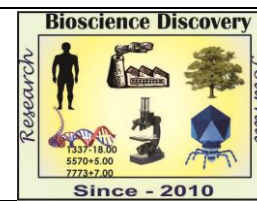


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Research Article



New Report on *Zingiber montanum* (K.D. Koenig) Link. From Kudal, Dist. Sindhudurg, (MS) India

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Abstract

Studies on rare and threatened flowering plants from South India has been carried out and 224 species of flowering plants in danger of extinction from the distribution of species available from literature. Red data book recorded *Cautleya petiolata* Baker and *Hedychium aurantiacum* Roscoe members of Zingiberaceae from Uttar Pradesh, Nepal and Bhutan and Himachal Pradesh. *Zingiber montanum* (K.D. Koenig) Link ex Dietris probably native to India and is widely cultivated in Southeast Asia for medicinal purpose as mountain ginger. It is found in many parts of India and reported from Malay Peninsula, Sri Lanka & Java. In south India reported from Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Arunachal Pradesh to East India and Myanmar. *Zingiber purpureum* Roscoe from Bombay, Sindhudurg and recorded cultivation for its rhizome. *Z. montanum* is morphologically identical to *Zingiber zerumbet* and it is difficult for classical taxonomists to differentiate two species during the non-flowering stage. *Z. montanum* observed near village Pavashi Tal. Kudal, Dist. Sindhudurg, Maharashtra state along the river side of Bangsali during flowering stage. The plant is found on slopes having sandy soils. It is situated between latitude 20° 11' to 20° 14' N and longitude 80° 15' to 80° 19' E having elevation 200 meter from mean Sea level.

INTRODUCTION

Zingiberaceae is the largest monocotyledonous family in India. Zingiberaceae group has 52 genera and 1400 sp. Concentrated in India – Malaysia region of Asia. Out of these 22 genera and 178 species are available in North-eastern and peninsular region of India (Jain, 1995). While considering Maharashtra state 10 genera 32 species are found in wild and cultivated state.

The genus *Zingiber* Boehm. was represented by 141 species and distributed mainly in tropical Asia (Theilade, 1999; Theilade and Mood, 1999). It was first time studied by Roxburgh,

(1810) and considered 11. In Western Ghats of South India 7 sp. of *Zingiber* Boehm are found (Fischer, 1928).

Studies on rare and threatened flowering plants from of South India made by (Henry *et al.*, 1978). They reported 224 species of flowering plants in danger of extinction in south India from the distribution of species available from literature. (Sabu, 2003) Revised genus *Zingiber* from South India and recorded 8 species, out of which 2 species are endemic to south. The list of IUCN was first hand information on plant species (IUCN 2008). In this list only one member *Amomum hypoleucum* Thw. belong to family Zingiberaceae.

Annotated list of threatened and endangered plants of India published by (Jain and Sastry, 1983) reported plants in red data book recorded *Cautleya apetiolata* Baker and *Hedychium aurantiacum* Roscoe members of Zingiberaceae from Uttar Pradesh, Nepal and Bhutan and Himachal Pradesh. Kulkarni, *et al.*, 2013 recorded new report of *Zingiber capitatum* Roxb. from Mendha lakha in Maharashtra state. Phenological studies on rare endangered plants in relation to family Zingiberaceae are important to know plant growth pattern in different environment. In this context, (Kasarkar and Kulkarni, 2011) carried out research on phonological aspect of *Alpinia* and *Zingiber* belong to family Zingiberaceae from Kolhapur region. *In-situ* and *ex-situ* conservation of rare, endangered and threatened plants will be prime importance in recent years due to loss of habitat and developmental activities in the regions.

Zingiber montanum (K.D. Koenig) Link ex Dietris probably native to India and is widely cultivated in Southeast Asia for medicinal purpose as mountain ginger. It is found in many parts of India and reported from Malay Peninsula, Shri Lanka & Java. In south India reported from Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Arunachal Pradesh to East India and Myanmar (Sabu, 2003, Govaerts, 2013).

Revision of Flora of Maharashtra State was carried out with special reference to Monocotyledones (Sharma, *et al.*, 1996). They have not recorded *Zingiber montanum* (K.D. Koenig) Link ex Dietr. from regions of Maharashtra state. Almeida, (2009) reported *Zingiber purpureum* Roscoe from Bombay, Sindhudurg and recorded cultivation for its rhizome by Dr. S.M. Almeida.

