

## ***Cinnamomum pauciflorum* Nees (Lauraceae) – a wonder and promising source of cinnamon spice and oil from Northeast India**

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### **Abstract**

Morphology of *Cinnamomum pauciflorum* Nees (Lauraceae), a promising and wonder crop of cinnamon spice and oil value, discovered from North-east India has been illustrated and described in this article for easy identification.

**Key words:** *Cinnamomum pauciflorum*, morphology

### **INTRODUCTION**

*Cinnamomum pauciflorum* Nees (Lauraceae) is a wonder plant and a promising source of cinnamon spice and oil, discovered from Northeast India (Nath *et al* 1996). It is a small to large bushy aromatic shrub attaining a height of 1.5 – 5 m, and vernacularly known among the Khasi tribe of Meghalaya state of Northeast India as '*Deing-Lorthia*'. While, conducting an ethnofloristic survey in Northeast India, we came across this plant species (Baruah & Nath 2007) growing sporadically in some restricted pockets of Khasi and Jaintia Hills of Meghalaya. The stem bark of this wonder plant is used by the local tribal people of Meghalaya as cinnamon spice and even sold in the local markets in the name of cinnamon or '*Deing-lorthia*'. However, the stem bark in the form of decoction is also used for medicinal purpose by the Khasi people of the region as cardi tonic and antispasmodic. The bark decoction is, however, used by the Kuki tribe in Manipur for the treatment of stomach disorders (Baruah & Nath 2006a). Besides Northeast India, this taxon is found in Sylhet (Hooker 1885) and Xishangbana of China (Chen *et al* 1992).

The significance of this wonder plant is that besides having the properties of cinnamon in its bark, the mature leaves and root bark also possess the same properties i.e. warm, pungent and sweet taste which have not been found in the leaves and root bark of the True cinnamon (*C. verum* Presl. syn. *C. zeylanicum* Blume) plant. The characteristic aroma and taste of cinnamon bark is due to the presence of an alcohol soluble pale-yellow mobile essential oil which is very rich in cinnamaldehyde (Sennanayaka & Wijesekera 1989).

Cinnamaldehyde is reported as the major component in the essential oils of leaf, stem and root bark of *C. pauciflorum* growing in Northeast India (Nath *et al* 1996). The percentage of cinnamaldehyde is, however, higher in the leaf essential oil (94 %) followed by root (92.40 %) and stem bark (85.10 %) essential oils (Baruah & Nath 2006b; Nath *et al.* 1996, 2006, 2007). The percentage of cinnamaldehyde in true cinnamon is reported to be maximum up-to 80 %. Moreover, the amount of oils extracted (Dry Weight Basis = DWB) from the leaves (4 %), stem bark (1.1 %) and root bark (5.2 %) of this wonder plant are higher than that of true cinnamon source (@ 1 % DWB). Another chemical race of *C. pauciflorum* with safrole as the major component in its essential oils, extracted from the leaf, stem bark and lateral roots, is reported from China (Chen *et al* 1992).

## 2 *Cinnamomum pauciflorum* – a wonder source of cinnamon spice

The mature leaves of *C. pauciflorum* can be used either as such or in powder form, as a better substitute of cinnamon spice besides being the use of its stem and root barks. Raw cinnamon bark and its essential oil are already internationally established items which are extensively used in various flavor, cosmetics and pharmaceutical industries. This promising source of cinnamon plant, i.e. *C. pauciflorum* can be cultivated like ‘Tea plantations’, if the climatic conditions are conducive or similar to Meghalaya state.

A **National patent (No. 193291)**, on the process for the production of spice compounds/oils from this wonder cinnamon plant (*C. pauciflorum*) is granted. Vegetative propagation technique of this promising source of cinnamon with 100 % success is reported irrespective of winter as well as in summer seasons (Baruah 2007; Nath & Baruah 2000). The present author could able to cultivate a few plants of this wonder source of cinnamon, raised through vegetative propagation, inside the Shade-House of Darrang College, Tezpur, located in the Brahmaputra valley of Assam, India. These plants are now four years old and attaining a height of about 2.5 meter.

Morphological description of this wonder and promising source of cinnamon spice plant is provided here for easy identification (**Fig. 1**).

