

A new genus for a new species of the family Aphelinidae (Hymenoptera: Chalcidoidea) from Mexico

Новые род и вид семейства Aphelinidae (Hymenoptera: Chalcidoidea) из Мексики

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A new genus in the subfamily Coccophaginae (Aphelinidae), *Mexidalgus* **gen. nov.**, is described based on the type species *Mexidalgus toumeyellus* **sp. nov.** from Mexico. Morphological characters of the new genus and its differences from the closely related genera *Coccophagus* Westwood, 1833 and *Coccobius* Ratzeburg, 1852 are discussed.

Новый род подсемейства Coccophaginae (Aphelinidae) – *Mexidalgus* **gen. nov.** – описан на основании типового вида *Mexidalgus toumeyellus* **sp. nov.** из Мексики. Рассмотрены морфологические особенности нового рода и его отличия от близких родов *Coccophagus* Westwood, 1833 и *Coccobius* Ratzeburg, 1852.

Key words: aphelinid wasps, taxonomy, Aphelinidae, Coccophaginae, new genus, new species

Ключевые слова: афелиниды, систематика, Aphelinidae, Coccophaginae, новый род, новый вид

INTRODUCTION

The worldwide family Aphelinidae belongs to the superfamily Chalcidoidea (Hymenoptera), parasitoids of hemipteran insects (Hemiptera: Coccoidea, Aleyrodoidea and Aphidoidea) (Woolley, 1997). In 2000–2012, Aphelinid fauna of Mexico was increased more than twice, from 73 to 185 species (Myartseva et al., 2012; Kim & Heraty, 2012). Nevertheless, there is a rather little information about fauna of many aphelinid subfamilies, including Coccophaginae, with only exception the genus

Encarsia Foerster, 1878 which is studied much better than other aphelinid genera (Myartseva & Evans, 2008).

In this paper, we describe a new species and genus, *Mexidalgus toumeyellus* **gen. et sp. nov.** (Chalcidoidea: Aphelinidae), reared from soft scale *Toumeyella* sp. (Hemiptera: Coccidae) collected on cactus *Myrtillocactus geometrizans* (Mart.) Const. (Cactaceae) in the State of Hidalgo, Mexico.

MATERIAL AND METHODS

Descriptions of the new genus and species are based on specimens loaned from the Colegio de Postgraduados, Texcoco, México, collected by D.G. Martínez Hernández and A. Callejas Chavero in the State of Hidalgo, México in 2011 and 2013. Samples were placed in a drier TOUSI-MIS SAMDRI-780 and dried with CO₂ to critical point; were shadowed with gold in a metalionizer JEOL-10 SPOTTER JFC-1100. Photographies 1–4 were taken in a Electronic microscope JEOL JSM-7401F. Among with examination of external characters, were prepared microscopic slides, some specimens of females and males were dissected and examined using a microscope Leica CME. Holotype of the new species is deposited at the University of California, Riverside, California, USA (UCR). The terms of morphology and measurements follow to Hayat (1998), Woolley (1997) and Myartseva (Myartseva et al., 2012).

DESCRIPTIONS

Order **HYMENOPTERA**

Family **APHELINIDAE**

Subfamily **COCCOPHAGINAE**

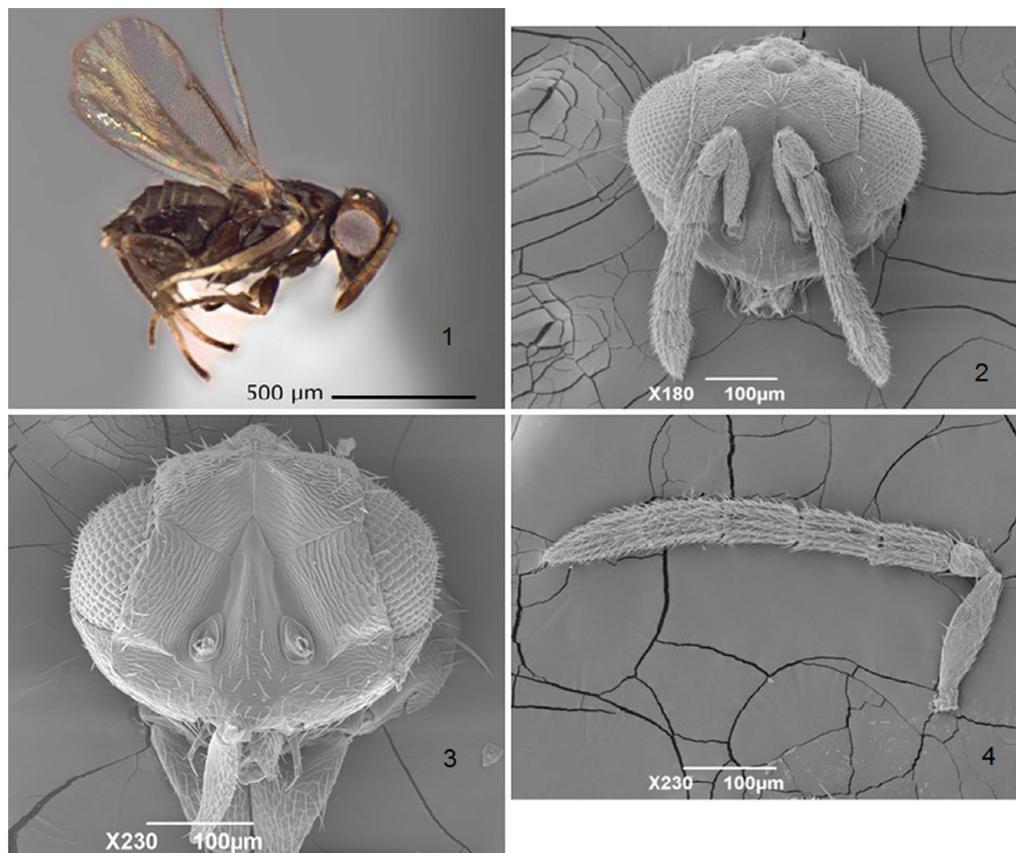
Genus *Mexidalgus* Myartseva, **gen. nov.**
(Figs 1–8)

