annuli, not offset from body, 6.1–6.6 µm wide and 3.1–3.4 µm high. Cephalic framework weakly sclerotized. Amphidial aperture obligate, slit-like. Stylet delicate with distinct knobs, 1.9–2.3 µm wide, conus

Table 2. Morphometric characters of *Basiria ritteri* population from Dezful region (measurements in μm) and in the form: mean \pm s.d. (range).

Character	Present study		Baqri & Jairajpuri 1969	Karegar & Geraert 1997
	Female	Male	Female	Female
n	4	4	7	14
L (μm)	713 \pm 31.3 (685–747)	666 \pm 60.5 (618–734)	480–680	625–775
a	32 \pm 0.9 (31–33)	39 \pm 2.6 (36–41)	-	-
b	5.5 \pm 0.2 (5.3–5.7)	13.7 \pm 0.5 (13.2–14.3)	-	-
c	7.3 \pm 0.2 (7.2–7.6)	7.3 \pm 0.2 (7.0–7.4)	-	-
c'	8.1 \pm 0.2 (7.9–8.3)	7.0 \pm 0.6 (6.3–7.6)	-	-
V	72.2 \pm 1.6 (70.3–73.4)	-	71–77	71–76
V'	83.5 \pm 1.7 (81.6–85.1)	-	81–85	82–85
Stylet (μm)	10.9 \pm 0.5 (10.5–11.5)	10.9 \pm 0.3 (10.6–11.2)	9.0–10	8.5–11.0
Conus (μm)	3.7 \pm 0.2 (3.6–4.0)	3.8 \pm 0.2 (3.6–4.1)	-	-
O	24.4 \pm 1.4 (23.3–26)	22.5 \pm 1.7 (20.5–23.6)	-	-
Pharynx (μm)	128 \pm 1.0 (127–129)	123 \pm 5.1 (117–127)	120	101–128
Median bulb (μm)	48.5 \pm 0.5 (48–49)	47 \pm 2.0 (45–49)	-	-
MB	37.7 \pm 0.2 (37.5–37.9)	38.3 \pm 0.3 (37.9–38.5)	36.5	34–39
Deirids	94.3 \pm 0.5 (94–95)	94 \pm 0.5 (94–95)	-	-
Head-vulva (μm)	516 \pm 31.7 (482–545)	-	-	-
Head-anus (μm)	617 \pm 29.9 (590–649)	575 \pm 53.6 (535–636)	485–565	550–705
Vulva-anus (V-A) (μm)	101 \pm 8.8 (91–108)	-	-	-
Tail/V-A	0.9 \pm 0.1 (0.8–1.0)	-	0.5–1.0	0.6–1.0
Body width (μm)	22.6 \pm 1.5 (21–24)	17.3 \pm 2.0 (15–19)	15–17.5	-
Vulval body width (μm)	19.6 \pm 0.5 (19–20)	-	-	-
Anal body width (μm)	11.8 \pm 0.2 (11.6–12)	12.8 \pm 0.7 (12–13.5)	-	-
Annulus width (μm)	1.3 \pm 0.1 (1.3–1.5)	1.2 \pm 0.1 (1.2–1.3)	-	-
PUS	10.4 \pm 0.3 (10–10.7)	-	-	-
PUS/VBW (%)	53 \pm 2.6 (50–55.2)	-	30–80	-
Tail length	97 \pm 1.5 (95–98)	91 \pm 7.5 (83–98)	49–68	59–95
Spicules	-	18.1 \pm 1.0 (17–19)	16–17	15
Gubernaculum	-	5.2 \pm 0.2 (5–5.5)	4.0–5.0	4.5
Bursa	-	25.3 \pm 0.5 (25–26)	-	-

33–35 % of total stylet length. Dorsal pharyngeal gland orifice (DGO) 2.5–3.0 μm posterior to stylet knobs. Median bulb oval, 8.0–8.6 μm , occupied 50–57 % of body wide, with distinct valve, located at posterior half of pharynx. Isthmus slender. Excretory pore at 87–99 μm from anterior end. Nerve ring located at 85–90 μm from anterior end. Hemizonid 1–3 annuli anterior to excretory pore, 89–92 μm from anterior end. Basal bulb cylindroid, 12.0–13.0 μm wide and 27–30 μm long. Deirids at level of excretory pore. Cardia large and funnel-shape. Reproductive system monodelphic-prodelphic, ovary very long. Spermatheca non-offset, elongated and rectangular, with rounded sperm, 25–28 μm long and 10–12 μm in wide. Vulva a transvers slit

lacking flaps or epiptygma. Vagina 5.8–6.2 μm long occupying 25–27 % of corresponding body wide. Tail elongate-conoid, with distinct annulation, tapering gradually, terminus with notched.

