

FIVE NEW SPECIES OF SCUTACARID MITES (ACARI : TARSONEMINA) FROM EGYPT *

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TAXONOMY
SCUTACARIDAE
EGYPT

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ABSTRACT : Five new species of the genera *Scutacarus* and *Heterodispus* are described and illustrated. These species were named *Scutacarus subfimetarius*, *Scutacarus salami*, *Scutacarus paracurtus*, *Heterodispus evansi* and *Heterodispus aegyptensis*. All were found in soil associated with roots of chamomile, basil and artichoke, medicinal and aromatic plants.

RÉSUMÉ : Cinq nouvelles espèces des genres *Scutacarus* et *Heterodispus* sont décrites et illustrées. Ces espèces reçoivent les noms de *Scutacarus subfimetarius*, *Scutacarus salami*, *Scutacarus paracurtus*, *Heterodispus evansi* et *Heterodispus aegyptensis*. Toutes ont été trouvées dans le sol, associées aux racines de la Camomille, du Basilic et de l'Artichaut, plantes médicinales et aromatiques.

INTRODUCTION

During our survey on acarine fauna associated with medicinal and aromatic plants, several new species of the family Scutacaridae were recorded. This paper contains descriptions of five new species of the genera *Scutacarus* and *Heterodispus*, while two new species of the genus *Scutacarus* are described in a separate paper (MOMEN and EL-BAGOURY, 1987). The Scutacaridae constitute a large and ubiquitous family represented in humus, compost and soil (KARAFIAT, 1959; MOMEN and CURRY, 1987 & 1988). Many species are associated with insects, being found either on the insects themselves or in nesting cells of their primary associates-bees and wasps (BATRA, 1965; MAHUNKA, 1969; DELFINADO and BAKER, 1976; DELFINADO *et al.* 1976). Scutacarid 'also are found on beetles (MAHUNKA 1965a, KUROSA 1976). Although the associations are generally considered harmless to the insects (hosts), but beneficial to the mites, information on the true relationship (other than phoresy, see NORTON and IDE, 1974) between mites and insects is lacking. The descriptive terminology follows LINDQUIST (1986). The holotypes and paratypes of the new species are deposited in the Collection of N.R.C.

METHODS

The soil samples were taken from immediately below the plants to a depth of 10 cm with a stainless steel core sampler. The samples contained

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soil associated with plant roots. The Acari were extracted by Tullgren funnel method. Specimens mounted in lactic acid, vitzthum's fluid were drawn with the aid of a Leitz drawing tube attached to a Laborlux interference phase microscop.

Genus *Scutacarus* Gros 1845

Type-species, *Scutacarus femoris* Gros 1845, by monotypy = *Acarus acarorum* Goeze, 1780.

The genus *Scutacarus* is distinguished in having 4-segmented leg IV, usually with short tibiotarsus bearing 5-7 setae and without pretarsus, claw and empodium. Leg. I is also 4-segmented, claws I may lack.

The three species presently described in *Scutacarus* belong to subgenus *Scutacarus* Gros characterized by a claw on tibiotarsus I.

Scutacarus (Scutacarus) subfimetarius sp. nov.

■ Length 257-262 μm , width 244-247 μm , body broadly elliptical, its surface punctate.

Dorsum (Fig. 1, A) : Clypeus large with free margin wide. Setae C1 of clypeus strong, smooth, posterior to C2 and of equal length, d smooth, shorter than C1; f barbed, as long as h2; e barbed, shorter than f; h1 the strongest and longest of dorsal setae, barbed.

Trichobothrium (Fig. 1, B) : Sensillus capitate, smooth; prodorsal setae spinelike, pd2 about 1/3 as long as pd1.

Venter (Fig. 1, C) : Apodeme 2 poorly developed, a thin line extending to acetabula of leg II. Apodeme 4 incomplete, free; sternal apodemes (apsa, apsp) strong, the posterior end of apsp extending to acetabula of leg IV. Epimeral setae 1a large, thickly barbed; 1b and 2a similar to 1a but sparsely barbed and not so large; 2b robust, saberlike, smooth; 3a barbed, slightly shorter than 3b and 3c; 4c barbed, longer than 3c; 4a barbed, short, about 1/2 4b and inserted anteriorly; 4b barbed, long, not reaching the posterior margin of body. Caudal setae ps1 and ps2 feathered; ps3 barbed, distant. *Legs* : Tibiotarsus of leg I (Fig. 2, D) with solenidia ω_2 and α_1 long, slender; ω_1 stout; α_2 club-shaped. Leg IV (Fig. 2, E), with long tibiotarsus bearing 7 setae. Seta s about 3/4 r, both serrate.