Type species: *Mexidalgus toumeyellus* **sp. nov.**

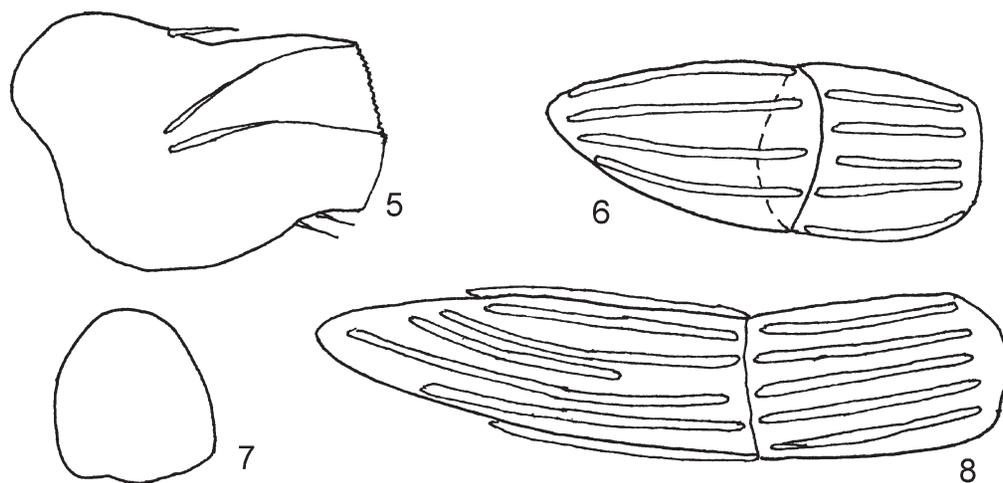
Remarks. The new genus belongs to subfamily Coccophaginae (following to Hayat, 1998) based on the the following characters: antennal flagellum with 5–6 segments (rarely 7 in *Euxanthellus*), the head with pale lines and sutures, prepectus as a single continuous plate, ventrally long and separated from the mesosternum by a suture, and the fore wing without a linea calva. *Mexidalgus* is similar to some species in the genus *Coccophagus* Westwood, 1833 (Coccophagini) for its unicolored antennal flagellum, stigmal vein short and scape of

male without a sensory area, and to *Coccobius* Ratzeburg, 1852 (Physcini) for its 7-segmented antennae in the female with a two-segmented club, scutellum with six setae, and side lobe with two setae. The new genus possesses a combination of characters of both genera but does not correspond to either of these genera.

Diagnosis. Female. Antenna (Figs 1, 2) 7-segmented with 2-segmented club (Fig. 6). Anellus present. Head (Fig. 2) with distinct mediofrontal and facial lines. Malar sulcus present. Mandible (Fig. 5) with two short teeth and truncation, apical margin between teeth with a small serration. Maxillary palpus 2-segmented, labial palpus 1-segmented. Dorsum of mesosoma slightly convex; pronotum entire, medially narrow, with single bristle at each posterolateral corner. Mid lobe of mesoscutum densely setose, with two longer setae basally and three-four setae laterally; each side lobe with two setae. Axilla with two setae, basal seta longer than apical seta. Distance between axillae as long as basal margin of axilla. Sculpture of mesoscutum reticulate, reticulae on sides of axillae elongated. Scutellum with three pairs of setae, apical pair of setae longer than other setae. Metanotum with median triangular process. Propodeum medially divided by a line of longitudinal suture. Fore wing (Fig. 1) broad, with short marginal fringe, without linea calva. Submarginal and marginal veins with numerous setae along anterior margin; stigmal vein short and with long uncus; postmarginal vein present, about as long as stigmal vein. Disc of wing densely setose. Legs with single a bristle near apex of fore and mid femora. Tarsal formula 5-5-5. Mid tibial spur large, slightly shorter than basitarsus (19 : 21). Gaster with seven tergites; seventh tergite with some setae and swelling at base and sides. Third to fifth tergites with a complete line of setae, sixth tergite with six setae. Ovipositor not protruded (Fig. 1), with strong second valvifer and without third valvula. Hypopygium not extending to apex of gaster. In male, apical segment