Male: General characters similar to female, cephalic region slightly smaller than female. Spicules arcuate and tylenchoid. Gubernaculum simple. Bursa ad-cloacal.

Discussion

This species was firstly described as *Basiroides ritteri* Baqri & Jairajpuri 1969 from India, then, Bernard (1980) transferred it to the genus *Basiria*. It is very similar to *B. guangdongensis* (Xie, Feng, Li & Yin, 1994) Siddiqi 2000 *B. similis*, and *B. tumida*. It can be differentiated from *B.*

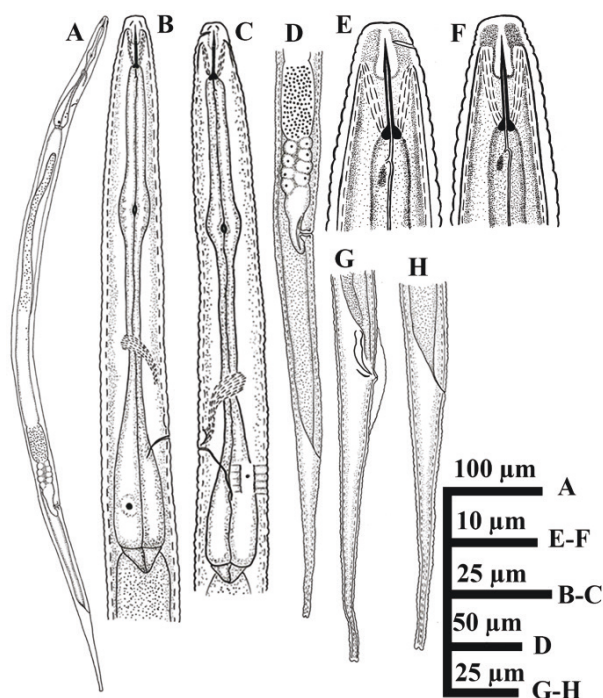


Figure 3. Iranian population of *Basiria ritteri*. Female (A, B, D, F & H) and Male (C, E, G): A—entire body | B, C—anterior end | D—posterior end | E, F—stylet and cephalic region | G, H—tail.

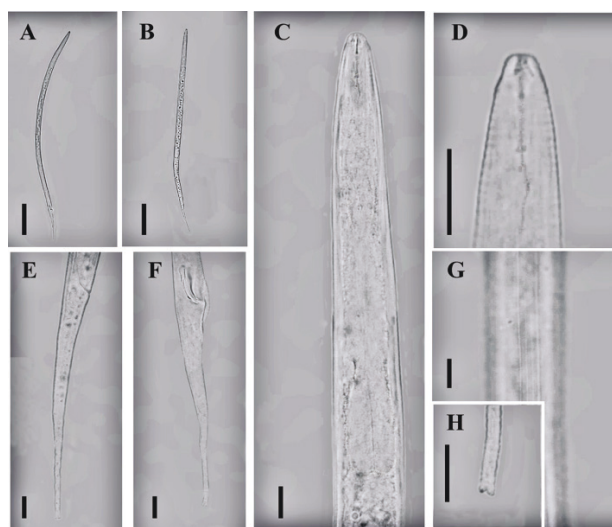


Image 3. Iranian population of *Basiria ritteri*. Female (B-E, G) and Male (A, F, H): A, B—entire body | C—anterior end | D—stylet and cephalic region | E, F—posterior end | G—lateral field | H—tail tip | A, B—100µm | C-H—10µm.

guangdongensis by stylet length (8.5–11.0 µm vs. 12.5–13 µm). It can be separated from *B. similis* by slightly shorter stylet (8.5–11.0 µm vs. 11–13 µm), DGO (2.0–3.5 µm vs. 10–11 µm), and tail tip (notched vs. not notched), and from *B. tumida* by tail tip (notched vs. not notched),

entire tail annulated (vs. posterior part of tail without distinct annulation). Our population is very similar to the *B. ritteri* and all morphological and morphometrical characters are close to the type population. This species has been found only in Asia, Uttar Pradesh (as type locality), India (Baqri & Jairajpuri 1969); Pakistan (Maqbool et al. 1984 as *Basirioides sindhicus*); China and Vietnam (Karegar & Geraert 1997). In this study, it was recovered from the rhizosphere of *Polianthes tubeosa* in Dezful region.

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