Table 1. Physico-chemical parameters of sea water collected from seaweeds cultivated site at Ervadi

<table>
<thead>
<tr>
<th>Month</th>
<th>pH</th>
<th>Salinity (ppt)</th>
<th>Dissolved oxygen (ml/l)</th>
<th>Phosphate (µg/l)</th>
<th>Nitrate (µg/l)</th>
<th>Nitrite (µg/l)</th>
<th>Temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 2005</td>
<td>8.03</td>
<td>32</td>
<td>1.48</td>
<td>1.54</td>
<td>0.16</td>
<td>0.21</td>
<td>24</td>
</tr>
<tr>
<td>November 2005</td>
<td>8.01</td>
<td>32</td>
<td>1.48</td>
<td>1.81</td>
<td>0.21</td>
<td>0.37</td>
<td>25</td>
</tr>
<tr>
<td>December 2005</td>
<td>8.10</td>
<td>27</td>
<td>2.28</td>
<td>0.81</td>
<td>0.04</td>
<td>0.23</td>
<td>27</td>
</tr>
<tr>
<td>January 2006</td>
<td>7.80</td>
<td>29</td>
<td>1.03</td>
<td>1.30</td>
<td>0.10</td>
<td>0.38</td>
<td>33</td>
</tr>
<tr>
<td>February 2006</td>
<td>7.92</td>
<td>27</td>
<td>3.84</td>
<td>-0.24</td>
<td>1.82</td>
<td>0.17</td>
<td>33</td>
</tr>
<tr>
<td>March 2006</td>
<td>8.10</td>
<td>28</td>
<td>1.00</td>
<td>1.27</td>
<td>1.50</td>
<td>0.13</td>
<td>31</td>
</tr>
<tr>
<td>April 2006</td>
<td>7.90</td>
<td>28</td>
<td>1.02</td>
<td>1.48</td>
<td>0.90</td>
<td>0.2</td>
<td>32</td>
</tr>
</tbody>
</table>

followed by a complete decay, indicating its short life span. Temporary loss of G. acerosa or K. alvarezii crops could be either because of their competitive interaction with S. puillum for space, light and nutrients and/or due to some chemical exudates from S. puillum. Future study needs greater focus on the chemical, functional and behavioural aspects of the seaweeds and sponges that infect them.


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Rutaleyrodes atalantiae, a new genus and species (Hemiptera: Aleyrodidae) from India

The family Aleyrodidae (whiteflies) includes small inconspicuous phytophagous bugs often overlooked on the lower surface of leaves. They rank among the least studied group despite their importance as pests of agricultural, horticultural and forestry crop plants and their potential to transmit plant disease-causing viruses. The whitefly taxonomy is exclusively based on the fourth nymphal instar (so-called 'pupal case'), and use of puparia rather than adults for identification is well discussed by Martin1. The whitefly subfamily Aleyrodinae is represented in India by 57 genera, with majority of them from the Western Ghats. While studying the whiteflies of these ghats, Rutaleyrodes gen. nov. is described to accommodate a new species that differs from Aleurolobus Quaintance & Baker in the absence of a submarginal furrrow, deeply invaginated thoracic tracheal combs giving it a pouch-like appearance and in the presence of tubercles on it; open type of vasiiform orifice, and merging place of vasiiform orifice and caudal furrow with inwardly directed lateral projections.

Rutaleyrodes Dubey and Ko gen. nov.
Type species: Rutaleyrodes atalantiae Dubey and Ko, sp. nov.

Etymology: Named after host plant family, Rutaceae.

Remarks: The new genus differs from Aleurolobus Quaintance & Baker in (1) the absence of a submarginal furrow, (2) presence of tubercles in the thoracic tracheal furrows, (3) inwardly directed lateral projections near the base of the vasiiform orifice, (4) vasiiform orifice is open-type, having an open channel with a caudal furrow. It also differs from Tetradeurodes Cockerell in the following characters: (1) presence of thoracic tracheal combs with teeth, (2) absence of distinct submarginal furrow, (3) vasiiform orifice not elevated, (4) open-type of vasiiform orifice, (5) trilobed eighth abdominal segment; from Aleurodulphidens Martin in the following characters: (1) marginal tooth not nestled in glandular openings, (2) extended thoracic tracheal furrow with tubercles in it, (3) open type of vasiiform orifice, (4) thoracic tracheal folds not arising from large circular glands, (5) presence of stipples in tracheal folds; from Psatileuroplatus Martin in the following characters: (1) thoracic and caudal tracheal combs indicated as comb of three teeth, (2) first abdominal setae not placed close to median area, (3) subcordate vasiiform orifice, (4) open channel at posterior end of vasiiform orifice with lateral ridges, (5) dorsal tubercular gland absent at base of each tooth, (6) presence of caudal furrow.

