ABSTRACT

New species of Cestrum fasiculatum (Schltdl.) Miers complex from the eastern India, Cestrum benghalensis sp. nov. described and depicted. Its specimens were found in the Herbarium of Botanical Survey of India (CAL) in material collected in 1965 by H. Santanu and S.K. Mukherjee, which was collected from Chilapata forest, Rissum, West Bengal and is referred to the Flora of Bengal and Borders.

Keywords: Solanaceae, Cestrum fasiculatum complex, New species, India.

Introduction

The Night shade family Solanaceae has 90 genera and 3000-4000 species with great variation in habit and distribution on all continents except Antarctica, most of which are native to Central and South America (PBI Solanum Project, 2014). Compromising of 250 species, the genus Cestrum is widely distributed as a pioneer in tropical Central and South America, with high concentrations in Brazil and Andean region. The species belongs to the genus Cestrum (Solanaceae) especially small trees, shrubs, vines and robust herbs from the New World tropics from northern Mexico and southern Florida ca. 150 species with southern Chile (Benitez & D’Arcy 1998; Nee 1986, 2001). Cestrum is derived from the Greek word ‘kestron’, because of the similarity to a plant of that name “Kestrum,” means for a tool for engraving that bear a resemblance to plant’s anther (Motooka et al., 2003). Compared to other countries, the taxonomy of Cestrum in India is complicated by a large number of synonyms and unidentified collections. The genus Cestrum was first described by Linnaeus (1753) in Species Plantarum, which included two species Cestrum nocturum L., and C. diurnum L. Dunal (1852) and Francey (1935, 1936) carried out a revisionary study of the genus, using a tool used to trap the pollen of the Cestrum, which is similar to the pollen. Since then many new species have been described and reported. According to the British Flora of India in the fourth suborder included Cestrineae with the characters corolla lobes, in duplicate valvate, fruits capsular, seeds scarily compressed, embryo straight. In this Hooker (1885) discusses the family that came under Nicotiana. Later in the tribe Cestreae plants absorbed characters such as actinomorphic flowers, small, persistent calyces, long, narrowly tube corollas, small, longitudinally dehiscent anthers held outside the corolla and advanced ovaries (Benitez & D’Arcy 1998). The authors’ have revised the materials of the Botanical Survey of India herbarium (CAL) and identified unknown species of Cestrum fasiculatum. The plants were collected in 1965 by H. Santanu and S.K. Mukherjee from Rissum, West Bengal. With these particular characters like the petiole 0.6mm; leaf blade lanceolate, 7-9 × 5-6 cm, entire, leaf glabrous, leaf apex acuminate, inflorescences drooping, many-flowered, axillary, penduncles 1cm in length, pedicel 0.1 mm, calyx campanulate 0.6 mm, corolla violet or dark violet 5 lobed and 2 cm in length, tube slightly contracted at throat, the fruits dark violet is clear that that they do not belong to one species to this day. This paper is based entirely on herbarium studies, which revise the Eastern region species of Cestrum. A summary of the work with which is unusual morphological characters of the new species and their allied species with their segregationare published in the table of difference. Photographs of the consultant species (Figs. 1) and major distinct characters for the two species are provided.
Cestrum benghalensis sp. nov. is a new species (Solanaceae: browallioideae: cestreae) in India – revealed by herbarium revision

Materials and Methods

The authors located an interesting collection of *Cestrum* specimen described in CAL from two different areas West Bengal prior to the Eastern region. In further study they located 13 sheets of *Cestrum fasiculatum* which were restricted in distribution from Eastern region of India. This specimen has little similarity to *C. fasiculatum* but differs by the characters given in tables 1. *C. fasiculatum* was firstly introduced and naturalized in tropical regions like South America, Brazil etc. However, so far we have reported from India. We have studied with a different accession number 153 in Central National Herbarium (CAL) for characterisation of *Cestrum benghalensis* sp. nov. A Comparative study with the relevant description and available herbarium proved here that the specimen mentioned above belongs to a new species of science.

