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Orijinal araştırma (Original article)

Description of a new species of *Chorizococcus* (Hemiptera: Coccoidea: Pseudococcidae) infesting *Vitis vinifera* in Iran

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Summary

The adult female of *Chorizococcus viticola* sp. nov. is described and illustrated based on adult female by Kaydan & Kozár. The mealybug species were collected from *Vitis vinifera* L. at Beyza in Fars province of Iran in 2001 and 2003 by M. Fallahzadeh.

Keywords: Pseudococcidae, *Chorizococcus*,*Vitis vinifera*, new species Iran

Anahtar sözcükler: Pseudococcidae, *Chorizococcus*, *Vitis vinifera*, yeni tor, İran

Introduction

The genus *Chorizococcus* McKenzie comprises 54 species which are distributed in all zoogeographic regions, with only three species in the Palaearctic (Ben-Dov, 1994; Ben-Dov et al., 2009). The genus resembles *Vryburgia* De Lotto, in having oral rim tubular ducts on dorsum but differs from *Chorizococcus* in possessing also dorsal oral collar tubular ducts distributed across segments head, thorax and abdomen, in addition to transverse rows of oral rim tubular ducts (Williams, 2004). *Spilococcus* Ferris is also related to *Chorizococcus* but differs from the latter in possessing 6-17 pairs of cerarii, six of which are on the abdomen. Many species currently placed in *Chorizococcus* are found on Poacecae, while most species assigned to *Spilococcus* feed on plants belonging to other families (Williams, 2004). Danzig (1998) studied the mealybug species with oral rim tubular ducts of Russia and adjacent countries, did not accept *Chorizococcus* and included all species with 1-17 pairs of cerarii

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in *Spilococcus,* sensu lato. Here we follow the concept of Williams (2004) and accept the usage of *Chorizococcus* McKenzie.

According to Kozár et al. (1996) 192 species of scale insects were recorded in Iran. Ben-Dov et al. (2009) listed in ScaleNet 216 species of scale insects, 34 of which belonged to the Pseudococcidae, and none belonged to *Chorizococcus*. On grapevine (*Vitis* spp.) 142 scale insect species were recorded in the World, 30 belonged to Pseudococcidae, and only one species was from *Chorizococcus*, namely *Chorizococcus shaferi* (Hollinger) 1917 from North America.

The aim of this article is to describe a new species of *Chorizococcus,* collected on *Vitis vinifera* L. in Iran.

Materials and Methods

The mealybug samples were collected from *Vitis vinifera* at Beyza in Fars province of Iran by M. Fallahzadeh and originally described by Kaydan & Kozár. Specimens were prepared for light microscopy using the methods of Kosztarab & Kozár (1988). The morphological terms used here follow Kosztarab & Kozár (1988) and Williams (2004). Measurements and counts were taken from 10 specimens.

Both alcohol-preserved and slide-mounted materials of the new species are deposited in the Plant Protection Department, Faculty of Agriculture, Yüzüncü Yıl University, Van, Turkey (CCVT).

Results and Discussion

***Chorizococcus viticola* Kaydan & Kozár sp. nov. (Figure 1)**

Live appearance: Adult female body oval, light pink, with two white filaments at the end of abdomen (Figure 1).

Type Material:

Holotype adult ♀, on *Vitis vinifera*, Iran, Fars province, Beyza, 29.iv.2001, collected by M. Fallahzadeh.

Paratypes: 16 adult ♀♀, same data as holotype; 11 adult ♀♀, on *Vitis vinifera* Beyza, Fars province, IRAN, 22. viii. 2003, collected by M. Fallahzadeh.