Ruteleyrodes atalantiae Dubey and Ko, sp. nov. (Figures 1 a–3 d).

Puparium: Black, with colourless wax secretion, found singly on the lower as well as upper surface of leaves, widest across the second and third abdominal segments; 1.35 to 1.44 mm long, 1.21 to 1.35 mm wide. Margin crenulate, 6 to 8 crenulations in 0.1 mm. Thoracic and caudal tracheal pores differentiated from margin with a comb of three distinct teeth. Anterior and posterior marginal setae absent.

Dorsum: Submargin not separated from dorsal disc by furrow. Submargin with broken lines made up of granules. Submedian pockets with depressions present on all segmental sutures. Minute tubercles on subdorsum forming rhabdices. Median length of abdominal segment VII shorter than VIII. Thoracic tracheal furrows tuberculate, pouch-like: caudal tracheal furrow not pouch-like, with polygonal markings. Dorsum with scattered pores and porettes. Eye-spots reniform. Vasiiform orifice subcylindrical, 74 to 102 μm long, 82 to 118 μm wide; operculum subcylindrical, 60 to 76 μm long, 60 to 76 μm wide. Lingula concealed. Inner wall of vasiiform orifice with ridges.

Chaetotaxy: Four pairs of hook-like setae each with distinct bases; cephalic and first abdominal setae 18 μm long, eighth abdominal setae 12 μm long; caudal setae arising lateral of caudal furrow on submarginal area. Submargin with a row of 13 pairs of setae, each 26 μm long.

Venter: Paired ventral abdominal setae 2 μm long, 60 μm apart. Thoracic and caudal tracheal folds not indicated. Stipples present. Antennae reaching more than half length of mesothoracic legs and outside.

Material examined: Holotype puparium, India: Tamil Nadu: Chennai (13.04°N, 80.17°E), on Atalantia racemosa, 16-v-2004, A. K. Dubey, deposited in the collections of National Taiwan University, Department of Entomology, Taiwan. Paratypes, 28 puparia, data same as for holotype. Paratypes, 77 puparia, India: Tamil Nadu: Amaravathi (10.25°N, 76.52°E), on Atalantia racemosa, 28-v-2005, A. K. Dubey. (One paratype each deposited in the collections of the Australian National Insect Collection, CSIRO Entomology, Canberra, ACT, Australia; The Natural History Museum, London, UK; California Department of Food and Agriculture, Sacramento, USA; Indian Agricultural Research Institute, New Delhi, India; National Museum of Natural History, Tel Aviv University, Israel; National Taiwan University (NTU), Taipei, Taiwan; Staatliches Museum für Tierkunde, Dresden, Germany; the US Department of Agriculture, Beltsville, Maryland, USA; (Sternorrhyncha collections of the United States National Museum of Natural History, Washington DC); Zoological Museum, Universitätsparken, Department of Zoology, Copenhagen, Denmark and Zoological Survey of India, Kolkata.

Etymology: Named after the host plant genus, Atalantia.

Host plant: Atalantia racemosa (Rutaceae).

Distribution: India: Tamil Nadu.

Comments: The host plant family (Rutaceae) is known to be infested by 25 whitefly species in India and description

of the new genus *Rataleyrodes* forming a new record for this host plant family. We believe this genus may be a close relative of *Aleurolobus* Quaintance & Baker. Sexual dimorphism is observed in this species, i.e., the antennae of male puparia are longer (229 μm) than female (176 μm); however, the male puparia were smaller in size than female puparia. This species shows affinities with two *Aleurolobus* species, viz. *A. subrotundus* Silvestri and *A. olivinus* (Silvestri) in having wider submargin. *A. subrotundus* has distinct longer submarginal setae protruding beyond the margin of the puparium. In *A. olivinus*, submargin is clearly separated from the dorsum and thoracic tracheal pores lacking tubercles. The new species differs from the preceding species in having tubercles in tracheal pores, open-type of vasiiform orifice and submargin not separated from the dorsum.


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