MATERIALS AND METHODS

Collection of *Zingiber montanum* (K.D. Koenig) Link. plant in flowering stage in the month of August 20th, 2016 near village Pavashi Tal. Kudal, Dist. Sindhudurg, Maharashtra state and along river side of Bangsali. The plant is found on slopes having sandy soils. It is situated between latitude 20°11' to 20°14' N and longitude 80°15' to 80°19' E having elevation 200 meter from mean Sea level.

***Zingiber montanum* (K.D. Koenig) Link., Sp. Pl.** 1:52.1831; B. L. Burtt & R. M. Smith. Notes Roy. Bot. Gard. Edinburgh 31: 194. 1972; T. Cooke Fl. Pres. Bombay 2: 735, 1907; C. E. C. Fisch, in Gamble, Fl. Pres. Madras 8: 1490, 1928,

Ramamamoorthy in C. J. Saldanha & Nicolson, Fl. Hassan Dist. 769. 1976; Theilade, Nord. J. Bot. 19(4): 396. 1999; M. Sabu, Folia Malaysiana 4(1):27. 2003.

Rhizome thick, 1-2 cm, perennial, fleshy, horizontal, aromatic, yellow inside. Leafy shoots 1-1.5 m. high and pubescent. Leaves subsessile, ligule very short, 2-3 mm. long, bilobed, pubescent, lamina 20-35 x 3-4 cm., linear-lanceolate, tip acute, base slightly rounded, upper glabrous, lower surface pubescent. Inflorescence borne separately from the leafy shoot, peduncle 10-20 cm. long, clothed with pubescent sheaths, spike 6-8 x 3-4 cm, ovate, deep red. Bracts 3x3-4 cm. broadly ovate, subacute with a narrow membranous margin, purplish brown, pubescent. Bracteolate 2-2.5 x 1.2-1.5 cm., obtuse, 3-toothed. Calyx 1.5 cm. long, truncate, white, membranous, unilaterally split, glabrous. Corolla tube 2.3-2.5 cm. long, pale yellow, lobes lanceolate, pale yellow, dorsal lobe 3.2 x 1.5 cm, cymbiform, lateral lobes 2.5 x 1 cm, linear lanceolate, reflexed. Labellum 3-lobed, 2.5 cm. wide, yellowish-white, suborbicular, apex emarginated with crisped margins. Lateral lobes 8x5 mm., obliquely obovate, erect. Filament short, anther-thecae, 1 cm, crest longer than the thecae. Style long, filiform, stigma obconic, margin ciliate. Epigynous glands, linear, free from each other. Ovary 3-4 mm. long, pubescent. Capsules 1.5 cm. in diameter, ovoid. Seeds very small, purple.

Flowering and Fruiting: June- August.

Distribution: It is native of India, specially reported from Andhra Pradesh, Karnataka, Kerala and Tamil Nadu (Sabu 2006).

According to description of *Z. montanum* and taxonomic description given by (Sabu, 2006). It resembles with *Z. zerumbet* with yellow flowers with crisped margins but can be distinguished from the later by the narrow lanceolate leaves and short bifid ligules. It also resembles *Z. officinale* but it differs in the yellowish white labellum. Haines (1961) states that it is a highly variable species especially in the size of the peduncle. Initially (Burtt and Smith, 1972) accepted this combination but in later publication they treated this under *Z. purpureum*, *Zingiber montanum* (J. König ex Retz.) Theilade is a synonym* of *Zingiber montanum* (J. Koenig) Link ex A. Dietr. (The record derives from Tropicos data supplied on 2012-04-18) which reports it as an accepted name (record 50220457) with original publication details: *Gard. Bull. Singapore* 48: 225 1996.). Ramamoorthy, (1976)



Fig-1: Habitat and Flower of *Zingiber montanum* (K.D. Koenig) Link.

collected samples from Indomalaysia specially State Kagenari Forest (200-400 m) on moist sandy loose soil in shady places in June and July. He described plant as leaf 30 x 45 cm. and peduncle about 15 cm. long, bracts broadly ovate, acute, scarious margins. Flowers white, lip frilled margins, pinkish capsule, sub-globose, seeds small purple (Saldhana and Nicolson, 1976).

However, *Zingiber montanum* is morphologically identical to *Zingiber zerumbet* (Ghosh, *et al.*, 2011). *Zingiber montanum* distinguished from *Zingiber zerumbet* by different morphological characters like narrow leaves and short bifid ligules. Ligules are very short 2-3 mm. long, bi-lobed and pubescent.

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