

Notes on *Caulokaempferia linearis* (Wallich) K. Larsen – a rare ginger of India

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Abstract

Caulokaempferia linearis (Wallich) K. Larsen has been collected from Mowlingdong (c. 438 m), East Khasi Hills district of Meghalaya after a long gap of more than half a century. Detailed description, phenology and distribution are provided in the present communication.

Key words: *Caulokaempferia linearis*, Zingiberaceae, Meghalaya, India

INTRODUCTION

The genus *Caulokaempferia* K. Larsen consists of c. 12 species from the Himalayas to South East Asia in humid environments, mossy rocks along streams, wet rock-walls and swampy areas (Larsen 1996; Larsen & Jenjittikul 2004). The genus *Caulokaempferia* was established by K. Larsen in 1964 taking out the section *Monolophus* of *Kaempferia* Linnaeus based on cytological and morphological criteria. In India the genus is represented by three species viz. *Caulokaempferia linearis* (Wallich) K. Larsen, *C. secunda* (Wallich) K. Larsen and *C. sikkimensis* (King) K. Larsen (Larsen 1964).

During botanical exploration tour to Mowlingdong village (GPS Location: N 25 12 20.7 EO 91 54 02) East Khasi Hills district of Meghalaya, an interesting species of *Caulokaempferia* was collected. It was growing on mossy rock crevices and boulders in the bank of stream near the living root bridge at an altitude c. 438 m. Based on critical examination of the freshly collected specimen, consultation of literatures (Hooker 1890; Larsen 1964) and the study of (ASSAM!) herbarium, Shillong, the species was identified as *Caulokaempferia linearis* (Wallich) K. Larsen. It is interesting to note that *C. linearis* is the type species of the genus *Caulokaempferia* K. Larsen and reported so far from India (Assam, Meghalaya and Mizoram) and Bangladesh only (Larsen 1964). But, there is no as such authentic report of its occurrence from Assam. Rai & Lalramnghinglova (2010) mentioned the occurrence of the species in Mizoram. It may be the recollection of the species in Mizoram after the earlier collection which was made by Parry in year 1927 from Linglek, Lushai Hills (Mizoram). So, the present distribution of *C. linearis* (Wallich) K. Larsen in India is only ascertain from the state of Meghalaya (Khasi Hills) and Mizoram. It is also known from herbarium study (ASSAM!) that there is no any report of recent collection of the species after 1935 by S. R. Sharma and G.K. Deka in 1940 and 1944. So, our collection of the species indicates its localized distribution in Meghalaya is after a long gap of more than half a century.

Therefore a detailed description, citation, phenology and ecology of the species along with some photographs are provided here for easy identification.



Figure 1: *Caulokaempferia linearis* (Wallich) K. Larsen: (A) Habitat; (B) A single plant; (C) Flower- close up showing labellum

Caulokaempferia linearis (Wallich) K.Larsen, Bot. Tidsskr. 60: 170. 1964. *Kaempferia linearis* Wallich in Roxburgh, Fl. Ind. ed. 1, 1: 20, 1820; Baker in Hooker *f.*, Fl. Brit. India 6: 223, 1890; Schumann, *Zingiberaceae* in Pflanzenreich IV. 46: 73, 1904; Loesener in Nat. Pflanzenfam. ed. 2, 15a: 566, 1930; *Monolophus linearis* Wall. Cat. in Horan. Monogr. 22, 1862.

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Lithophytic herbs, 16 – 18 cm long. Roots worm like, whitish. Stem greenish, terete, *c.* 0.2 cm in diameter. Ligule up to 5 mm long, entire, membranous, acute. Leaves 10 – 11, sessile, glabrous, blade green, lanceolate, 5 – 6 x 0.5 – 0.6 cm, caudate. Inflorescence pluriflorous; rachis glabrous; bracts 2, green, lanceolate, up to 3 cm long, acute, each subtending upto 5 flowers. Calyx pinkish white, upto 1 cm long. Corolla lobes pinkish white, linear-oblong, 7 – 10 x 3 – 4 mm, tube upto 2 cm long, glabrous. Lateral staminodes oblong-cuneate, as long as corolla lobes. Lip broadly cuneate, obovate, trilobed, 1 – 2 cm long, midlobe slightly emarginate, tinged with yellow spot at the throat. Anther-crest large, petaloid, apex reflexed, orbicular. Ovary unilocular, style filiform, stigma cup shaped, ciliate at apex. Fruits not seen.

Flowering: August.

Distribution: INDIA (Assam? Meghalaya and Mizoram); BANGLADESH ?.

Ecology: The species is found growing in mossy moist rock crevices or boulders in the bank of streams in shady places. It is found growing along with *Diplomeris pulchella* D. Don, *Caulokaempferia secunda* (Wallich) K. Larsen, *Impatiens* spp. etc.

Uses: In Mizoram, the species is locally called as *Lung-ai-thing Lalram* and the local tribe Chakmas use crushed leaves on the head in vertigo (Rai & Lalramnghinglova 2010).

Specimen examined at ASSAM Herbarium:

India, Meghalaya, Khasi Hills, Pongtung forest, 28.08.1935, *S.R. Sharma-12180*; Dawki, 06.08.1940, *G.K. Deka – 19598*; Dawki, 11.08.1944, *G.K. Deka – 21872*; Mowlingdong, 18.08.2012, *D.K. Roy & Santanu Dey – 125700*.

DISCUSSION

The genus *Caulokaempferia* can be divided into two groups, *viz.* (i) species with yellow flowers and unilocular ovary, fruits dehiscing by one broad apical opening, and (ii) species with white to pale violet flowers and a trilocular ovary, fruits dehiscing by three recurving valves (Larsen 2002; Larsen & Jenjittikul 2004). Larsen (2002) placed the type species *Caulokaempferia linearis* in the 1st group. The other two of its Indian species, *viz.* *C. sikkimensis* (flowers white-violet) and *C. secunda* (flowers violet-white) are belonging to the 2nd group.

BOTANICAL HISTORY OF THE GENUS CAULOKAEMPEFIA

Based on cytological and morphological criteria, the section *Monolophus* of the genus *Kaempferia* Linnaeus is separated out as a new genus *Caulokaempferia* K. Larsen. Wallich, in his *Plantae Asiaticae Rariores* 1: 24, Tab. 27. 1830, established a new genus related to *Kaempferia*, which he named as *Monolophus* “in allusion to the entire crest of the anther”. In this group he placed three species *Kaempferia elegans*, *K. secunda* and *K. linearis*. But, for two reasons this name ought to be rejected as a generic name: (1) The type species of Wallich’s *Monolophus* is a *Kaempferia* and the description given by Wallich thus does not hold for the group in its sense today; and (2) the name refers to a character widely distributed also in neighboring genera. Therefore a new name *Caulokaempferia* is given to the genus, which deviates from *Kaempferia* in many characters like true stem with few leaf blades having cincinnus of flowers that it is quite unnatural to keep them together (Larsen 1964) which has recently been strongly supported by molecular studies (Kress *et al* 2002).



Figure 2: *Caulokaempferia linearis* (Wallich) K. Larsen: (A) Complete Flower with bract; (B) Bract; (C) Bracteole; (D) Calyx; (E) Lateral staminodes; (F) Corolla tube; (G) Gynoecium with attached anther crest; (H) Anther crest; (I) Labellum

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