Description of a new species of genus *Fippataleyrodes* Sundararaj & David, 1992 (Hemiptera: Aleyrodidae) from Karnataka, India with key to known species

T.G. Revathi†*, S. John William† and R. Sundararaj‡

†Department of Advanced Zoology & Bio Technology, Loyola College, Chennai 600 034, Tamil Nadu, India.
‡Forest and Wood Protection Division, Institute of Wood Science and Technology, 18th Cross, Malleswaram, Bangalore 560 003, India.

(Corresponding author: T.G. Revathi*)
(Received 08 December 2018, Accepted 05 March, 2019)
(Published by Research Trend, Website: www.researchtrend.net)

ABSTRACT: The whitefly genus *Fippataleyrodes* Sundararaj & David, 1992, is represented so far by seven species from India. One new species *Fippataleyrodes divyae* sp. nov. breeding on an unidentified plant from Karnataka state of India is described and illustrated in this paper. A key to the species of the genus *Fippataleyrodes* is given.

Keywords: *Fippataleyrodes divyae*, *bituberculata*, *indicus*, *litseae*, Hemiptera, Aleyrodidae


INTRODUCTION

The whitefly genus *Fippataleyrodes* was erected by Sundararaj & David (1992) with description of two species namely, *F. indica* Sundararaj and David *F. litseae* Sundararaj and David. Dubey and Sundararaj (2005) described three species namely, *F. cinnamomi* Dubey and Sundararaj, *F. multipori* Dubey and Sundararaj and *F. yellapurensis* Dubey and Sundararaj. Pushpa and Sundararaj (2008) added two new species namely, *F. bituberculata*, *F. rajmohani*. So far this genus is reported only from India and seven species are reported. In this paper, a new species is described and illustrated and accordingly, the total number of species has increased to 8 under this genus. A key to the species of the genus is given.

Genus *Fippataleyrodes* Sundararaj & David, 1992

**Type species:** *Fippataleyrodes indica* Sundararaj & David 1992 *Reichenbachia*, 29(40): 15-20, by original designation.

**Diagnosis:** Pupal case elliptical; white, without wax secretion; margin irregularly crenulate; submargin not separated from dorsal disc and with a row of setae; submedian area with a row of papillae; thoracic tracheal pore, furrow, and fold absent; caudal pore end, furrow and some times fold indicated; longitudinal moulting suture reaching margin and transverse moulting suture reaching subdorsum. Vasiform orifice cordate; operculum similarly shaped, filling the orifice; lingula concealed.

MATERIAL AND METHODS

Surveys were conducted to collect and identify the whiteflies breeding in different habitats of south India during the period 2010-2014. The whitefly infested leaves were collected from the host plants and they were kept in whitefly collection envelopes bearing all collection details. To study the detailed characters of the whitefly, permanent mounts of the puparia were prepared by following the method adopted by David and Subramaniam (1976). The best mounts were obtained from puparia from which adults have emerged and parasitised specimens were avoided. Observations, micro-measurements and camera lucida drawings were made by using Nikon Optiphot T-2 EFD (Japan) microscope. The types and other collections available in the Institute of Wood Science & Technology, Bangalore and the type specimens loaned from the different national depositories were consulted in determining the identity of the species. The holotype of the new species was deposited in National Forest Insect Collection, (NFIC-FRI 21943), Dehra Dun, India and the paratype was deposited in National Bureau of Agricultural Insect Resources (ICAR/NBAIR/ALD 4), Bangalore.

1. *Fippataleyrodes bituberculata* Pushpa and Sundararaj, 2008


**Material examined:** Holotype: puparium on *Actinodaphne malabarica*, 24.x.06, Kerala: Thrissur, Coll. R. Sundararaj.
Host Plant: *Actinodaphne malabarica* (Pushpa and Sundararaj, 2008).


2. *Fippataleyrodes cinnamomi* Dubey and Sundararaj, 2005


Host Plant: *Cinnamomum malabatrum* (Dubey and Sundararaj, 2005).

Distribution: India: Karnataka (Dubey & Sundararaj, 2005).

3. *Fippataleyrodes divya* Revathi and Sundararaj sp. nov. (Figs. 1-7)


Paratype, 1 puparia, data as for holotype (ICAR/NBAIR/ALD-4).

Etymology. Named after its collector, Ms. K.P. Divya.

Puparium: White, without secretion of wax; oval, broadest at prothoracic region, 1.06 – 1.1 mm long, 0.7 - 0.74 mm wide; found singly on the under surface of leaves. Margin irregularly crenulate with fine projections; thoracic tracheal pore areas not differentiated from margin while caudal tracheal pore region indicated by emargination. Anterior and posterior marginal setae 38 µm and 40 µm long respectively.

