

***Garcinia dulcis* (Roxburgh) Kurz [Clusiaceae]: a new distributional record for Assam, India**

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Abstract

Garcinia dulcis (Roxburgh) Kurz [Clusiaceae] has been collected from Jokai Reserve Forest, Dibrugarh district of Assam and has been reported here as new record for the state of Assam as well as for Northeastern India.

Key words: *Garcinia dulcis*, New record, Assam, Northeast India

INTRODUCTION

The genus *Garcinia* Linnaeus of Clusiaceae is pantropic and comprises of over 350 species of evergreen, lactiferous, dioecious trees and shrubs of the moist, lowland tropical forests (Stevens 2007; Sweeney 2008). Centres of diversity of the genus have been reported to be in Southeast Asia and Madagascar, and in the Guyana Highlands of the neotropics. The genus is native to South Asia starting from southern parts of the Thailand and Peninsular Malaysia to Indonesia but distributed throughout South East Asian region (Singh 1993; Mabberley 2005). Out of the estimated 350 species worldwide there are 49 species of *Garcinia* in peninsular Malaysia (Whitemore 1973). In India, Anderson (1874) reported 30 species in *Flora of British India*. Out of the 35 species reported by Maheswhari (1964), 15 species are from North-East India. Kanjilal *et al* (1934) reported 9 species from erstwhile Assam.

During recent botanical exploration undertaken in the Dibrugarh district of Assam, a species of *Garcinia* Linnaeus has been collected from Jokai Reserve Forest of Dibrugarh Forest Division, the area of which is 1846.62 ha. After critical studies and scrutiny of literatures the plant has been identified as *Garcinia dulcis* (Roxburgh) Kurz. Perusal of literature reveals that this taxon has not been reported earlier from northeastern India and hence its occurrence in Assam as well as in Northeastern India is recorded here as new report. The species is occurring in Peninsular Malaysia, southern Thailand, Java, Borneo and the Philippines. It is cultivated as a fruit tree in South-East Asia and introduced into tropical parts of America. It was introduced into the Royal Botanic Garden, Kolkata as a species of Mangosteen (Singh 1993). In India the distribution has been shown as inland forests of low altitude without mentioning any specific region or state and Andaman & Nicobar Islands (Andaman Island) by Singh (1993). A taxonomic description along with illustration is provided here for easy recognition of the species. The voucher specimens are deposited in the Herbarium of Botany Department, Gauhati University (GUBH) for future reference.

Garcinia dulcis (Roxburgh) Kurz in J. Asiat. Soc. Beng. 43: 88. 1874. p.p. & For. Fl. Brit. Burma 1: 92. 1877. p.p. *Stalagmitis dulcis* Cambessèdes in Mem. Mus. Hist. Nat. (Paris) 16: 426. 1828. *Xanthochymus dulcis* Roxburgh, Fl. Ind. 2: 631. 1832. Wight, Icon. Plant. India. Orient. 1: t. 192. 1839. Miquel, Fl. Ind. Bat. 1: 508. 1859 *Garcinia ovalifolia* Vidal, Rev. Pl. Vasc. Filip. 53. 1886. non Hooker f., King in J. Asiat. Soc. Beng. 59: 169. 1890. Ridley, Fl. Mal. Penins. 1: 179. 1922. Engler in Nat. Pfam. (ed. 2) 21: 219. 1925. Fl. Ind. 3: 109. 1993. Way. Tr. Mala. 1: 316. 1951. Wealth of India 4: 101. 1956. Bull. Bot. Surv. Ind. 6: 115. 1964.

Vernacular names: *Tepor tenga* (Assamese); *Dephol* (Bengali); *Moendo* (Dutch); *Mundu*, *Baros*, *Mundur* (Javanese); *Mundu* (Lamong, Malay, Minangkabau); *Patung-Patung* (Makassar); *Golodog-Pnato* (Indonesia).