Figs 1–4. *Mexidalgus toumeyellus* gen. et sp. nov. 1, female in lateral view; 2, head of female in frontal view; 3, head of male in frontal view; 4, male antenna.



Figs 5–8. *Mexidalgus toumeyellus* gen. et sp. nov. 5, mandible of female; 6, antennal club of female; 7, mandible of male; 8, antennal club of male.

of club elongate (Fig. 8). Mandible of male (Fig. 7) strongly reduced, without teeth, about half shorter than mandible of female. Third to sixth sternites of male medially with area of strong pegs. Genitalia of male not elongate, shorter than mid tibia.

Included species. Type species only.

Comparison. *Mexidalgus* distinguished from all known genera of Coccophaginae by following combination of characters: female with antennae 7-segmented, club 2-segmented; mandible with two short teeth and truncation, apical margin between teeth with small serration; ovipositor without third valvula (possibly second valvifer and third valvula very closely fused); male with 7-segmented antennae, club 2-segmented, apical segment of club elongate; mandible reduced, without teeth, about half as long as female mandible; genitalia shorter than mid tibia; third to sixth gastral sternites medially with an area of large pegs.

Differences of the new genus from two the most closely related genera *Coccophagus* and *Coccobius* are given in the following key:

1. Antenna of female and male 8-segmented. Club of female 3-segmented. Axilla and side lobe with two or more setae *Coccophagus* Westwood, 1833
- Antenna of female and male have different number of segments. Club of female 2-segmented. Axilla and side lobe with not more than two setae 2
2. Antenna of female 7-segmented, of male 8-segmented. Axilla with one seta. Stigmal vein long, postmarginal vein absent or very short. Third valvula of ovipositor present. Flagellum usually bicolour. Each cercus with 3 long setae, subequal in length. Mandible of female and male without serration of apical margin between two strong teeth. In male sternites with thin short setae *Coccobius* Ratzeburg, 1852
- Antenna of female and male 7-segmented. Axilla with two setae. Stigmal vein short, postmarginal vein about as long as stigmal vein. Third valvula of ovipositor absent (possibly very closely fused with second valvifer). Flagellum unicolour. Each cercus with 2 long setae and 1 shorter seta. Mandible of female with serration on apical margin between

short teeth. Male with mandible strongly reduced and without teeth; sternites with area of strong pegs medially *Mexidalgus* gen. nov.

Etymology. Name of the new genus originates from names of country (Mexico) and state (Hidalgo), where this genus was found.

Mexidalgus toumeyellus Myartseva, sp. nov.
(Figs 1–8)

Holotype. Female; Mexico, Hidalgo State, “Municipio Huichapan, Zequetejé, 20°22′39″N, 99°36′22″O, 2188 msnm, ex *Toumeyella* sp. (Coccidae) on *Myrtillocactus geometrizans* (Cactaceae)”, 20 June 2013, coll. D.G. Martínez Hernández, A. Callejas Chavero (UCR).

Paratypes. Thirty two females, 12 males, same data as for holotype, but 20 June 2013 as well as 3, 9, 15 Aug. 2011 [21 females in alcohol, all males on slides] (UCR; Natural History Museum, London, UK; United States National Museum, Washington, USA; Colegio de Postgraduados, Texcoco, México; Universidad Autónoma de Tamaulipas, Ciudad Victoria, Tamaulipas, México; Zoological Institute, Russian Academy of Sciences, St Petersburg, Russia).

Description. Female (Fig. 1). Length of body 1.0–1.1 mm.

Coloration. Head black, frontovertex yellow, interocellar area black, with narrow yellow line around eyes. Antennae yellow, scape and pedicel infusate. Glossa transparent, palpi slightly infusate. Mandible yellow. Mesosoma black, apical two thirds of scutellum yellow, metanotum slightly infusate, propodeum black. Fore wings hyaline, with black short stripe on basal margin, venation infusate. Legs black; mid tibia at apex, mid tibial spur and tarsi whitish, two apical segments of mid tarsi and three apical segments of hind tarsi infusate, fore tarsi entirely infusate. Metasoma black; seventh tergite brown, near cerci and at apex yellowish, swelling band at base and sides of tergite dark.

