

Occurrence of a *Tinospora subcordata* (Menispermaceae): a New Record to Flora of India, from Khandwa District, India

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Abstract

The present paper enumerates the occurrence of *Tinospora subcordata* (Miq.) Diels an Australian (Southeast Asia and North of Australia) species collected for the first time from Khandwa District, Madhya Pradesh in India. Description, distribution, photographs and with the respective holotype images accessed on Kew Herbarium of this newly recorded species are provided to aid easy identification.

INTRODUCTION

The genus *Tinospora* Miers (Menispermaceae) comprises about 32 species and distributed throughout tropical Africa, Madagascar, Asia to Australia and the Pacific Islands (Forman, 1981; Kubitzki *et al.*, 1993; Mabberley, 2008; Pramanik *et al.*, 1993; Udayan *et al.*, 2009 and Mujaffar *et al.*, 2014). In India, the genus *Tinospora* is represented by seven species. Out of seven, two species *Tinospora cordifolia* (Willd.) Hook. f. and Thomson and *T. sinensis* (Lour.) Merr. are known to occur in Madhya Pradesh. *Tinospora crispa* (L.) Hook f. and Thomson; *T. glabra* (F. Burm.) Merr. are reported from northeast India and the Andaman Islands. New species of *T. formanii* Udayan and Pradeep from the Western Ghats of Thrissur district, Kerala South India; *T. maqsoodiana* Mujaffar, Moinuddin and Mustakim a new species described from Madhya Pradesh and recently *T. smilacina*

Benth..described from Tamil Nadu (Parthipan *et al.*, 2016).

During recent field explorations in the various parts of forests of Central India, we could collect some specimens of *Tinospora* from Awalya forest range (Khandwa district, Madhya Pradesh). This after critical study was identified as *T. Subcordata* Diels. Identified specimens were matched with the respective holotype images accessed on Kew Herbarium Catalogue (<http://apps.kew.org/herbcat/navigator.do>). Perusal of literature revealed that this species has not been reported from India. Therefore species reported as a new addition to the flora of India. The specimens are preserved in S.N.Govt.P.G. College, Khandwa, research centre of Botany department and living specimen of in the botanical garden of S.N. Govt. P.G. College, Khandwa, Madhya Pradesh (450 001).

SYSTEMATIC TREATMENT

Tinospora subcordata (Miq.) Diels in Engler, Pflanzenr. IV. 94: 136 (1910). Types: Timor, Zippelius s.n. (syntype B, K, L); Spanoghe s.n. (syntype L). *Hypsipodes subcordatus* Miq., Ann. Mus. Lugd. Bat. 4: 82 (1868). Valeton in Bull. D6p. Agric. Ind. Néerl. 10: 11 (1907). *Tinospora polygonoides* Diels in Engler, Pflanzenr. IV. 94: 136 (1910), and in Journ. Arn. Arb. 20: 73 (1939). Types: W New Guinea, Merauke, Koch s.n. (S) & s.n. (fruit)-'360 and 361' in descr. orig. (syntypes L).

Small **woody climber**, entirely glabrous. Stems drying striate when young, later becoming verruculose and bearing scattered raised lenticels. **Leaves** with petioles 2.5-8 cm long; lamina triangular to broadly triangular, base broadly cordate to truncate with rounded, sometimes subhastate, basal lobes, apex acute, 6-10.5×4-9 cm, reticulation raised on both surfaces, papyraceous, glandular patches present on lower surface in axils of main nerves. **Male inflorescences** axillary, pseudoracemose, 5-14 cm long, the lower half without flowers, arising singly or 2-3 directly from the leaf-axils, or sometimes 2-3 arising from very short 1-1.5 cm long axillary shoot, flowers mostly in fascicles of 3-4. **Male flowers** on slender pedicels 4-5 mm long; sepals white, outer 3 ovate, 1-1.5 mm long, inner 3 elliptic, 4 mm long; petals 6, obovate-cuneate, 1.5 mm long, fleshy, externally minutely papillose-glandular near base; stamens 6, narrowly clavate with filament broadened apically, 3.5-4.5 mm long. **Female inflorescences** pseudoracemose, the flowers arising singly. **Female flowers** on pedicels 4-6 mm long: sepals and petals similar to male but slightly smaller and petals thin; staminodes 6, oblong, 0-5 mm long; gynophore columnar, 1 mm long; carpels 3, gibbose ellipsoidal, 1 mm long, stigma flat and expanded with margin minutely lobed. **Infructescences** racemose, 7-9.5 cm long. **Drupe** red, radiating from columnar gynophore 4-5 mm long on peduncles 5-8 mm long; pericarp drying thin; endocarp bony, elliptic in outline, shortly pointed at base, strongly keeled at apex, 7×4 mm, dorsally with a median ridge, surface coarsely and irregularly tuberculate,

ventrally with elliptic aperture to shallow ventral cavity.

