



## Key to the Indian species of the whitefly genus *Martiniella* Jesudasan and David (Hemiptera: Aleyrodidae) with description of a new species

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**ABSTRACT:** A new whitefly species, *Martiniella multituberculata* breeding on *Knema attenuata* from Varathahalli (Karnataka, India) is described and illustrated. Further, key to the Indian species of *Martiniella* is presented. © 2018 Association for Advancement of Entomology

**KEYWORDS:** Taxonomy, Aleyrodidae, *Martiniella*, new species, India

### INTRODUCTION

Jesudasan and David (1990) erected the whitefly genus *Martiniella* for two species of *Aleurotuberculatus* viz., *A. canangae* and *A. macarange* described by Corbett (1935), with the former being the type species. Martin (1999) synonymised *Martiniella* with *Aleuroclava* while Sundararaj and Pushpa (2011) reinstated its generic status indicating that the presence of very much enlarged, jointed, cephalic and first abdominal setae form a distinct diagnostic character in separating *Martiniella* from all known species of *Aleuroclava*. Following this Vimala and Sundararaj (2015) revealed that the base of the seta is nothing but an elongated extension of the cuticle in the form of elongate tubercle bearing the seta at its apex and redefined the diagnostic features of the genus *Martiniella*. This genus is represented by 12 hitherto described species and is so far known from

Hong Kong, India, Malaysia, Sri Lanka and Taiwan (Vimala and Sundararaj, 2015). In India, it is so far represented by seven species, viz., *M. ayyari* Sundararaj and David, *M. fletcheri* (Sundararaj and David), *M. indica* (Singh), *M. lefroyi* Sundararaj and David, *M. papillata* Sundararaj and Dubey, *M. sepangensis* (Martin and Mound) and *M. tripori* (Dubey and Sundararaj) (Vimala and Sundararaj, 2015). In this paper a new species *M. multituberculata* breeding on *Knema attenuata* from Varathahalli (Karnataka: India) in south India is described and illustrated, raising the total number of Indian species of *Martiniella* to eight. A key to the Indian species of the genus is given.

**Genus *Martiniella* Jesudasan and David, 1990**

**Type species:** *Aleurotuberculatus canangae* Corbett, 1935. *J. Fed. Malay. St. Mus.* 17: 827–828; by original designation.

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*Martiniella canangae* (Corbett) Jesudasan and David, 1990. *FIPPAT Entomology Series*, 2: 1-13.

*Aleuroclava canangae* (Corbett) Martin, 1999. *CSIRO Entomology Technical Paper*, 38: 197 pp.

*Martiniella canangae* (Corbett) Sundararaj and Dubey, 2004. *Entomon*, 29 (4): 357-360.

*Aleuroclava canangae* (Corbett) Martin and Mound, 2007. *Zootaxa*, 1492: 10.

*Martiniella canangae* (Corbett) Sundararaj and Pushpa, 2011: 509. In: *Advancements in Invertebrate Taxonomy and Biodiversity*. Gupta, Rajiv K. (Ed.), Agrobios (International), 552 Pp; Vimala and Sundararaj, 2015. *Entomon*, 40 (4): 221-234.

### Key to puparia of the Indian species of *Martiniella*

1. Thoracic tracheal pores/clefts/folds indicated . . . . . 2
- Thoracic tracheal pores/clefts/folds not indicated. . . . . 5
2. Dorsal area not smooth, with papillae or tubercles . . . . . 3
- Dorsal area smooth, without papillae or tubercles . . . . . *ayyari* Sundararaj and David
3. Submedian area smooth, without papillae or granules, only subdorsum with papillae and granules; thoracic tracheal pore region not with pouch-like structure . . . . . 4
- Entire dorsum not smooth, with papillae, granules and tubercles; thoracic tracheal pore region invaginated with pouch-like structure. . . . . *multituberculata* sp. nov.
4. Submargin with a row of papillae; abdominal segments I to V with median tubercles; vasiform orifice subcordate . . . . . *papillata* Sundararaj and Dubey