Structure. Head (Fig. 2) slightly wider than mesosoma, slightly wider than high and about twice as wide as long. Frontovertex transversely striate and with stout

setae, about 0.5 times as wide as head width. Interantennal area and clypeus with thin setae. Glossa with four short pegs. Ocelli arranged on slightly obtuse triangle; distance between posterior ocelli about 1.4 times as long as distance from ocellus to eye margin. Eyes setose, about 1.2 times as long as cheeks (lateral view). Mandible (Fig. 5) with two short teeth and truncation, apical margin between teeth finely serrate. Maxillary and labial palpi 2- and 1-segmented, respectively. Antenna (Fig. 2) 7-segmented, inserted immediately under lower margin of eyes. Distance between toruli 0.8 times as long as distance from torulus to eye and slightly longer than distance to mouth margin. Antennal radicle short, as wide as long. Scape a little more than 4.0 times as long as wide. Pedicel 0.7 times as long as first segment of funicle and about 1.7 times as long as wide. First segment of funicle twice as long as wide; second segment same length as F1 and about 1.8 times as long as wide; third segment slightly shorter and about 1.4 times as long as wide. Club (Fig. 6) 2-segmented, slightly wider than funicle, about as long as two preceding segments of funicle combined. Second segment of club slightly less than twice as long as wide and about 1.5 times as long as first segment. Each segments of funicle with three longitudinal sensilla, two segments of club with four and six sensilla, respectively. Pronotum entire, with one long bristle on each postero-lateral corner. Sculpture of mesoscutum reticulate, on sides of axillae reticulae elongated. Mid lobe of mesoscutum densely setose, with two long setae at base and three to four long setae on sides of mid lobe. Side lobe with two setae. Axilla with two setae, basal seta longer than apical seta. Basal margin of axilla as long as basal margin of mid lobe of mesoscutum. Scutellum about 1.5 times as wide as long, 0.8 times as long as mid lobe, with three pairs of long setae, apical pair more long. Metanotum with triangular process medially and with two short slender setae on each side. Propodeum medially divided by longitudinal suture. Postphragma with cavity on

apex. Fore wing (Fig. 1) uniformly setose, 2.2 times as long as wide, with short marginal fringe (1 : 20) and compression at base of hind margin of wing. Submarginal vein with seven-eight setae along its anterior margin. Marginal vein longer than submarginal vein (3 : 4) and with numerous (usually 14) setae along its anterior margin. Stigmal vein short, with long uncus. Postmarginal vein present, about as long as stigmal vein. Hind wing 4.5 times as long as wide, its marginal fringe about 0.3 times as long as maximum width of wing. Tarsal formula 5-5-5. Mid tibial spur 0.8 times as long as basitarsus of middle leg. Fore and mid femora with stout bristle on inner side near apex. First and second metasomal tergites with three and four setae laterally, respectively, third to fifth tergites with rows of setae, sixth tergite with six setae. Seventh tergite 1.5 times as wide as long, with 9–12 setae and swelling at base and on sides. Hypopygium not reaching to apex of metasoma. Ovipositor not protruded, slightly shorter than mid tibia, with strong second valvifer and without third valvula. Sternites above base of ovipositor with median group of slender setae.

Male. Length of body 0.8–0.9 mm.

Coloration. Similar to female, but scutellum and mandible entirely black.

Structure. Head (Fig. 3) about 1.5 times as wide as high. Frontovortex 0.6 times as wide as head width. Interantennal area with two pairs of short setae; clypeus with six setae. Distance between posterior ocelli about 2.5 times as long as distance from ocellus to eye margin. Eyes about 1.2 times as long as cheeks (lateral view). Mandible (Fig. 7) reduced, without teeth, half as long as female mandible. Antenna (Fig. 4) 7-segmented, inserted at level of lower margin of eyes. Antennal radicle as wide as long. Scape 3.3 times as long as wide. Pedicel short, slightly longer than wide. First to fourth flagellar segments about same length, all about twice as long as wide. Club 2-segmented (Fig. 8), longer than two preceding segments of funicle combined, its apical segment elongate, 3.0–3.3 times as long as wide and about 1.7

times longer than first segment of club. All flagellar segments with four-five longitudinal sensilla. Fore wing twice as long as wide. Marginal vein with 10–11 setae along its anterior margin. Hind wing 5.0 times as long as wide, its marginal fringe 0.4 times as long as maximum width of wing. Third to sixth metasomal sternites medially with strong pegs arranged in about four lines, second tergite with some slender setae. Seventh tergite 1.5 times as wide as long, with five to nine setae and with two more long setae laterally. Genitalia 0.7 times as long as mid tibia.

Etymology. The name of species is derived from a Latin name of the host, soft scale *Toumeyella*.

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