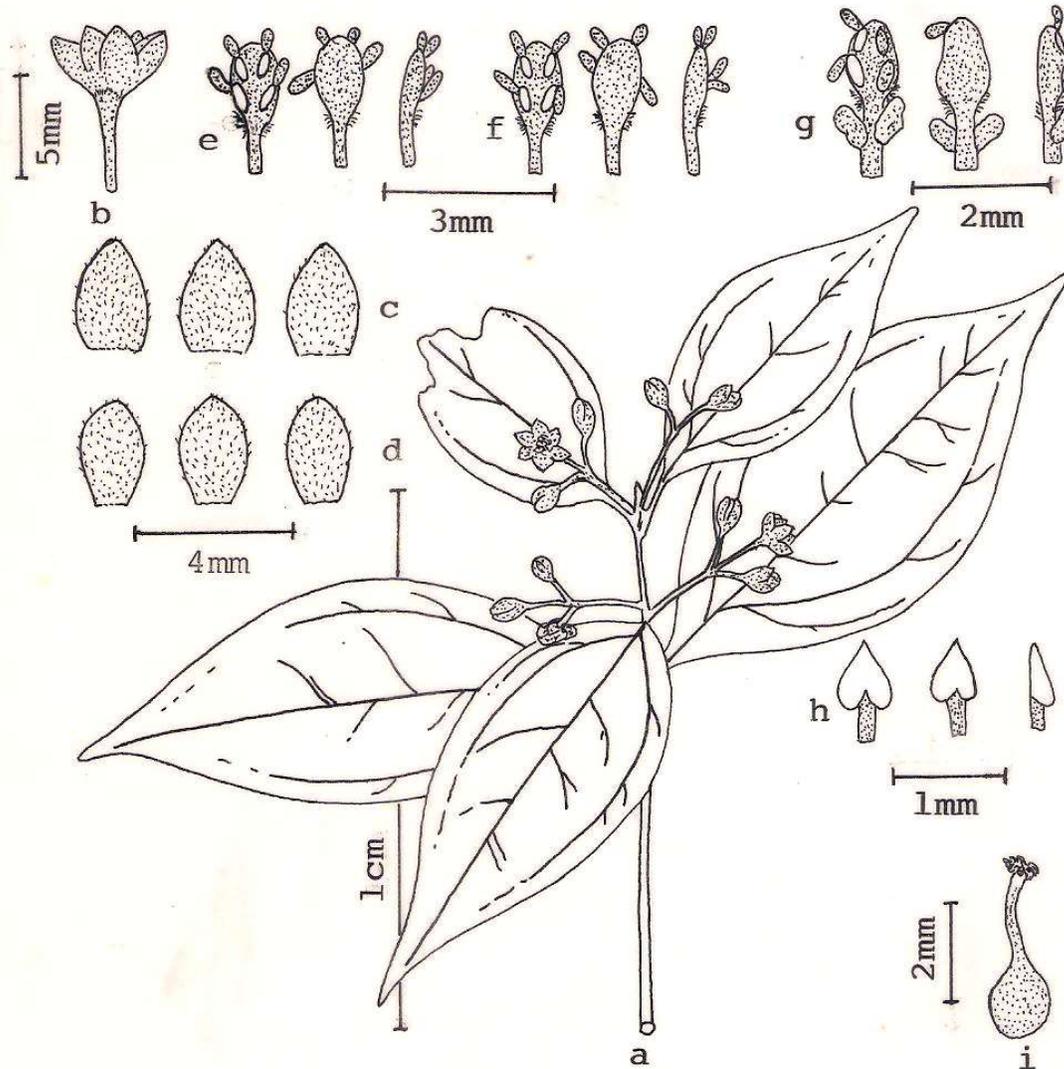
***Cinnamomum pauciflorum*** Nees in Wallich, Pl. Asiat. Rar. 2: 75. 1831; Hooker f., Fl. Brit. India. 5: 129. 1886; Gamble, Man. Ind. Timb. 562. 1902; Brandis, Ind. Trees. 533. 1906; Kanjilal *et al*, Fl. Assam 4: 57. 1940; Balakrishnan, Fl. Jowai. 2: 407. 1983; Haridasan & Rao, Forest Fl. Meghalaya 2: 722. 1987.