Trees to 20 m tall, 40 cm in diameter, trunk straight, fluted at the top. **Bark** blackish brown, smooth. **Wood** yellowish white with some red marks exuding scanty cream coloured latex which later turns yellow. **Branches** many, borne toward top of trunk, obliquely horizontal but usually distally pendulous, robust; branchlets green, grooved and keeled. **Leaves** opposite; lamina shiny, dark green above and light green underneath, young ones light green (with red petiole), thickly coriaceous, elliptic, obovate, obcordate, oblong-lanceolate and broadly lanceolate, acute or obtuse, base obtuse, 10.6 – 30 cm x 4.3 – 13.3 cm; petiole long, robust, transversely wrinkled with red fleshy ligules or protuberance inside, 1.7 – 3 cm long; mid-vein raised abaxially, impressed adaxially; secondary veins ca 15 – 25 pair, obliquely parallel, forming $\pm 55^\circ$ angle with the 1^o vein, prominent on lower surface, closely placed, 5 – 10 mm apart. **Hermaphrodite flowers:** 2.6 – 3.7 cm long (with pedicel), 0.8 – 1 cm in diameter, axillary, 3 – 4 a in cluster, pedicel with transverse ring, 1.9 – 3.2 cm long, green. **Sepals** 5 or 6, free, unequal (3 small, 2 large), quincuncial, margin ciliate, 2 sepals ovate and 3 sepals suborbicular, outer sepal 4 – 5 mm x 4 – 5 mm, inner 5 mm x 6 mm, overlapped sepal 6 mm x 6 mm. **Petals** 5 or 6, free, quincuncial, obovate, concave, greenish white, thin leathery, margin ciliate and membranous, 9 mm x 10 mm; truncated porous yellow **nectar glands** of about 2.5 mm long alternate with the filament round the base of ovary. **Stamens** 5; filaments 0.4 mm long, incurved, broad, divided at the apex into 3 or 4 short portions, each of which supports twin anthers. **Ovary** globose, smooth, green, 5-celled, one ovule in each; style very short, 1.5 mm long; stigma 5-lobed, white, peltate, droop downside, 0.4 mm in diameter. **Berries** 3.4 – 5.3 cm x 3.2 – 5.1 cm, globose with straight or oblique pointed apex base slightly 5 grooved, concave, yellow when ripe; black persistent stigma, 5 – 5.5 mm in diameter; pulp yellow; seeds 1 – 3.

Flowers: April – May; **Fruits:** July – November.

Specimen examined: Assam, Dibrugarh District, Jokai Reserve Forest (27° 23' 30.6" N and 95° 55' 56.7" E), 100 m msl., 12th Feb. 2013, A. Begum & J. Sarma 110 (GUBH); Assam, Dibrugarh District, Jokai RF, 22nd April, A. Begum & J. Sarma 111 (GUBH); Assam, Dibrugarh District, Jokai Reserve Forest, 10th 2013, A. Begum & J. Sarma 112 (GUBH); INDIA, 1832 Wallich, 4839 (K); 1822, E.I.C. [Wallich?], 4839 (K); 1901 [Boerlage] 88 (K); 1901 [Boerlage] 90 (K).

Distribution: India (Andaman & Nicobar Islands, Assam), Southern Thailand, Java, Borneo and the Philippines. It is cultivated as a fruit tree in South East Asia and introduced into tropical parts of America.

Notes: The species resembles with *Garcinia spicata* (Wight & Arnott) Hooker f. but differs from it in having thick, compressed, 4 – 6-gonous branchlets and uniformly 5-locular ovary while *G. spicata* bear twiggy branchlets and 3 – 4 locular ovary.