- Submargin without a row of papillae; abdominal segments I to V without median tubercles; vasiform orifice subrectangular. . . . . *lefroyi* Sundararaj and David
- 5. Submargin without large subcircular lobes . . . 6
- Submargin with three pairs of large subcircular lobes. . . . . *tripori* (Dubey and Sundararaj)
- 6. Abdominal segments with median tubercles. . 7
- Abdominal segments without median tubercles . . . . . *indica* (Singh)
- 7. Median tubercles on abdominal segments not extending along the segment sutures; subdorsum without microtubercles; caudal furrow closed at its anterior end . . . . . *sepangensis* (Martin and Mound)
- Median tubercles on abdominal segments extending along the segment sutures; subdorsum with microtubercles; caudal furrow not closed at its anterior end. . . . . *fletcheri* (Sundararaj and David)

### Description of new species:

#### *Martiniella multituberculata* sp. nov.

(Figs. 1-6)

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**Puparium:** Elliptical, slightly narrowing at posterior region, broadest at metathoracic segment region; white, transparent without any wax secretion; 0.49-0.58 mm long, 0.31-0.37 mm wide; found singly one or two per leaf, on the under surface of leaves.

**Margin:** Finely crenulate, 39-40 crenulations in 0.1 mm. Anterior and posterior marginal setae respectively, 10 µm and 14 µm long. Thoracic tracheal pore regions slightly emarginated and invaginated into a prominent pouch-like structure, caudal tracheal pore distinct.

**Dorsum:** Submargin separated from the dorsal disc by a thin submarginal ventral fold, with semicircular markings; dorsum with numerous granules and

microtubercles, abdominal segments I-VII with prominent median tubercles, and microtubercles along the thoracic and abdominal sutures distinct. Longitudinal moulting suture reaching margin, transverse moulting suture reaching submargin. Thoracic tracheal furrows indistinct, caudal tracheal furrow distinct, cylindrical shape, tassellated, 38-48  $\mu\text{m}$  long, 15-18  $\mu\text{m}$  wide. Pores and porettes not evident.

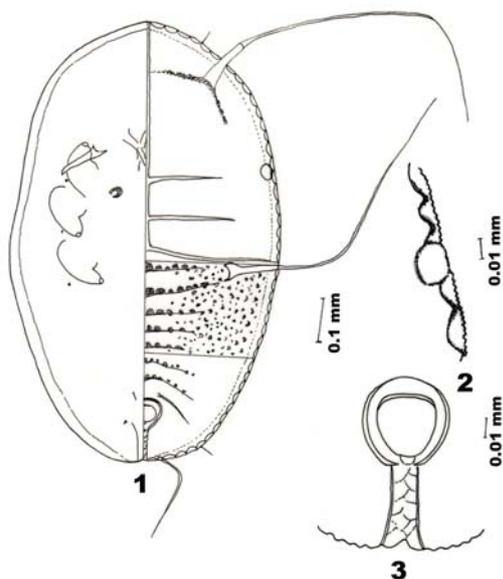
**Chaetotaxy:** Two pairs of long tuberculate setae-cephalic setae 415-420  $\mu\text{m}$  long (basal long elevated

tubercle 43-44  $\mu\text{m}$  long and the seta at apex 372- to 376  $\mu\text{m}$  long) and first abdominal setae 390-394  $\mu\text{m}$  long (basal long elevated tubercle 42-44  $\mu\text{m}$  and the seta at apex 348 to 350  $\mu\text{m}$  long); a pair of eighth abdominal setae cephalolaterad of vasiform orifice 75  $\mu\text{m}$  long and a pair of submarginal caudal setae 110-118  $\mu\text{m}$  long.