A handsome evergreen shrub to small tree, up-to 3.7 m high; bark grey with streaks of brown on stem, aromatic, aroma and taste like that of “cinnamon”, ± 2 mm thick. Leaves alternate, sub-opposite or opposite on the same twig, lamina firmly coriaceous, aromatic, smell and taste similar with stem bark (tender leaves not aromatic), shining above, dark green, pale below, glabrous, elliptic-ovate or ovate-elliptic to oblong-lanceolate, acuminate to caudate-acuminate, base decurrently acute to rounded or sub-cordate, variable in size, 1.5 – 5 x 2.5 – 14.5 cm, triplinerved; petiole concave above, 5 – 9 mm long. Panicles solitary sub-terminal to axillary, upto 5 cm long, shorter than leaves, peduncles 2 – 3 flowered; flowers 7 – 8 mm long, creamish- white, pedicels 4 – 5 mm long, minutely pubescent or puberulous; perianth 3 + 3, both surfaces silky pubescent, outer perianth 3 mm long, obovate-lanceolate, inner perianth 2.5 – 3 mm long, minutely puberulous to pubescent, anthers 4-locular, introrse, whorl-III extrorse, valve and locule oblong-lanceolate, glands of whorl-III yellow, attached 1/3 of the base of the filament; Staminodes 3, 1 mm long, minutely puberulous to pubescent, head sagittate with pointed apex and rounded base; Pistil 3.5 mm long, ovary ovoid, minutely puberulous, stigma capitate. Fruits globose, seated on the truncate toothed accrescent base of the perianth; rate of fruit setting poor.

**Phenology:** *Flowering:* March – May; *Fruiting:* June – September.

### LITERATURE CITED

- Baruah, A. 2007. Anatomical, cytological and propagation studies of New and Promising *Cinnamomum* resources used as Spices in Northeast India, UGC (NERO) Project, Guwahati. Pp. 28 – 33.
- Baruah, A. & Nath, S.C. 2006a. Ethnobotanical evaluation of *Cinnamomum* Schaeffer species used as spices and condiments in North-East India. *Ethnobotany* 18(1): 27 – 35.
- Baruah, A. & Nath, S.C. 2006b. Leaf anatomy and essential oil characters of *Cinnamomum pauciflorum* Nees – A new potential spice crop from North-East India. *J. Spices Arom. Crops*. 15: 52 – 56.



**Figure 1:** a. A flowering twig of *Cinnamomum pauciflorum*. b. Single flower. c. Perianth of whorl I. d. Perianth of whorl II. e. Stamens of whorl I. f. Stamens of whorl II. g. Glandular stamens of whorl III. h. Stamines. i. Pistil.

Baruah, A. & Nath, S.C. 2007. Systematics and diversities of *Cinnamomum* species used as Cinnamon spice in Northeastern India. *J. Econ. Tax. Bot.* 31(4): 872 – 887.

Chen, B.; Xu, Y. & Ding, J.K. 1992 *Cinnamomum pauciflorum* introduced in Xishangbana and chemical constituents of its essential oil. *Flav. Frag. Cosm.* 21: 1 – 5.

Hooker, J.D. 1885. *Flora of British India*, Vol – V. L. Reeve & Co., London.

Nath, S.C. & Baruah, A. 2000. An effective method for vegetative propagation of two Cinnamon sources. In *Conservation of Biodiversity* (eds. V.P. Agarwal & S.K. Gupta), Society of Biosciences Pub., Muzaffarnagar, India. Pp.147 – 154.

Nath, S.C.; Baruah, A. & Kanjilal, P.B. 2006. Chemical composition of the leaf essential oil of *Cinnamomum pauciflorum* Nees. *Flavour Fragr. J.* 21: 531 – 533.

4 *Cinnamomum pauciflorum* – a wonder source of cinnamon spice

- Nath, S.C.; Baruah, A. & Kanjilal, P.B. 2007. Chemical compositions of the root bark and stem bark essential oils of *Cinnamomum pauciflorum* Nees. In *Aromatic Plants of Asia, their Chemistry and Application in Food and Therapy* (Eds. Jirovetz, L. et al). Har Krishan Bhalla & Sons Pub., Dehradun, India. Pp. 76 – 81.
- Nath, S.C.; Hazarika, A.K. & Baruah, A. 1996. Cinnamaldehyde, the major component of leaf, stem bark and root bark oil of *Cinnamomum pauciflorum* Nees. *J. Essent. Oil Res.* 8: 421 – 422.
- Senanayaka, U.M. & Wijesekera, R.C.B. 1989. The volatile of *Cinnamomum* species. In S.C. Bhattacharya, N. Sen & K.L. Sethi, Eds. *Proceedings of the 11<sup>th</sup> International Congress of Essential Oils, Fragrances and Flavours*. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi, Bombay, Calcutta. Pp. 103 – 120.