Legs : Tibiotarsus of leg I (Fig. 1, D) with solenidia ω_2 and α_1 very long, slender; ω_1 stout;

α_2 small, club-shaped. Leg IV (Fig. 1, E) with long, slender tibiotarsus, bearing 7 setae. seta s short, about 3/4 r and strongly serrate at distal half.

■ **MALE** : Unknown.

Holotype : Female collected from soil associated with roots of *Matricaria chamomilla*. Giza Co., Cairo, February 1988.

Paratype : 1 female collected with the holotype.

Remarks : On the basis of leg IV, the new species is relegable to the longitarsus-group and is most closely related to *Scutacarus fimetarius* Delfinado, Baker and Abbatiello 1976 described from New York. It can be readily distinguished from *fimetarius* by setae d short, e shorter than f, e and f barbed, a smooth sensillus and setae 3b not reaching insertion of 4b.

Scutacarus (Scutacarus) salami sp. nov.

■ **FEMALE** : Length 179-183 μm , width 145-149 μm , body elliptical, its surface punctate.

Dorsum (Fig. 2, A) : Setae C1 of clypeus smooth, posterior to C2 and slightly longer; d smooth, as long as C2; e simple, as long as h2; f barbed; h1 the strongest and longest of the dorsal setae.

Trichobothrium (Fig. 2, B) : Sensillus capitate, smooth; prodorsal setae spinelike, pd2 about 1/2 pd1.

Venter (Fig. 2, C) : Apodeme 2 poorly developed, a thin line extending to acetabula of leg II. Sternal apodeme (apsp) strong, with posterior end extending to acetabula of leg IV. Epimeral setae 1a densely barbed, stronger than 1b and 2a; 2b saberlike, smooth; 3a barbed, slightly shorter than 3b; 4a barbed, short, about 2/3 4b and inserted anteriorly; 4b barbed, long, not reaching the posterior margin of body. Caudal setae ps1 and ps2 feathered; ps3 barbed, distant. *Legs* : Tibiotarsus of leg I (Fig. 2, D) with solenidia ω_2 and α_1 long, slender; ω_1 stout; α_2 club-shaped. Leg IV (Fig. 2, E), with long tibiotarsus bearing 7 setae. Seta s about 3/4 r, both serrate.

MALE : Unknown.

Holotype : Female collected from soil associated with roots of *Matricaria chamomilla*, Giza Co., Cairo, February 1988.