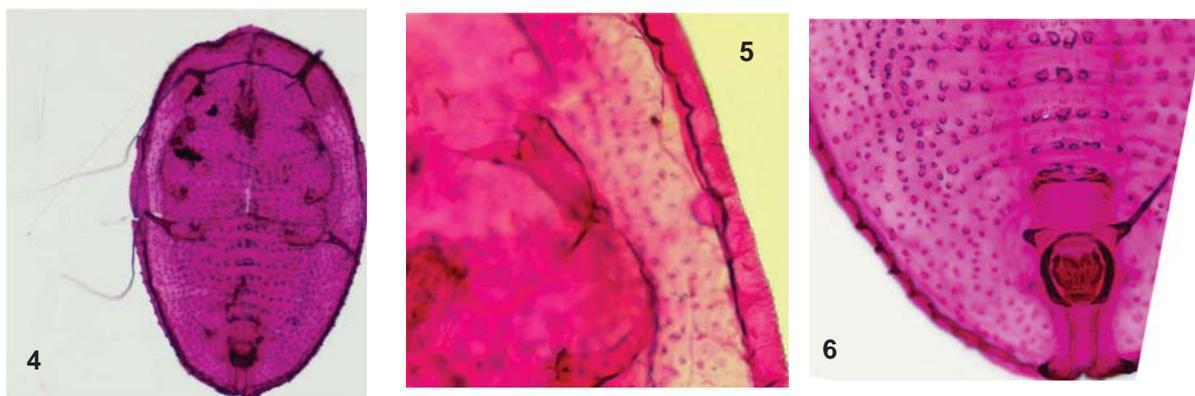
**Vasiform orifice:** Cordate, distinctly notched at caudal end with its lateral walls ridged, 36-39  $\mu\text{m}$  long, 35-38  $\mu\text{m}$  wide; operculum cordate, 20-24  $\mu\text{m}$  long, 22-26  $\mu\text{m}$  wide, filling the orifice, lingula tip slightly exposed, included.

**Venter:** A pair of ventral abdominal setae 5  $\mu\text{m}$  long, 26  $\mu\text{m}$  apart. Antennae reaching base of prothoracic legs. Thoracic tracheal folds not indicated while caudal tracheal fold distinct. All the four pairs of spiracles and adhesive sacs visible.

**Material examined: Holotype-** One puparium, mounted on slide, *Knema attenuata*, 24.x.2013, R. Sundararaj, will be deposited in the collection of National Bureau of Agricultural Insect Resources (NBAIR), Bangalore, India. **Paratypes:** Nine mounted puparia, data same as holotype, deposited one each in the collections of National Forest Insect Collection (NFIC# 22050), Forest Entomology Division, Forest Research Institute, Dehradun; Zoological Survey of India, Kolkata (5631/H15) and the remaining in the collection of Institute of Wood Science and Technology, Bangalore.



**Figs. 1-3: Line diagram, *Martiniella multituberculata* sp. nov.** 1. Puparium, 2. Margin at thoracic tracheal pore region, 3. Vasiform orifice



**Figs. 4-6: Mounted images, *Martiniella multituberculata* sp. nov.,** 4. Puparium, 5. Margin at thoracic tracheal pore region, 6. Vasiform orifice

**Comments:** This species closely resembles *M. papillata* Sundararaj and Dubey in shape, indication of thoracic tracheal pore regions, and presence of median tubercles on abdominal segments but differs from it in having dorsum fully covered with microtubercles and granules with microtubercles extending along the abdominal and thoracic segment sutures, thoracic tracheal pore regions with invaginated pouch-like structures and by the presence of very long cephalic, first abdominal, eighth abdominal and caudal setae. It is also close to *M. fletcheri* (Sundararaj and David) in having entire dorsum tuberculated with microtubercles extending along the abdominal and thoracic segment sutures but differs by the presence of distinct thoracic tracheal pore regions with invaginated pouch-like structures and tessellated caudal furrow.

**Etymology:** Named to reflect the nature of its dorsum.

#### ACKNOWLEDGEMENTS

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