Results and Discussion

*Cestrum benghalensis* Kalidass & Madhusmita Mallia sp. nov

Type: India, Eastern Region, The Flora of Bengal and Borders, Rissum, Chilapata forest, 27.4.1965, H. Santanu and S.K Mukherjee, CAL 193. (Fig 2)

Description

Shrubs, 0.4–2.5 m. Leaf–bearing stems drying brown, yellow–brown, the internodes 25–55 × 1.375–4.0 mm; stems glabrous. Axillary buds 0.5–1.0 mm, drying dark brown to brown, glabrous, not subtended by a minor leaf. Lamina 5 to130 mm and width of 20 to 60 mm oblong–ovate, ovate–elliptic, drying yellow–green, brown or dull olive green above, paler below; the upper surface glabrous, primary to quaternary veins, (occasionally primary and secondary only) raised and clearly visible to the naked eye; secondary veins 6 pairs, borne 65–80° to the midrib, irregularly and weakly curved, decurrent, the veinlets visible or not, where visible unbranched or branched; base obtuse to decurrent, obtuse, or decurrent; margin entire; apex subcuspidate to cuspidate or acute; petioles 7–25 mm, drying green, dark brown or yellow–brown, glabrous. Inflorescences 1–3 per herbarium sheet, terminal or subterminal panicles, axillary panicles solitary in each axil, ca. 105 mm long, bearing 3–5 flowers borne in 2–6 clusters, each cluster bearing 3 or 4 flowers; peduncle 25–37 × 1.0–1.5 mm, drying green–brown, yellow–brown or brown, glabrous; bracts 3–100 × 0.75–31.0 mm, leaf–like to bracteole–like; bracteoles 3.0–3.5 mm, linear, glabrous. Flowers pedicellate, the pedicels 0.50–0.75 mm; calyx 10 mm, the outer surface glabrous, the lobes 5, 5.0–0.675 mm, erect; corolla violet, the tube 20 mm long, 3.0–3.5 mm in diameter at the mouth, ca. 1.25 mm in diameter at the base, glabrous, the lobes 5, 5–6 mm long; stamens 5, the filaments 22 mm long, equal, adnate for 19.0–20.5 mm of their length, glabrous, a lobe–like appendage present at insertion point, the anthers ca. 1 × 0.675–0.750 mm; style 24.5–26.0 mm, the stigma 0.375–0.50 × 0.75–1.25 mm. Infructescences 25–80 mm long, bearing 5–12 fruit; fruiting calyx 3.5–4.0 × 7–8 mm; fruit dark violet in colour.

Table 1: Morphological comparison between *Cestrum benghalensis* sp. nov. and *Cestrum fasiculatum* (Schldtl.) Miers

<table>
<thead>
<tr>
<th>Characters</th>
<th><em>Cestrum benghalensis</em></th>
<th><em>Cestrum fasiculatum</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaf lamina</td>
<td>Glaberscent</td>
<td>Pubescent</td>
</tr>
<tr>
<td>Inflorescence</td>
<td>Axilllarycymose</td>
<td>Terminal cymose</td>
</tr>
<tr>
<td>Corolla colour</td>
<td>Violet</td>
<td>Red</td>
</tr>
<tr>
<td>Leaf shape</td>
<td>Lanceolate</td>
<td>Ovate</td>
</tr>
<tr>
<td>Leaf Size</td>
<td>8.2×2-5.5 cm, length width ratio 5.5cms of leaf</td>
<td>9-10.5, 5-6cm, length width ratio 4.2cms of young leaf</td>
</tr>
<tr>
<td>Leaf Base</td>
<td>Obseute</td>
<td>Round</td>
</tr>
<tr>
<td>Calyx length</td>
<td>Less than 1 cm(0.6 mm)</td>
<td>1cm</td>
</tr>
<tr>
<td>Petiole length</td>
<td>1cm</td>
<td>0.6mm</td>
</tr>
</tbody>
</table>

Fig. 1: Comparison of herbarium *Cestrum fasiculatum* and *C. benghalensis* sp. nov with detailed information.

Fig. 2: *Cestrum benghalensis* sp. nov. Holotype
Ecology – *Cestrum benghalensis* grows in the deep, nutritious clay soil, the Ecoene sandstone in Bengal and border region. According to the ecology of Bengal and Borders it is considered to be native species of the original Chilapata forest, which may have changed over time.

**Distribution**- Local to Bengal and Borders.

**Vulnerability**- Risk of extinction due to small population and distribution area and apparent loss of certain areas and the habitats since 1965.

**Etymology**- The specific epithet refers to the type locality in Bengal borders, West Bengal, India.

**Notes**-

The new species of *Cestrum benghalensis* leaf lamina was naturally glossy while the *C. fasiculatum* was fully immature. In addition the petiole length often varies from about 1cm in species. Moreover, the corolla color of both the plants differed with new species being violet and the known being red. Morphologically the plant leaf shape is completely different, it was lanceolate in the whole species and the other plant was ovate shaped. These are some of the characteristics that can be considered a plant that is completely different from *C. fasiculatum*. The history of detection of *C. benghalensis* is significant and very rare. So, these plants have not been collected since then or have been mentioned in the Flora of Bengal and Border or any other parts of India. After this the plant is focused and collected in subsequent years.

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**References**