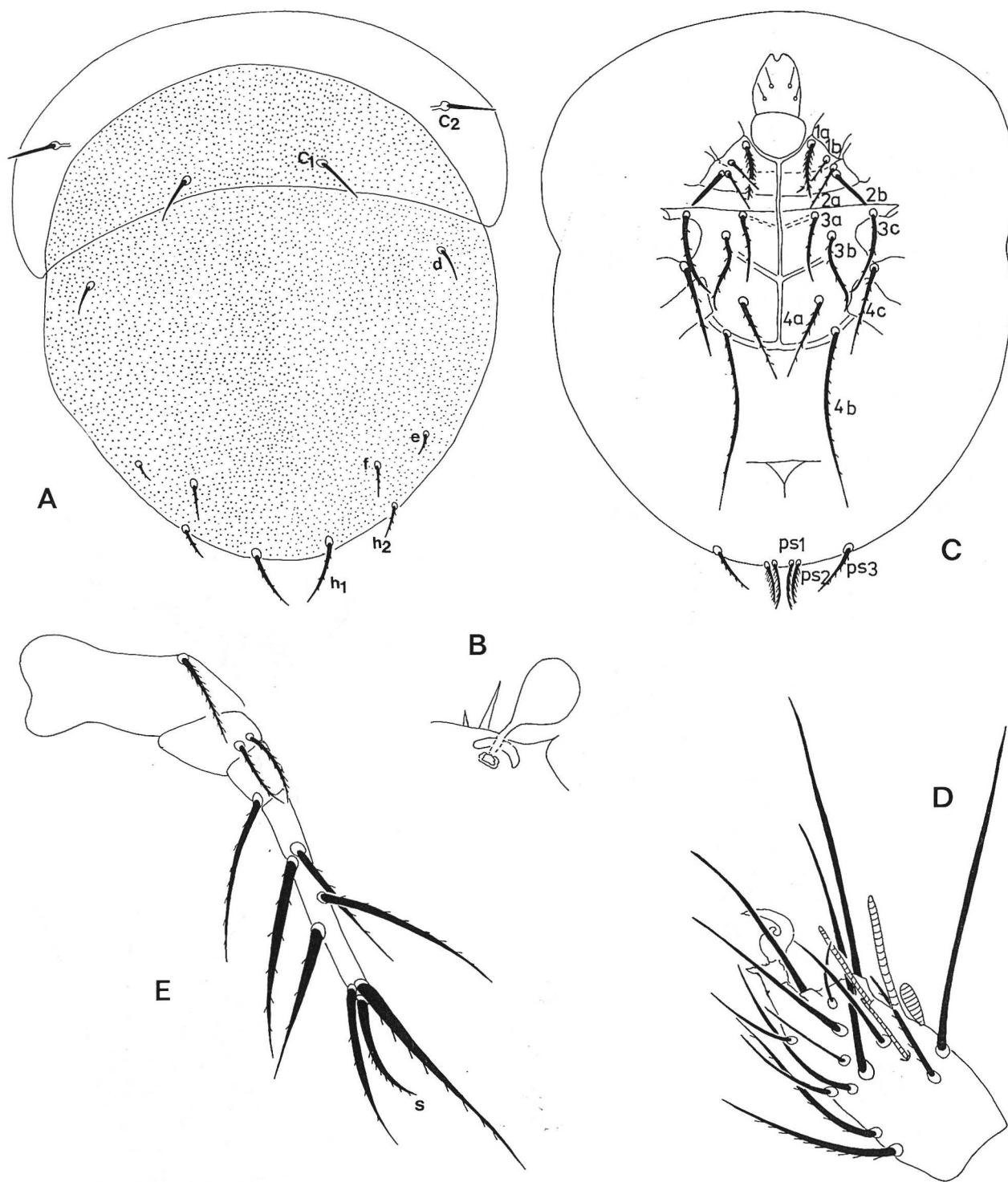


FIG 1 : *Scutacarus (Scutacarus) subfimetarius* sp. nov., female

A. — Dorsal aspect. B. — Trichobothrium (dorsal). C. — Ventral aspect. D. — Tarsus I (right). E. — Leg IV (right).

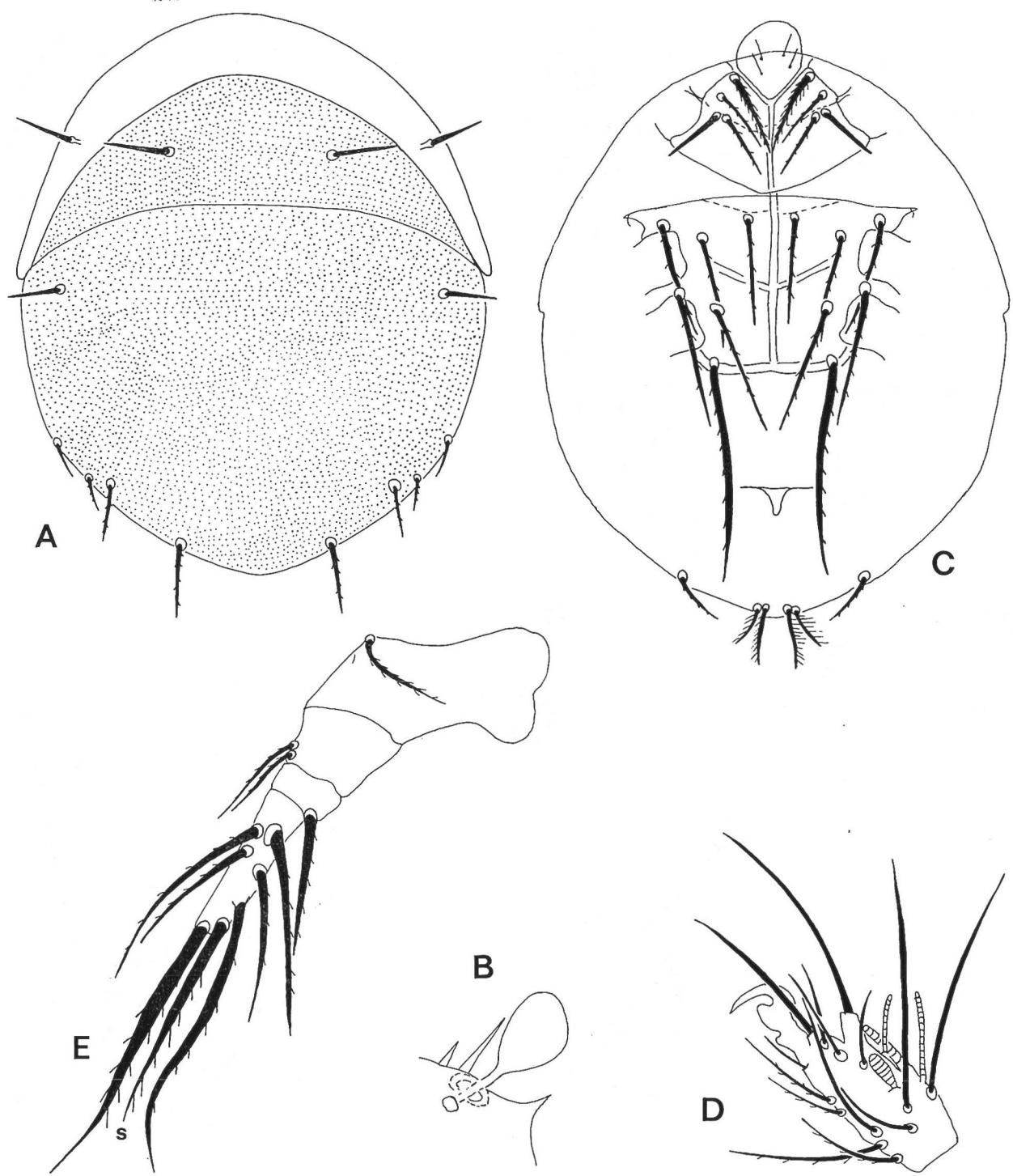


FIG 2 : *Scutacarus (Scutacarus) salami* sp. nov., female

A. — Dorsal aspect. B. — Trichobothrium (dorsal). C. — Ventral aspect. D. — Tarsus I (right). E. — Leg IV (left).

Paratypes : 8 females collected with the holotype.

Remarks : This new species belongs to the longitarsus group and is most closely related to *Scutacarus mahunkai* Delfinado, Baker and Abbatielo 1976 described from New York. It can be distinguished from *mahunkai* by prodorsal setae *pdl* long, setae *d* smooth, setae *f* barbed and longer than *h2*, setae *3a* and *3b* not reaching insertion of *4b* and setae *4b* not extending beyond the posteroerior margin of the hysterosoma.

Scutacarus (Scutacarus) paracurtus sp. nov.

■ FEMALE : Length 192-196 μm ; width 163-167 μm , elliptical.

Dorsum : (Fig. 3, A) : All dorsal setae stout with 2-3 barbs, except *e* which are smooth. Setae *C1* of clypeus anterior to *C2* and of equal length; *d* as long as *f*, longer than *h2*; *h1* slightly longer than *f*.