Dorsum. Dorsum completely tuberculated with of different sizes, fine tuberculation in between the large tubercles and along the segment sutures, median tubercles on abdominal segments I-VII distinct. Longitudinal moulting suture reaching margin and transverse moulting suture reaching subdorsum. Submedian pockets and depressions absent. Thoracic tracheal furrows indistinct, caudal tracheal furrow distinct with irregular marking, 130 µm long and 8 µm wide.

Chaetotaxy: Cephalic setae laciniate, 8–12 µm long, pointed first abdominal setae, 8 µm long, eighth abdominal setae 30 - 38 µm long and caudal setae 42 µm long. A pair of small stout setae on the submarginal area laterad of metathoracic segment, 12 µm long distinct.

Vasiform orifice: Cordate, longer than wide, 62 µm long, 60 µm wide; operculum similarly shaped, 48–50 µm long, 48–52 µm wide. Lingula concealed.

Venter: Paired ventral abdominal setae 26 µm long and 42 µm apart. Thoracic tracheal folds not indicated, caudal tracheal folds indicated without stipples. Antennae discernible. Spiracles visible at the base of legs.

Host Plant: Unidentified.

Distribution. India: Karnataka.

Remarks: This species is typical from all other known species of *Fippataleyrodes* Sundararaj & David by the absence of submarginal row of setae and by the presence of a pair of small stout setae on the submarginal area laterad of metathoracic segment.

4. *Fippataleyrodes indicus* Sundararaj and David, 1992


Host Plants: *Litsea* sp., *Nothopegia* sp. (Sundararaj & David, 1992).

Distribution. India: Tamil Nadu (Sundararaj & David, 1992); Goa, Karnataka (Dubey & Sundararaj, 2005).

5. *Fippataleyrodes litsea* Sundararaj and David, 1992


Distribution: India: Maharashtra (Sundararaj & David, 1992); Kerala (Meganathan & David, 1994); Karnataka (Dubey & Sundararaj, 2005).

6. *Fippataleyrodes multipori* Dubey and Sundararaj, 2005


Host Plant: Unidentified (Dubey & Sundararaj, 2005).


Material examined: Holotype; puparium on *Psidium guajava*, 06.xi.2006, Tamil Nadu, Coll. R.Pushpa.

Host Plant: *Psidium guajava* (Pushpa and Sundararaj, 2008).

Distribution: India: Tamil Nadu (Pushpa and Sundararaj, 2008).

8. *Fippataleyrodes yellapurensis* Dubey and Sundararaj, 2005

Fig. 1-7. *Fippataleyrodes divyae* sp. nov. 1. puparium; 2. margin; 3. vasiform orifice; 4. puparium with small stout setae as marked; 5. margin with projections; 6. dorsum with different size tubercles; 7. vasiform orifice.

**Material examined:** Holotype: puparium on unidentified plant, 11.x.2001, Yellapur, Coll. A.K.Dubey.  

**Host Plant:** Unidentified (Dubey & Sundararaj, 2005).  

**Distribution:** India- Karnataka: Yellapur (Dubey & Sundararaj, 2005).
Key to the species of *Fippataleyrodes* Sundararaj & David

1. Submargin without a row of tubercles, subdorsum without paired tubercles and caudal furrow without minute tubercles.............................................................2

2. Submargin with a row of tubercles, subdorsum with paired tubercles and caudal furrow with minute tubercles................................. *bituberculata* Pushpa and Sundararaj

3. Abdominal segments without median tubercles; cephalic setae short 2-37.5 μm long..............................................4

4. Submarginal setae pointed.............................................................5

5. A row of submedian papillae present; submargin with 12 pairs of setae; dorsum with distinct pores................................. *multipori* Dubey & Sundararaj

6. Submarginal setae capitate.............................................................6

7. Median tubercles on abdominal segments paired; submargin with papillae-like markings; submargin with 10 pairs of pointed setae, vasiform orifice not notched.............................................. *rajmohani* Pushpa and Sundararaj

-Submargin without a row of setae; a small stout setae on the submarginal area laterad of metathoracic segment present................................. *divyae* sp. Nov

-Submargin without a row of setae; a small stout setae on the submarginal area laterad of metathoracic segment absent................................. *indica* Sundararaj & David

-Submargin with 8 pairs of setae; caudal tracheal pore not indicated; vasiform orifice notched at caudal end; caudal furrow incomplete.......... *cinnamomi* Dubey & Sundararaj

-Submargin with 13 pairs of setae; caudal tracheal pore indicated; vasiform orifice not notched at caudal end; caudal furrow complete........ *litseae* Sundararaj & David

ACKNOWLEDGEMENTS

The authors are grateful to the Director and Group Co-ordinator (Research), Institute of Wood Science and Technology, Bangalore for the facilities provided. Financial assistance provided by the Ministry of Environment, Forest and Climate Change, Govt. of India for conducting this research work is acknowledged.

REFERENCES


