

Tylophora Hirsuta Wight (Apocynaceae)- A New Addition To The Flora Of Dumka District, Jharkhand, India

Swarnendu Mondal

Department of Botany, M.U.C Womens College, Burdwan, West Bengal, India

Abstract

Tylophora hirsuta Wight, a rare ethnomedicinal plant of the family Apocynaceae, is reported here for first time from the district of Dumka of Jharkhand state, India. A short description along with illustrations and photographs of the species is provided for its easy identification.

Keywords: Plant record, Bihar, Dumka district, Taxonomy, Hairy, Ethnomedicine.

1. Introduction

The genus *Tylophora* R.Br. (Apocynaceae) comprises c. 60 species, distributed mainly in tropical and subtropical Asia (Tseng and Chao, 2011), Africa and Australia (Richardson, 2008). In India, it is represented by 21 species and 2 varieties (Jagtap and Singh, 1999).

During an ethnobotanical investigation of the Dumka district of Jharkhand, India the author collected an interesting specimen of *Tylophora*. On critical morpho-taxonomical examinations and perusal of relevant literature (Hooker, 1885; Jagtap and Singh, 1999), it was identified as *Tylophora hirsuta* Wight. From the literature (Jagtap and Singh, 1999) it was noticed that the species is hitherto unrecorded for Dumka district of Jharkhand State. Hooker (1885) mentioned the distribution of this taxon from Pathankot (Pakistan) to Kumaun and Assam, up to 5000 ft. altitude. Literature survey also revealed that, that species is previously reported from Rohtas district in extreme South-West of the erstwhile Bihar state (Singh *et al.*, 2001). However, a recent consultation for herbarium of *Tylophora* species housed at Central National Herbarium (CAL), Howrah confirmed that no specimen of this species is deposited there from Jharkhand and Bihar states. Therefore the present record from Dumka district of the state of Jharkhand represent that the geographical distribution of this species extends beyond its previously reported locations in Eastern India. The description of the species is given with notes on its easy identification. Voucher specimens are deposited at the herbaria of Maharajadhiraj Uday Chand (M.U.C) Women's college,

Burdwan, West Bengal and Central National Herbarium (CAL), Howrah.

Tylophora hirsuta Wight, Contrib. 49. 1834; Hook.f.Fl. Brit.India 4:43.1883; Kanjilal *et al.* Fl. Assam 3:296. 1939; Duthie, Fl.Upp. Gang. Pl. 1:509.1960 (Repr. Ed.); Hara, Fl. East. Himalaya 262. 1966; Chowdhury & Wadhwa, Fl.Himachal Pradesh 2:465.1984; Parker, Fl. Punjab 343. 1984 (Repr. Ed.). *Gymnema hirsutum* Wall. Tent. Fl. Nep. 50. 1826. *Tylophora jacquemontii* Decne. in DC. Prodr. 8: 607. 1844. *Diplolepis epiculata* Trans. Hort. Soc. London 6: 68. 1825; *Vincetoxicum hirsutum* Revis. Gen. Pl. 2:424. 1891 (Plate-1; Figure.-1).

Type: Apud Chandagery *et* Sanko, Wallich, (E); Herb. R. Wight. Prop. (K000872928, K000894978, K000872926, Photos!).

2. Description

Plants twining, twining to the left generally, c. 140 cm in length from soil surface. Stem long, decumbent at young and prostrate at maturity, rusty strigulose to strigose, terete, branched, internodes 1- 6.5 cm × 1- 2.5 mm. Roots several, long, fascicled, with milky latex, each very little branched, c. 10-16 cm × 0.2- 0.3 cm with characteristic smell. Leaves simple, opposite, decussate, a bit coriaceous; shortly attenuated at base. Petiole 0.4- 3cm × 0.1-0.15 cm, semiterete, deeply grooved, sparsely pubescent; leaf lamina 1- 8.1 cm × 0.5- 4.8 cm, elliptic-ovate or lance-ovate, rarely rounded, apex mucronulate, base rounded or obtuse, rarely slightly cordate at base, margin entire and ciliolate, abaxial surface nitidously green than adaxial part, hirsute or tomentose in both surface, midvein more densely hirsute than lateral veins, hairs mostly hooked, venation pinnate camptodromous; lateral veins generally 3- 5 pairs, lower veins prominent than the upper pairs. Inflorescence axillary, umbellate cyme, simple, densely strigose, 3-4 cm long, 8-11 flowered; flowers 3 × 3 mm, pubescent, peduncles simple, 15-20 mm × 1 mm, branched simple, the secondary peduncle 6-10 mm x c. 1 mm, hirsute; bracts 1 - 2.5 mm x 0.4- 0.7