Trichobothrium (Fig. 3, B) : Sensillus capitate, smooth; Prodorsal setae *pdl* slightly longer and stouter than *pd2*.

Venter (Fig. 3, C) : Apodeme 2 poorly developed. Apodeme 4 incomplete, free. Posterior sternal apodeme (apsp) strong, with free end reaching posteriorly the level of bases of setae *4a*. All epimeral setae barbed except *2b*; *1a* similar to *1b*, stronger than *2a*; *2b* slender, smooth; *3a* sparsely barbed, in transverse line with *3b*; *3c* as long as *4c*, sparsely barbed; *4a* smooth, short, about $\frac{1}{4}$ *4b* and in a transverse line with *4b*; *4b* barbed, very long but not reaching the bases of caudal setae. Caudal setae *ps1* and *ps2* strong, barbed, the last shorter; *ps3* very small, spinelike, simple, distant.

Legs : Tibiotarsus I with claw (Fig. 3, D), Solenidion ω_1 stout; ω_2 small. Leg IV (Fig. 3, E) with tibiotarsus bearing 6 setae. Seta *r* short, *s* shorter than *p*.

Male : Unknown.

Holotype : Female collected from soil associated with roots of *Ocimum basilicum*, Giza, Co., Cairo, February 1988.

Paratypes : 3 females collected with the holotype.