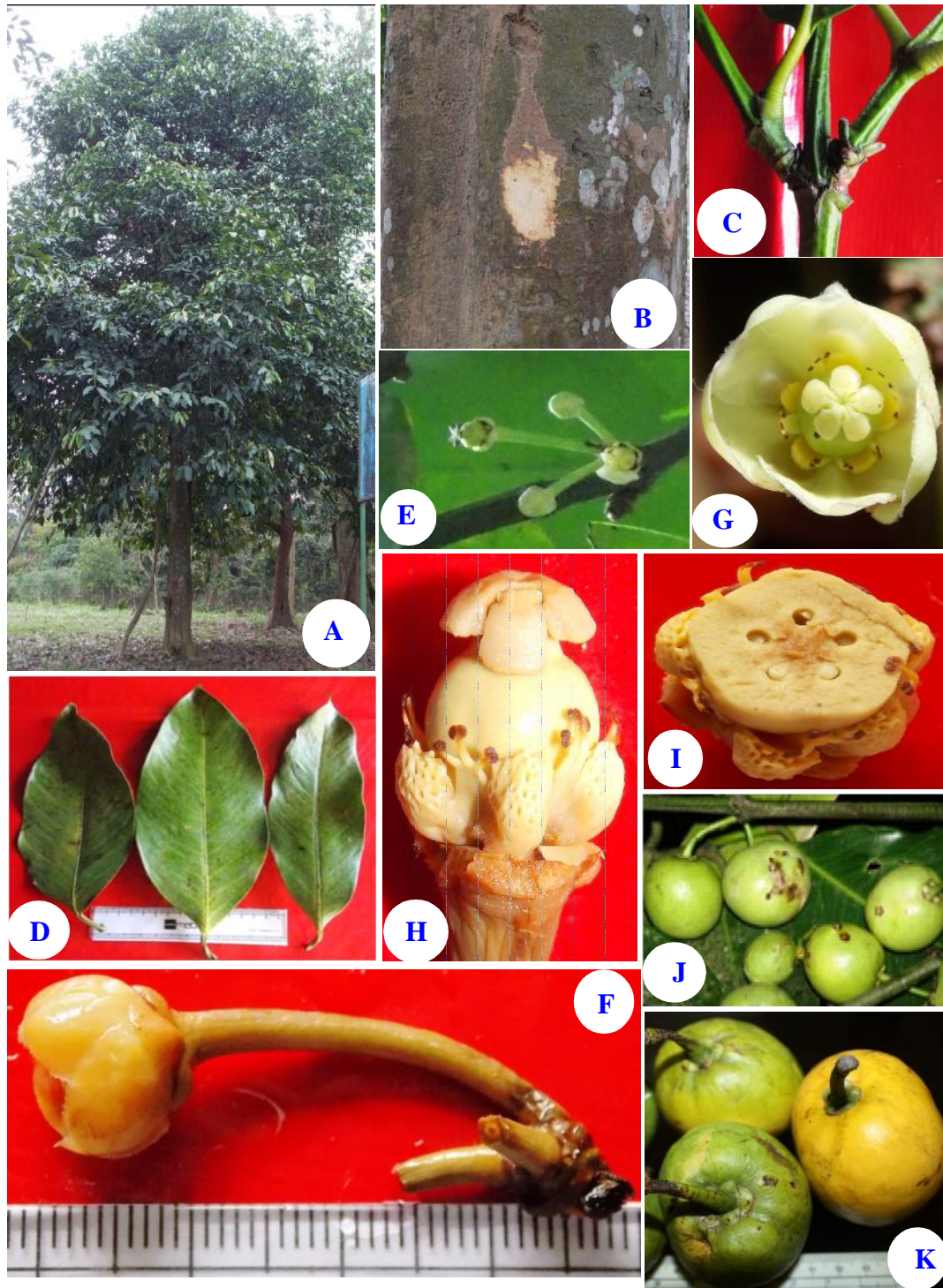


PLATE - I. *Garcinia dulcis* (Roxburgh) Kurz : **A.** a tree; **B.** bark; **C.** branching and angular stem; **D.** leaves; **E.** inflorescence; **F.** flower in lateral view; **G.** flower in top view; **H.** flower after removal of calyx and corolla; **I.** t.s. of ovary; **J.** immature fruits; **K.** mature fruits

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The fruits of *G. dulcis* contain citric acid and are suitable for preparing jams and preservers. The bark is used for dyeing mats.

LITERATURE CITED

- Anderson 1874. *Garcinia*, in Hooker, J.D. (ed.). *The flora of British India*. 1: 259 – 270. L. Reeve & Co, Ashford, Kent, London.
- Kanjilal, U.N.; Kanjilal, P.C. & Das, A. 1934. *Flora of Assam*. 1: 103 – 110. Govt. of Assam Press, Shillong.
- Mabberley, D.J. 2005. *The plant Book-A Portable dictionary of the vascular plants* (2nd Edn.). Cambridge University Press. Pp. 293.
- Maheswari, J.K. 1964. Taxonomic Studies on Indian Guttiferae III. The genus *Garcinia* Linn. *Bull. Bot. Surv. India* 6 (2 – 4): 107 – 135.
- Singh, N.P. 1993. Clusiaceae. In Sharma, B.D.; Sanjappa, M. & Balakrishnan, N.P. (Ed.) 1993. *Flora of India*. Vol. 3. Botanical Survey of India, Calcutta. Pp. 98 – 131.
- Stevens, P.F. 2007. Clusiaceae - Guttiferae. In: Kubitzki K (ed) *The families and genera of vascular plants. Flowering plants. Eudicots*. Springer, Berlin, 9: 48 – 66.
- Sweeney, P.W. 2008. Phylogeny and floral diversity in the genus *Garcinia* (Clusiaceae) and relatives. *Intn. J. Plant Sci.* 169: 1288 – 1303.
- Whitemore, T.C. Guttiferae. In T.C. Whitemore (ed.) 1973. *Tree Flora of Malaya*. Longman, Kuala Lumpur, Malaysia. 2: 162 – 236.