Habitat and Ecology

This species is growing in loamy soil with hedges of cultivated field at an altitude of 318 m, Awalya forest range, Khandwa district of Madhya Pradesh. It is rare and sparsely distributed in the areas along with *Tinospora sinensis* (Lour.) Merr. The associations with species in locality are *Clerodendron phlomidis* L.f., *Acacia eburnea* (Linn.f.) Willd. and *Azadirachta indica* Juss., etc.

Flowering and Fruiting: January to May

Specimens Examined: Known only from Awalya forest range, (Khandwa), Madhya Pradesh, India 20 Jan. 2016, SM-1008.

Vernacular Name: Gulvel/Gudvel (Korku); Karial/Usnaide Veli/Giloya de Veli (Gond); Gahutakli (Nihal).

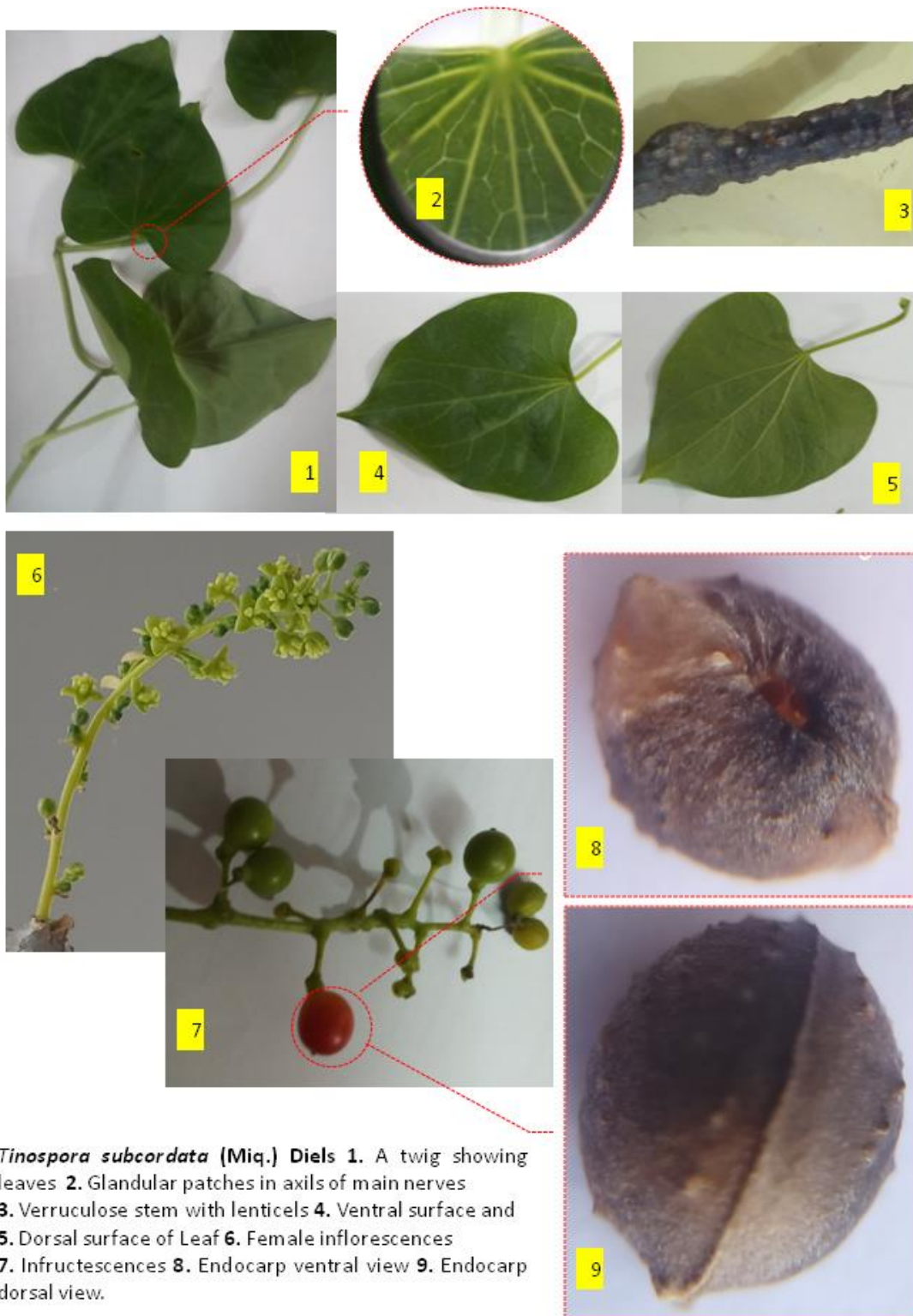
Distribution: Southeast Asia and North of Australia and Khandwa district of Madhya Pradesh, India.

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Tinospora subcordata (Miq.) Diels 1. A twig showing leaves 2. Glandular patches in axils of main nerves 3. Verruculose stem with lenticels 4. Ventral surface and 5. Dorsal surface of Leaf 6. Female inflorescences 7. Infructescences 8. Endocarp ventral view 9. Endocarp dorsal view.



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