Remarks : Among the species bearing only 6 setae on tibiotarsus IV, the new species is closely related to *Scutacarus curtus* Delfinado, Baker and Abbatielo 1976 and *Scutacarus imitans* Delfinado

and Baker 1976 described from New York. It can be readily distinguished from *curtus* by the dorsal setae with 2-3 barbs, setae *C1* anterior to *C2*, epimeral setae *2b* not dagger like and setae *4a* smooth and in a transverse line with *4b*. It can be distinguished from *imitans* by the dorsal setae with 2-3 barbs, setae *e* smooth, setae *3a* in a transverse line with *3b* and setae *4b* long and reaching the vulva.

Genus *Heterodispus* Paoli, 1911

Type species, *Heterodispus elongatus* Trägårdh, 1905.

The genus *Heterodispus* is distinguished by the following characters : both pairs of humeral setae (*C1* and *C2*) arising on the outer, free margin of clypeus; anterior portion of posterior sternal plate strongly widened, covering basis of leg III; the inner margin of trochanter IV deeply excised (in a U-shape). MAHUNKA (1977) divided the genus in two subgenera based on characters of tarsus IV. The two presently described species belong to subgenus *Heterodispus* Paoli characterized by : tarsus IV normal and developed, pretarsus and ambulacrum are developed and separated; if the latter are absent, the proximal end of the tarsus extended to a recognizable distant.

***Heterodispus (Heterodispus) evansi* sp. nov.**

■ FEMALE : Length 258-261 μm , width 169-172 μm , body oval to elongate, its surface strongly punctate.

Dorsum (Fig. 4, A) : Clypeus large with free margin wide. Setae *C1* of clypeus anterior to *C2* and slightly longer, both sparsely barbed; *d* sparsely barbed, shorter than *C1*; *f* strong, barbed, longer than *e*; *h1* barbed, shorter than *h2*; *h1* and *h2* considerably incrassate.

Trichobothrium (Fig. 4, B) : The spines are relatively long, sensillus smooth, circular.

Venter (Fig. 4, C) : All apodemes well discernible. Anterior corners of posterior sternal plate strongly widening laterally. Epimeral setae *1a* and *1b* of equal length, strong, densely barbed; *2a* shorter; *2b* long, strong, and blunt apically; *3b* strong, barbed, slightly posterior to *3a*, strong, *3c* and *4c*