mm, trullate-lanceolate to narrowly triangular, apex acute, pubescent at margins; pedicels filiform, 3-6 mm × 0.5 mm, tomentose; calyx 5-lobed, 1.5 – 2.2 mm × 0.5- 0.6 mm; lobes free, alternately with petals, aculeate at margins and on outer half, inner half glabrous, trullate to lance-ovate, acute at apex, veined, without glands inside, yellowish– green; corolla rotate, 5-lobed, valvate, c. 5 mm across; lobes densely puberulous to villous from margin to upper half inside, 3 mm – 3.5mm × 2 mm; elliptic – ovate, obtuse at apex, fleshy, contorted outwardly, pink-red colour inside and whitish in outside, veined. Gynoestegium cylindraceous, 2 mm × c. 0.6 mm. Corona 5-lobed, lobes in one series, completely adnate to staminal column, lobes 0.6 – 0.7 mm across, broadly ovate, ampiliform, fleshy, shorter than column, deep pink. Stamens 0.5 mm × 5 mm, erect and attached with edges of stigma by small membranous appendages above. Pollinaria 5, pollinia- 2 per pollinarium, horizontally placed, retinacula horizontal, yellow, pollinium c. 150 µm, unequal, elliptic – oblong and apically obtuse, size of the pollen mass longer than corpuscle and caudicle, corpuscle ‘∩’ -shaped and dark-brown, caudices arm-shaped or ‘L’ – shaped and light brown; stigma peltate, disciform or dome shaped at apex, c. 1- 1.2 × 0.5 mm, 5-gonal, yellow; style 2-fid from above the ovaries, glabrous, c. 0.5 mm × 0.3 mm, glabrous, lanceo-ovate; stigma surface blistery, farinaceous or verrucate, fleshy, torispherical to semiellipsoidal in shape, with minute aperture at center.

2.1 Flowering: August- October.

2.2 Distribution: India- Arunachal Pradesh, Assam, Meghalaya, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan, Uttar Pradesh, West Bengal, Bihar, Jharkhand; Nepal; Pakistan.

2.3 Specimens examined: INDIA, Jharkhand, Dumka Dist., Madhubon forest; N 24°04'02.0" and E 087°07'42.8"; 29 August, 2015; S. Mondal; 556 (Department of Botany Herbarium, M.U.C Women’s College, Burdwan); ibid., 29 August, 2015; S.Mondal, 564 (Central National Herbarium, CAL).

2.4 Notes: It is an ethnomedicinal plant, locally known as *Sandhani* by the Santal tribal people of the district. Earlier ethnobotanical and pharmaceutical studies reported that the species is effective against a number of ailments and diseases of human and veterinary animals (Pande *et al.*, 2007; Bashir *et al.*, 2009; Bashir *et al.*, 2012; Kumar *et al.*, 2014; Biswasroy *et al.*, 2015).

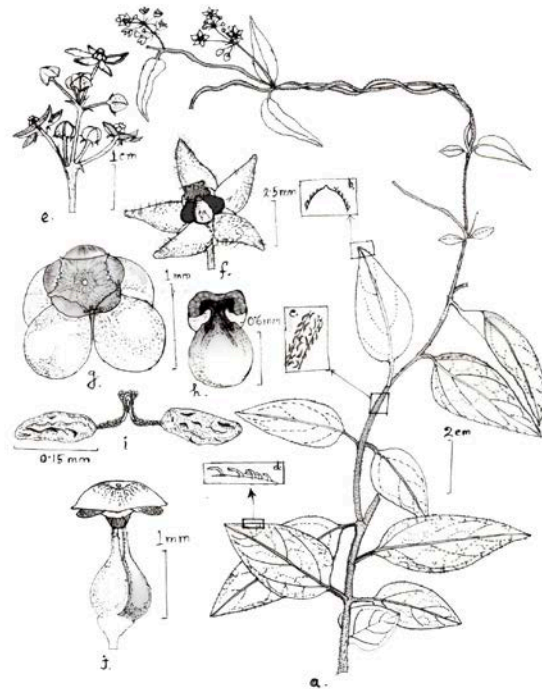


Figure 1 . *Tylophora hirsuta* Wight : a. Flowering-twig, b. Portion of apical part of a lamina enlarged, c. Portion of stem enlarged showing hooked surface hairs , d. Portion of lamina margin enlarged, e. Inflorescence, f. Flower , g. Corona , h. Stamen , i. Pollinia , j. Carpels with stigma .