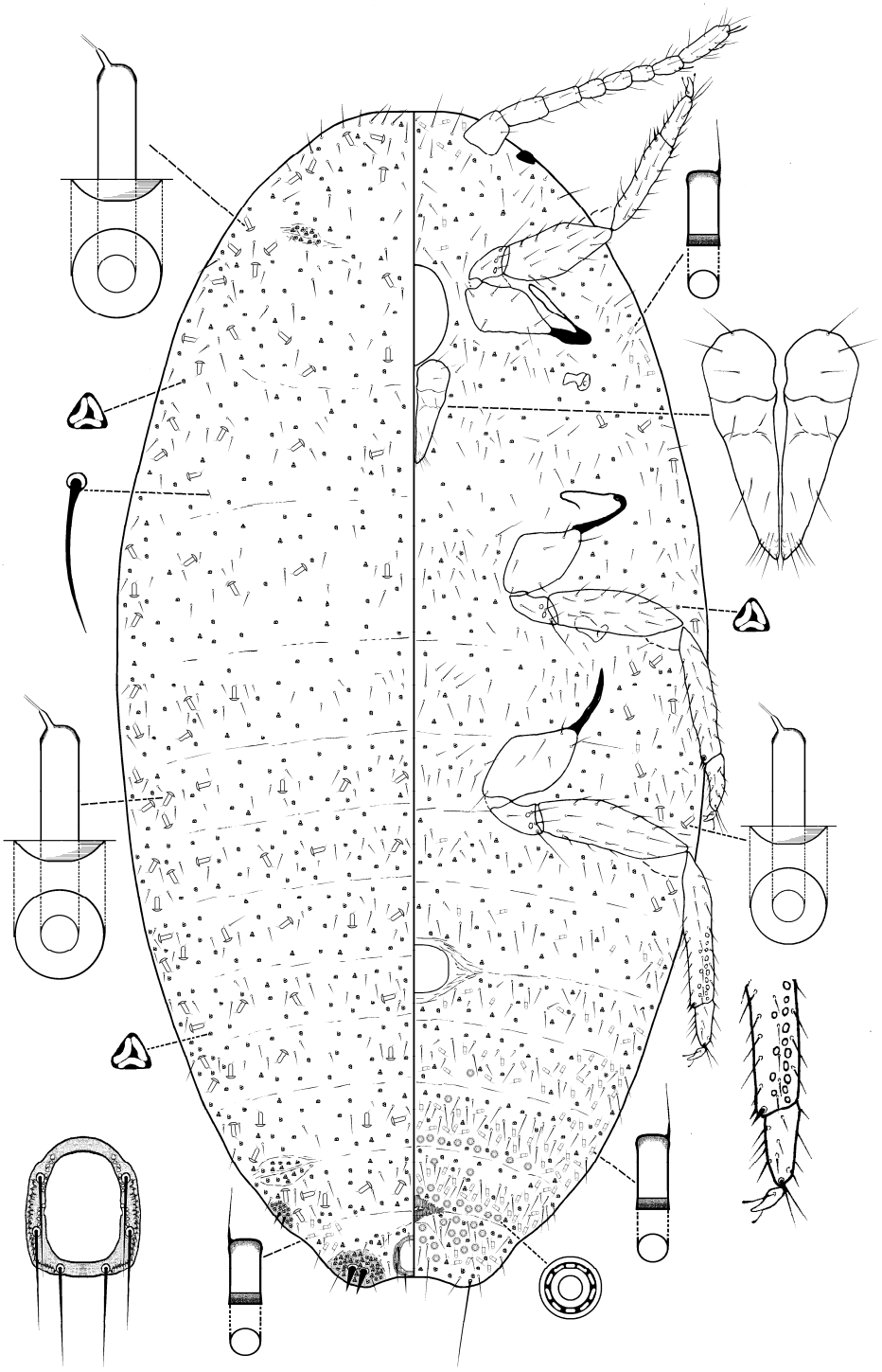

Figure 1. *Chorizococcus viticola* Kaydan & Kozár sp. nov.

Description of the adult female

Mounted adult female

Body elongate oval, 2.15–3.35 mm long, 1.11–1.78 mm wide. Eye marginal, 40–50 µm wide. Antenna 8-segmented, 430–555 µm long; apical segment 95–115 µm long, 30–40 µm wide. Clypeolabral shield 185–215 µm long, 100–135 µm wide. Labium 170–210 µm long, 100–135 µm wide. Anterior spiracles 60–75 µm long, 30–45 µm wide across atrium; posterior spiracles 62–90 µm long, 42–55 µm wide across atrium. Circulus oval, 245–275 µm wide.. Legs well developed; coxa 140–170 µm long hind trochanter + femur 350–405 µm long, hind tibia + tarsus 360–440 µm long, hind claw 30–38 µm long. Ratio of lengths of hind tibia + tarsus to hind trochanter + femur 1.05–1.10, ratio of lengths of hind tibia to tarsus 2.54–2.90, ratio of length of hind trochanter + femur to greatest width of femur 3.36–4.50. Tarsal digitules subequal, each 35–48 µm long slightly knobbed. Claw digitules subequal, each 30–33 µm long, and knobbed. Translucent pores present on tibia of hind legs, numbering 21–37. Both pairs of ostioles present; each anterior ostiole, with 24–26 trilocular pores and 3–6 setae; each posterior ostiole with 32–46 trilocular pores and 4–8 setae. Anal ring 105–115 µm wide, with 6 anal-ring setae, each seta 130–155 µm long.

Dorsum: Cerarii numbering 2 pairs situated on last two abdominal segments, anal lobe cerarii, each with 2 conical setae, 25–28 µm long, with 34–49 trilocular pores and 3–8 auxiliary setae. Dorsal body setae slender, each 12–68 µm long. Trilocular pores each 4–5 µm in diameter, scattered over all body. Oral rim tubular ducts totaling 73–127 on dorsum, each duct 12–15 µm long, 5.0–7.0 µm wide at mid-width, rim of duct opening, 9–13 µm wide, ducts on head, thorax, and all abdominal segments (except last abdominal segment); 4–8 ducts on segment I, 6–12 ducts on segment II, 7–10 ducts on segment III, 6–11 ducts on segment IV, 8–13 ducts on segment V, 5–9 ducts on segment VI, 5–10 ducts on segment VII, 27–53 ducts on head and thorax; oral-collar tubular ducts on the last abdominal segment each 7.0–8.0 µm long, 2–3 µm (3 µm) wide, numbering 8–15.