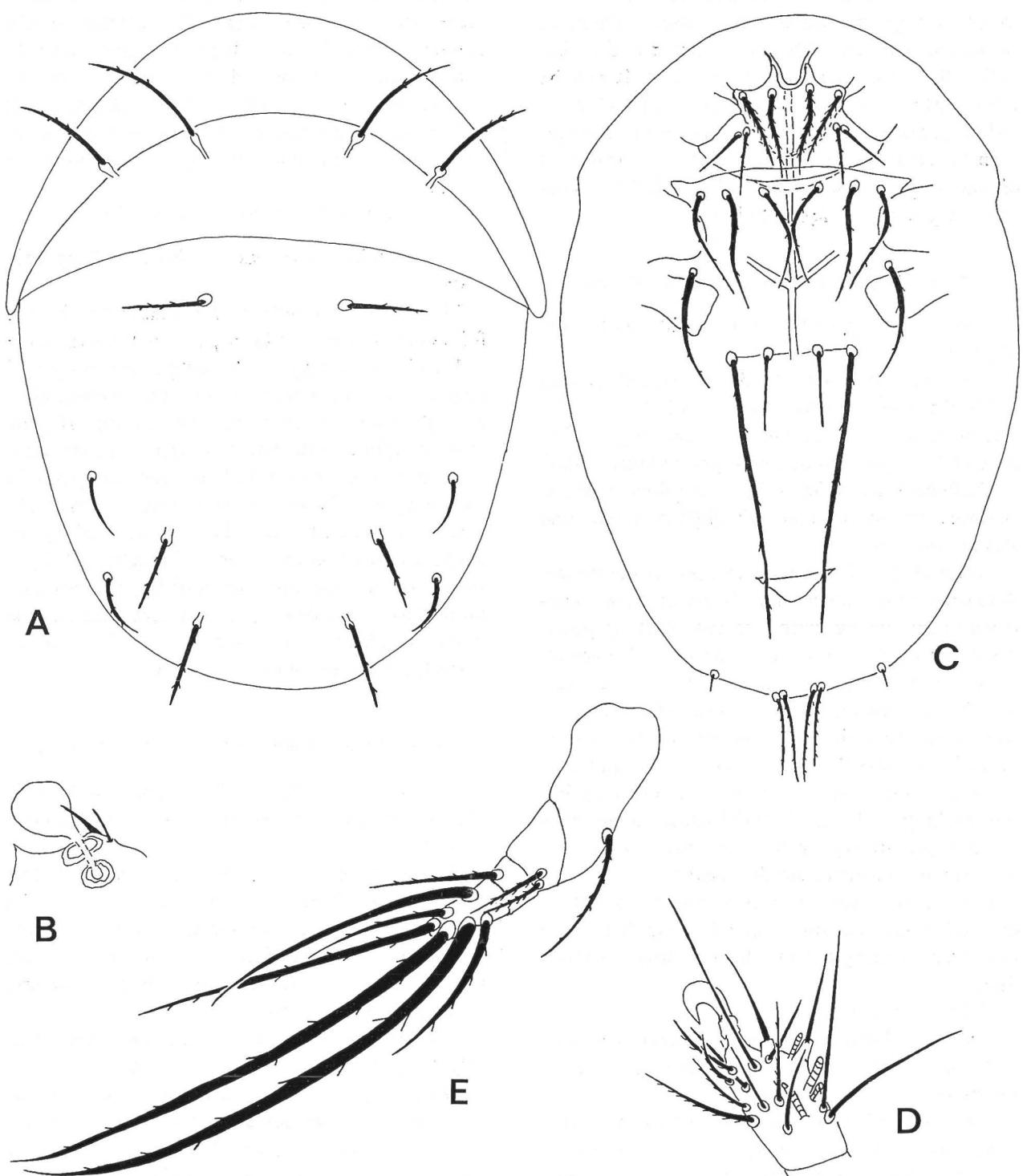


FIG 3 : *Scutacarus (Scutacarus) paracurtus* sp. nov., female

A. — Dorsal aspect. B. — Trichobothrium (dorsal). C. — Ventral aspect. D. — Tarsus I (right). E. — Leg IV (right).

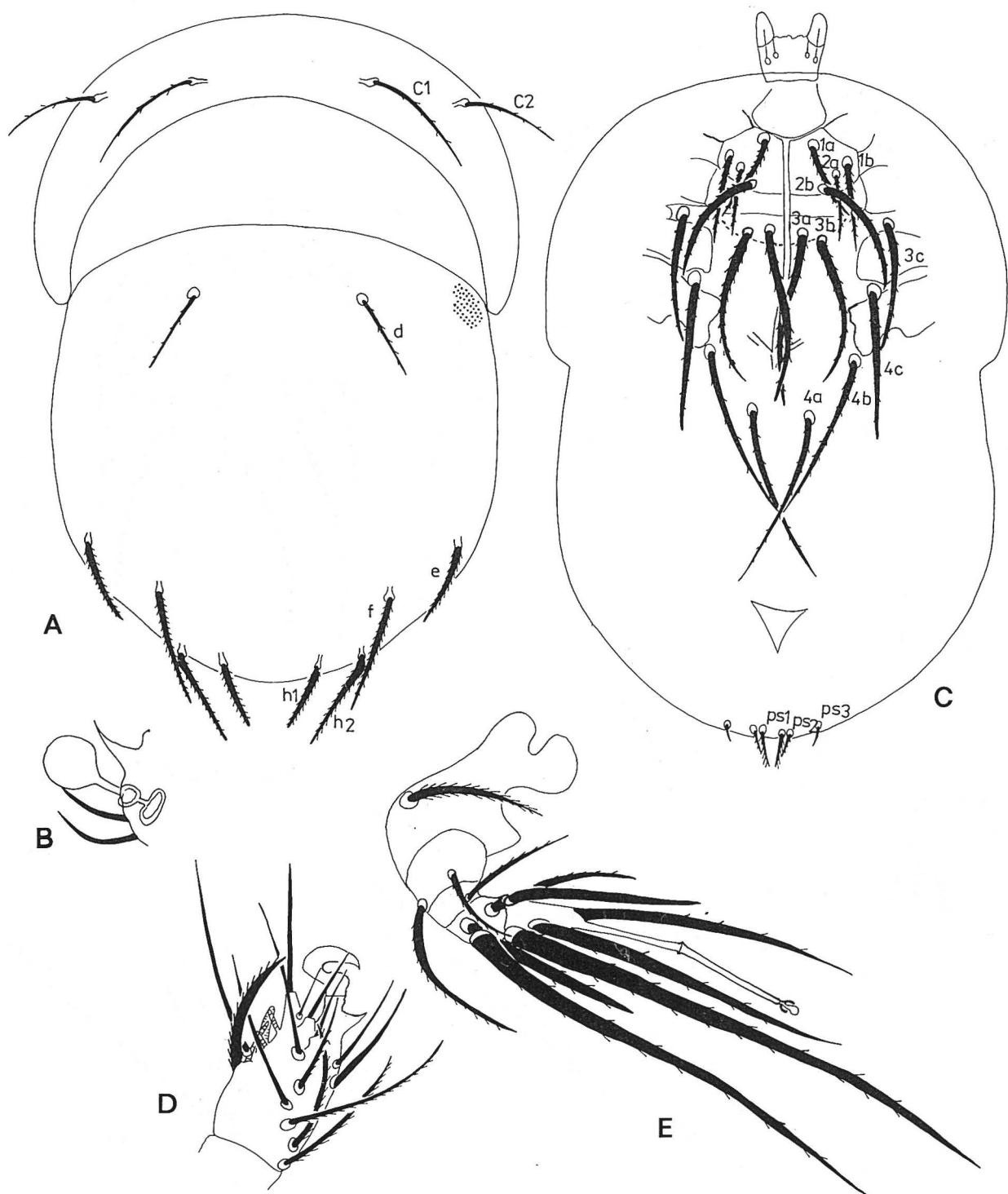


FIG 4 : *Heterodispus (Heterodispus) evansi* sp. nov., female

A. — Dorsal aspect. B. — Trichobothrium (dorsal). C. — Ventral aspect. D. — Tarsus I (left). E. — Leg IV (left).

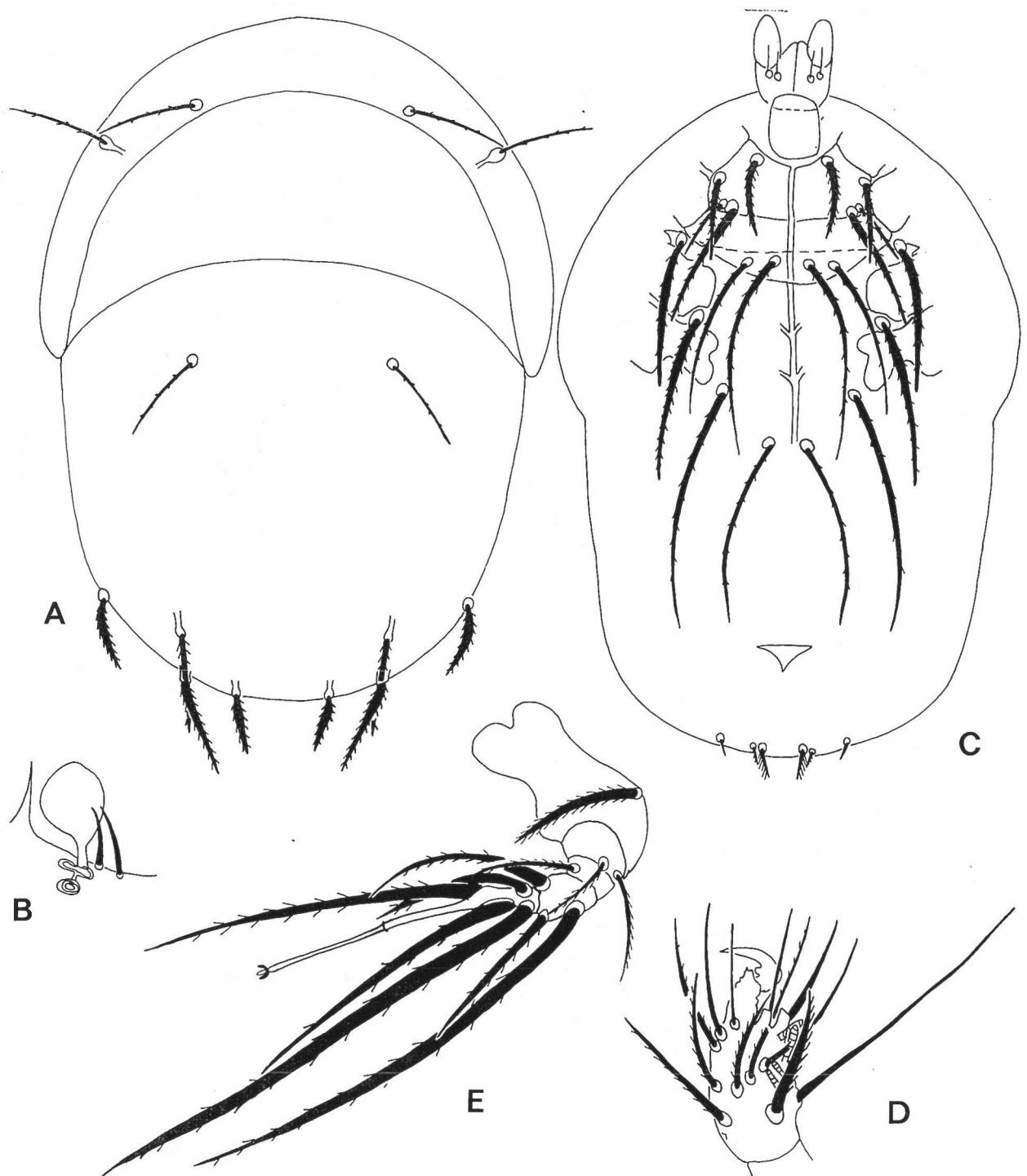


FIG 5 : *Heterodispus (Heterodispus) aegyptensis* sp. nov., female
A. — Dorsal aspect. B. — Trichobothrium (dorsal). C. — Ventral aspect. D. — Tarsus I (right). E. — Leg IV (right).

considerably incrassate, apically blunt ; $4a$ sparsely barbed as long as $4b$ and arising posteriorly. Caudal setae $ps1$ and $ps2$ barbed, the last shorter ; $ps3$ small, simple, distant.

Legs : Tibiotarsus of leg I (Fig. 4, D) with a well developed claw. Trochanter of leg IV (Fig. 4, E) deeply and arcuately excised, conforming to type species of the genus ; tarsus longer than pretarsus, with 4 setae.

