

## Chapter 22

# A Short Review on *Gynocardia odorata* R. Br: A Potent Medicinal Plant of Assam

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### ABSTRACT

*Gynocardia odorata* R. Br (Achariaceae) is an important medicinal plant. It is indigenous to Indian subcontinent and grows extensively in the tropical forests of Western Ghats and Hilly regions of North Eastern India. The plant has long been used in the traditional system of medicine to treat various cutaneous and subcutaneous diseases. The chapter deals with the different scientific studies and reports available in different aspects of this plant in the areas like morpho-taxonomy, ethnobotany, phytochemistry, and pharmacognosy.

### INTRODUCTION

Commonly known as Chaulmoogra, *Gynocardia odorata* Robert Brown is one of the most important tree plants under Flacourtiaceae (currently Achariaceae) (Lemke, 1988; Santos, 2007). The generic name *Gynocardia* comes from the ancient Greek words *Gyne* means female or woman and *Kardia* means heart (directly referring to ovary), indicating the heart shaped ovary (Quattrocchi, 1999; Patil, 2007). In this context, the meaning of the genus is more or less heart shaped ovary or heart shaped fruit. The tree is commonly known under different names in different parts of the world e.g. *ma dan guo* or *ta feng tzu* in Chinese (Quattrocchi, 1999), *Tulkung* in Lepcha, *Gandare*, *Koliori*, *Bandray* or *Gantay* in Nepali. In India, this tree is known in a variety of names in different dialects, such as *Salmogra*, *Lemtem* or *Bonsha* in Assamese, *Gaab*, *Deshi Gaub* or *Chaulmogra* in Bengali, *Chhalmogra* in Hindi, *Surantaeil* in

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Kannada, *Dieng-sohliang* or *Dieng sohphailing* in Khasi, *Sai-thei* in Mizo, *Alasakapaha*, *Kushthapa*, *Sagarodbhuta* or *Tuvaraka* in Sanskrit etc.

William Roxburgh (1815) mentioned *Gynocardia odorata*, under the name *Chaulmoogra odorata* in a catalogue of plants in the East India Company's botanical garden in Calcutta where he misidentified the plant *G. odorata* with *Hydnocarpus kurzii* which was the actual source of Chaulmoogra oil (Parascandola, 2003). The species *G. odorata* was first described by Robert Brown (1820) in the third volume of William Roxburgh's *Plants of the Coast of Coromandel*. Later on, Roxburgh (1832) again described *C. odorata* under order Dioecia Polyandria in the 3<sup>rd</sup> volume of his *Flora Indica*. Even Nathaniel Wallich (1831-32) also described the genus *Gynocardia* by its synonym as *Chaulmugra odorata* from India in the *List of Indian Woods*. Colonel Drury (1864) in his 1<sup>st</sup> volume of *Handbook of The Indian Flora* recorded the genus *Hydnocarpus* with its three species but he reported *G. odorata* as a synonym of *H. odorata*. According to Kabir (1965), *G. odorata* is endemic to Sikkim and Assam. Although the species is not assessed by IUCN yet it is Vulnerable with a limited range of distribution (Ahmedullah & Nayar, 1986), whereas Choudhury et al., (2005) reported that *G. odorata* falls under Endangered category.

## **BACKGROUND**

*G. odorata* R. Br. is a crooked, moderate to large sized East Indian tree which occurs in the dense tropical and temperate forest, also in secondary forest margin (Mohan et al., 2013; Khan et al., 2014 & Sharma et al., 2016). It grows wildly throughout India and other tropical countries of the world (Roxburgh, 1820). The species is found in the moist forests of mountain valleys in South Asia- India, South- East Xizang and Yunnan in China, Bangladesh, Nepal and Myanmar (Khan, 2014 b). This monotypic genus is indigenous to the moist forests of the North East India (Parascandola 2003; Rana & Ranade, 2009; Bera et al., 2014) and is fairly common in the evergreen forests throughout Assam. It is cultivated in Nigeria, Uganda, Sri Lanka and few other South East Asian countries.

A perennial, small or middle-sized glabrous tree, 30-45m high with hard and warty bark which is gray or greenish gray in colour. Branches slender and terete, not flaking, twig tips and branchlets glabrous. Leaves bifarious, simple, oblong, abruptly acuminate, margin entire, apex rounded and contracting abruptly to a short narrow acumen, rounded or acute at base, slightly uneven, petiolate, thinly coriaceous, dark green to brown in colour, 15-23cm × 4.5- 6cm; leaf blade greenish abaxially and deep green to brown adaxially, nearly concolored when dry; venation reticulate; lateral veins or secondaries 16-22 pairs, conspicuous abaxially, very arcuate; tertiaries alternate percurrent type, transverse to the midrib and often continuous to margin; quarternaries openly reticulate and alternate percurrent type, Quineries are regular polygonal reticulate type, senaries (6°) are the ultimate vein type and of thin dichotomizing type (Kalita et al., 2017); Petiole glabrous, 0.5-1.3cm. Pedicels articulate, sparsely appressed hairy or glabrous, 1.5-2.5 cm. Inflorescence axillary cyme, terminal and cauliflorous. Flowers solitary, unisexual, staminate, dioecious, pale yellow, fragrant, 1-1.25cm; Male flower and Female flowers are almost same, ovate or obtuse to rounded; Sepals 5 ± 0.5cm; Petals yellowish green, 8-10 in 2 rows, oblong or slightly obovate, each with a cuneate fleshy gland at the base ± 1.5 cm; Stamens 20-30; Anther elongate-cordate, filament short and villous, ± 0.5- 0.8cm long, hairy; Stigmas peltate or cordate, bifid; Style short and slender, ± 0.5cm. Fruits chocolate brown to yellowish brown in colour, globose with a hard, plain but scurfy and velvety surface; 6.5-7.6cm in diameter, fruits contains a stout beak (the remains of stigma), ± 3.5cm; Seeds numerous, variable in shape and size, usually angular-ovoid or ellipsoid about ± 2.5cm long.

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