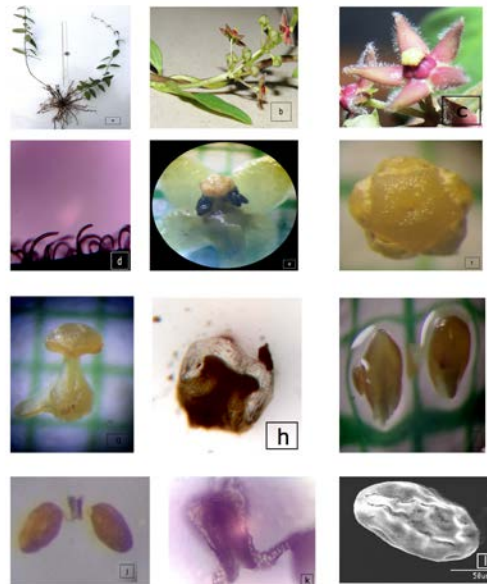


Plate-1: *Tylophora hirsuta* Wight : a. An uprooted flowering branch, b. Inflorescence , c. Flowers, d. Epidermal hairs magnified, e. Gynostegium f. Corona , g. Carpels with stigma, h. Stamen , i. Lobes of corona in ventral and dorsal face, j. Pollinarium , k. Pollen mass with corpuscles and caudicle magnified, l. Pollen mass (in Scanning Electron Microscopy)

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References

- [1] P.Biswaroy, D.Pradhan, P.Sharma, I. Makkar and A. Nairawat ,*Tylophora hirsuta*- A typical glorious medicinal herb of Northern India. Int. J. Pharm. Res. Schol. 4, 2015, pp.1-3.
- [2] A.Bashir, N. Ali, S.Bashir and I. Choudhury, Biological activities of aerial parts of *T. hirsuta* Wall. African J. Biotech. Vol.8,No.18, 2009, pp. 4627- 4631.
- [2] A.Bashir, N.Ali, S.Azam and S.Bashir, Blood pressure lowering effect of *Tylophora hirsuta* Wall, African Journal of Biotechnology, Vol. 11, No.2, pp.3009-3013.
- [3] J.D. Hooker, The Flora of British India. Vol. 4. L.Reeve & Co. Ltd.,London, 1885.
- [4] A. Jagtap and N.P. Singh, Asclepiadaceae and Periplocaceae. Fasc. Fl. India . Fasc. 24. Botanical Survey of India, Calcutta, 1999, pp. 1- 159.
- [5] K.Kumar, V.Fateh, B.Verma and S. Pandey, Some herbal drugs used for treatment of diabetes. Int. J. Res. & Dev. in Pharma & Life Sc., Vol.3,No.,2014,pp. 1116 – 1120.
- [6] P.C. Pandey, L.Tiwari and H.C. Pande, Ethnoveterinary plants of Uttaranchal- A review. Ind. J.Trad. Know, Vol. 6,No.3,2007, pp.444-458.
- [7] B. Richardson, Flora Base, the West Australian Flora. Department of Environment & Conservation, Australia, 2008.
- [8]N.P. Singh,V.Mudgal ,K.K.Khanna ,S.C.Srivastava ,A.K. Saho ,S.Banopadhyay,N.Aziz, M.Das,R.P. Bhattacharyya and P.K. Hazra, Flora of Bihar Analysis. Botanical Survey of India,Calcutta, 2001, p.314.
- [9] Y.H.Tseng and C.T. Chao, *Tylophora lui* (Apocynaceae), a new species from Taiwan. Ann. Bot. Fennici, Vol.48, 2011,pp. 515-518.

Biography:

SWARNENDU MONDAL is M.Sc. in Botany from Visva-Bharati University, Santiniketan. Qualified GATE (Life Science) and CSIR-UGC NET (Life Sciences)- in 2007. Currently he is employed as Assistant Professor of Botany since 2010, in M.U.C Women's College, Burdwan under the University of Burdwan, West Bengal. He is a life member of Indian Science Congress Association and Life member of Indian Association for Angiosperm Taxonomy. Currently attached as Reviewer of the Journal *Ethnobiology Letters*(Washington, US).