Male : Unknown.

Holotype : Female collected from soil associated with roots of artichoke, *Cynpra scolymus*, Giza, Co., Cairo, January 1988.

Paratype : 1 female collected with the holotype.

Remarks : The new species is close to *Heterodispus topali* Mahunka 1971 described from India, but it can be distinguished by setae d short, setae $h2$ longer than $h1$, setae $3a$ slightly anterior to $3b$ and tarsus IV bearing four setae.

Heterodispus (Heterodispus) aegyptensis sp. nov.

■ **FEMALE** : Length 216-220 μm , width 150-154 μm , elliptical.

Dorsum (Fig. 5, A) : Setae $C1$ as long as $C2$ and d , all sparsely barbed ; f densely barbed, as long as $h2$; $h1$ densely barbed, as long as e ; setae e , $h1$, $h2$ incrassate.

Trichobothrium (Fig. 5, B) : The spines are relatively long, sensillus pear-shaped, smooth.

Venter (Fig. 5, C) : apodemes I and II strong, complete ; III and IV vestigial. Epimeral setae $1a$ large, densely barbed, similar to $1b$; $2a$ thin, sparsely barbed ; $2b$ strikingly long, barbed and blunt apically ; $3a$ barbed, longer than $3b$ and inserted slightly anteriorly ; both $3c$ and $4c$ considerably incrassate and blunt apically ; $4a$ barbed, posterior to $4b$. Caudal setae $ps1$ feathered ; $ps2$ barbed ; $ps3$ simple, as long as $ps2$, distant.

Legs : tibiotarsus of leg I (Fig. 5, D) with a well developed claw ; tarsus IV longer than pretarsus, with 4 setae (Fig. 5, E).

Male : Unknown.

Holotype : Female collected from soil associated with roots of *Ocimum basilicum*, Giza, Co. Cairo, February 1988.

Paratypes : 5 females collected with holotype.

Remarks : The new species is closely related to *Heterodispus elongatus* Trägårdh, 1905 and *Heterodispus mongolicus* Mahunka, 1969. It can be distinguished from *elongatus* by setae d short, setae $2b$ strong and blunt apically ; setae $3a$ long and reaching insertion of $4a$; $ps1$ and $ps2$ barbed. It can be distinguished from *mongolicus* by setae d short, setae $3b$ not reaching insertions of $4a$, setae $ps1$ and $ps2$ barbed and $4b$ not reaching the vulva.

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