Venter: Body setae slender, each 17–200 µm long, longest setae medially on head; apical setae of anal lobe 195–215 µm long. Multilocular disc pores present on posterior abdominal segments, (IV – VIII + IX) abdominal segments only: 0–9 pores on segment IV, 1–8 pores on segment V, 14–21 pores on segment VI, 22–38 on segment VII, 19–34 on segments VIII + IX; each pore 7–9 µm in diameter. Trilocular pores each 3–4 µm in diameter scattered over all body. Minute discodial pores scattered, each 2.5 µm in diameter. Oral rim tubular ducts totaling 20–27 on venter, each duct 10.0–12.5 µm long, 5.0–6.0 µm wide at mid-width, rim of duct opening, 8–10 µm wide ducts on

margin of thorax and first abdominal segment. Oral-collar tubular ducts each 9–11 µm long, 2.5–4.0 µm wide, totaling 255–333, on the last abdominal segment clustered on margin and submargin of each segment; distributed as follows: 11–21 on head and thorax, and on each abdominal segment: 0–3 on segment I; 0–4 on segment II; 6–12 on segment III; 15–30 on IV; 49–73 on V; 71–109 on VI; 46–84 on VII; 15–27 on VIII.

Diagnosis of adult female

Chorizococcus viticola sp. nov. can be diagnosed by the following combination of features: translucent pores present on hind tibia; two pairs of cerarii present on the last two abdominal segments; circulus present; multilocular disc-pores present on venter of abdominal segments IV (0–7), V (1–8), VI (13–22), VII (22–30), and VIII + IX (19–34); anal lobe cerarii each with 2 conical setae; abdominal and thoracic ostioles present; antennae 8-segmented, usually 430–555 µm long, (apical antennal segment 95–115 µm long).

C. viticola is most similar to *Spilococcus. alhagii* as both species have cup-shaped translucent pores on tibia of third leg. *C. viticola* can readily be distinguished from *S. alhagii* in having only two real cerarii (some cerarii-like structure were observed on the margin on some specimens, but never more than 11) on the body margin, in having higher number of oral-rim duct on dorsum and by having oral-collar tubular ducts on dorsum of last abdominal segment. *C. viticola* is also similar to *S. vashlovanicoccus* by translucent pores on tibia of third leg and number of oral rim duct on dorsum but *C. viticola* differs from this species by having small number of oral-rim duct on venter.

Comment: Williams and Moghaddam (2007), discussed the variation of multilocular pores and oral rim ducts in *S. alhagii* from Egypt, Iran and Saudi Arabia. They indicated that there is big variation in the number of these structures between different populations. The specimens from Egypt has abundant number of trilocular pores and multilocular disc pores on venter reaching as far forward as abdominal segment II. On the other hand specimen from Iran and Saudi Arabia have noticeably fewer trilocular pores and multilocular pores reaching only as far as abdominal segment VI; and the number of oral rim tubular ducts also vary within localities. Our species is close to *S. alhagii* because of variation on multilocular pores and oral rim tubular ducts but in *C. viticola* number of cerarii is much smaller that it occurs in *S. alhagii.*

Etymology: The species epithet refers to *Vitis vinifera* the host plant of the new species.

Biology and importance: This mealybug is more active from the late spring, but the population is usually low in early spring on trunk only reaching

high densities midsummer especially on fruits. This species is the most important pest of grapevine in some parts of Fars province, Iran. The damage caused by this pest has increased in recent years on grape in Beyza, Kavar and Akbar Abad (Fallahzadeh, unpublished information).

Natural enemies: Parasitoids: *Gyranusoidea* sp. nov. (Fallahzadeh & Japoshvili, in press) and *Anagyrus matritensis* (Mercet) (Hymenoptera, Encyrtidae). **Predator:** *Nephus bipunctatus* (Kugelann) (Coleoptera, Coccinellidae).

Özet

İran'dan *Vitis vinifera* ile beslenen yeni bir *Chorizococcus* (Hemiptera: Coccoidea: Pseudococcidae) türünün tanılanması

Çalışmada *Vitis vinifera* üzerinden 2001 ve 2003 yıllarında Iran'ın Fars bölgesindeki Beyza şehrinden M. Fallahzadeh tarafından toplanan Pseudococcidae (Hemiptera: Coccoidea) familyasına ait yeni bir tür, *Chorizococcus viticola* sp. nov., ergin dişi özelliklerine göre Kaydan & Kozár tarafından tanılanmıştır.

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