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A new species of the genus *Atypus* Latreille, 1804 (Araneae: Atypidae) from Korea

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Worldwide, 30 species of the genus *Atypus* Latreille, 1804 have been recorded from the United States, Europe, Africa, south-east and far-east Asia (Platnick 2014). Atypid spiders are characterized by a male sternum with marginal ridges, a short, straight and spike-like embolus, a straight conductor and a distally widened vulva with bulbous or pyriform receptacula and with two lateral patches of pores on the genital atrium (Gertsch and Platnick 1980). Kraus and Baur (1974) utilized various taxonomic characters to distinguish between the European species, such as the segmentation of the posterior spinnerets, features of the patellar membrane, morphology of sigilla opposite coxae I and IV, and the male palpal conductor, palpal furrow and male metatarsal spines. The genus *Atypus* was reviewed by Schwendinger (1990) who redescribed 12 recorded species and discussed the granular texture on the male chelicerae and front legs, and the cymbial pit for distinguishing species. Among 30 *Atypus* spiders, 18 species are distributed in Far-East Asia; 12 species from China (Zhu *et al.* 2006), 5 species from Korea (Kim 1985; Namkung 1986, 2001; Kim *et al.* 2006), and 2 species from Japan (Bösenberg and Strand 1906; Tanikawa 2006).

We discovered one more new *Atypus* species in the course of investigation of hillocks near the agricultural ecosystem and described this species with illustrations of taxonomic characters. The external morphology of the specimens was observed and illustrated with a stereoscopic microscope, and metric values were measured with an ocular micrometer. All measurements are given in mm. Leg measurements are given in the order of femur, patella + tibia, metatarsus and tarsus, in parentheses. Pedipalp measurements are given in the order of femur, patella + tibia, – , tarsus, in parentheses. Abbreviations: AER anterior eye row, PER posterior eye row, AME anterior median eye, ALE anterior lateral eye, PME posterior median eye, PLE posterior lateral eye, MOQ median ocular quadrangle, AS anterior spinnerets, MS posterior median spinnerets, PS posterior spinnerets. The key to Korean *Atypus* species was made according to their taxonomic characters.

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Family Atypidae Thorell 1870

Genus *Atypus* Latreille 1804

Atypus minuta sp. nov.

(Fig. 1A–H)

Type material. Holotype male, Deokcheon-myeon, Sanghak-ri, Jeongeup-si, Jeollabuk-do, Korea (35° 36' 57" N, 126° 48' 15" E, altitude 46 m), 23 July 2008, S.T. Kim and S.Y. Lee leg., deposited in National Institute of Biological Resources (NIBR), Ministry of Environment, Korea.

Etymology. The specific name is Latin meaning minute or small referring to the small size of male compared to other *Atypus* members.

Diagnosis. The male differs from those of other Korean *Atypus* species by the thick tip on the upper distal corner of the conductor (Fig. 1H) and leg IV without metatarsal spines. *Atypus minuta* sp. nov. is most similar to *A. suweonensis* in

eye tubercle (0.6 long and 1.3 wide), AER and PER slightly recurved from above; eye sizes and interdistances: AME 0.20, ALE 0.23, PME 0.10, PLE 0.15, AME–AME 0.15, AME–ALE 0.07, AME–PLE 0.19, PME–PME 0.63, PME–PLE 0.41, PLE–PLE 0.95, ALE–PLE–PME contiguous, MOQ 0.4 long, front width 0.6, rear width 0.7 (Fig. 1B). Chelicerae longer than wide, reddish brown, robust, strongly developed with deep longitudinal furrow at base of retrolateral surface, 12 teeth on promargin of cheliceral furrow (Fig. 1C), prolateral and retrolateral surface with distinct granular texture. Sternum subequal in length and width, reddish brown with marginal ridges; four pairs of sigilla deeply imprinted, I, II, III ovoid, IV water drop-shaped, sigilla sizes and interdistances: I 0.4 long and 0.2 wide, 0.3 from margin; II, 0.4 long and 0.2 wide, 0.5 from margin; III, 0.5 long and 0.3 wide, 0.4 from margin; IV, 0.6 long and 0.4 wide, 0.5 from margin; I–I 0.9, II–II 1.3, III–III 1.3, IV–IV 0.4, I–II 0.1, II–III 0.1, III–IV 0.1 (Fig. 1D). Endites longer than wide, reddish brown with marginal ridges. Labium wider than long, reddish brown, strongly protrude in center (Fig. 1D). Leg formula 4123; reddish brown; all femora lack spines; short spines on ventral surface of tibiae I, II and IV; retrolateral surface of tibia of III, dorsal and ventral surfaces of metatarsus of I, whole surface of metatarsi II, III and IV; tarsi reddish brown, pseudosegmented; retrolateral membranous area on patella I purple; trichobothria inconspicuous; femoral granules on I and II doomed and smooth, respectively. Abdomen longer than wide, suboval, dull blackish brown, minutely wrinkled, dorsal scutum (3.5 long, 1.5 wide) covers *ca.* 4/5 of abdomen, blackish brown enclosing dark blackish brown tergite (Fig. 1A), venter with two pairs of lung opercula, upper pair vestigial, lower pair ovoid horizontally (2.0 long, 2.8 wide), dull blackish brown (Fig. 1E). Spinnerets pale blackish brown, AS 0.5, MS 0.4, PLS 0.9, 4 segmented: basal joint 0.5, median 0.6, subapical 0.4, apical 0.3 (Fig. 1E). Palpal tibia wider than tarsus, dark reddish brown; palpal cymbium without basal pit; narrow and deeply pitted straight furrow on femur; bulb small, globe-like, embolus short but stout, yellowish brown, spiniform; conductor almost transparent, minutely wrinkled, upper distal corner slightly bent upwards, tip of upper distal corner thick emarginately (Fig. 1F–H).

Female: Unknown.

Distribution. Korea (Deokcheon-myeon, Sanghak-ri, Jeongeup-si, Jeollabuk-do)

Ecological remarks. The holotype was collected by a pitfall trap at hillock near rice fields.

Key to Korean *Atypus* species

1. Female (females of *A. sternosulcus*, *A. suweonensis* and *A. minuta* sp. nov. are unknown 2
- Male 4
2. Anterior edge of atrium of genitalia almost straight, lateral pair of receptacula larger *A. coreanus* Kim, 1985
- Anterior edge of atrium of genitalia deeply sunken 3
3. Median and lateral pairs of receptacula subequal in size *A. magnus* Namkung, 1986
- Median and lateral pairs of receptacula twisted around each other like '8' figure *A. quelpartensis* Namkung, 2002
4. Tip of upper distal corner of conductor thick; metatarsal spines IV absent *A. minuta* **sp. nov.**
- Tip of upper distal corner of conductor thin; metatarsal spines IV present 5
5. Sigilla I remote from margin and II semicircular *A. suweonensis* Kim *et al.*, 2006
- Sigilla I marginal and II otherwise 6
6. Interdistance between sigilla II longest; femoral granules II doomed *A. coreanus*
- Interdistance between sigilla III longest; femoral granules II smooth 7
7. Sigilla I deeply pitted, sigilla II elliptical transversely *A. sternosulcus* Kim *et al.*, 2006
- Sigilla I shallowly imprinted, sigilla II round 8
8. Base of conductor narrow; retrolateral patella I white *A. magnus*
- Base of conductor broad; retrolateral patella I pigmented *A. quelpartensis*

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