

**MONOGRAPH  
ON  
CEROPEGIA BULBOSA ROXB.  
& CEROPEGIA MACRANTHA WIGHT**



**FOREST BOTANY DIVISION  
STATE FOREST RESEARCH INSTITUTE  
JABALPUR (M.P.)**

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ON  
*CEROPEGIA BULBOSA* ROXB.  
& *CEROPEGIA MACRANTHA* WIGHT**

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## FOREWORD

The genus *Ceropegia* is a member of the Asclepiadaceae. It is very widely distributed, growing sporadically almost throughout India in red laterite soil. Out of four species of *Ceropegia* viz., *C. hirsute*, *C. bulbosa*, *C. macrantha* and *C. candelabrum* occurring in Madhya Pradesh, *Ceropegia bulbosa* Roxb and *C. macrantha* occur as rare undergrowth species in natural habitats of mixed forests in Madhya Pradesh.

These are medicinal and prioritized herb species for conservation in the botanical garden (as per BSI guidelines). *Ceropegia bulbosa* Roxb is used traditionally in arthritis and cancer causing diseases in aboriginal pockets of Madhya Pradesh. *C. macrantha* is reported to be used as an antidote species.

This monograph provides useful information on the distribution and habitat, morphology, flowering and fruiting, natural regeneration, artificial regeneration, utilization, threat status and conservation measures etc., of these two species of genus *Ceropegia* for promoting their conservation and for the benefit of interested medicinal practitioners and overall development of medicinal plant sector.

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(C.P. Rai, IFS)  
Director

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**CEROPEGIA BULBOSA ROXB.****I. KNOWING THE SPECIES**

<b>Telgu:</b>	<i>Palatige</i>
<b>Kannada:</b>	<i>Hallike</i>
<b>Hindi:</b>	<i>Khapparkadu, Mirchi dhudde</i>
<b>Marathi:</b>	<i>Khapparkadu, Patala tumbari</i>
<b>Panjabi:</b>	<i>Galot</i>

**II. DISTRIBUTION AND HABITAT**

This member of the Asclepiadaceae\* family was described by William Roxburgh. It is very widely distributed, growing sporadically almost throughout India in red laterite soil. *Ceropegia bulbosa* Roxb occurs in Madhya Pradesh, Chhattisgarh, Panjab, upper Gangetic plain and Deccan. It is a rare species of Madhya Pradesh occurring in moist habitats of mixed forests of Chhindwada, Pachmarhi, Hoshangabad, Balaghat and Amarkantak. The vines can reach two meters.

**III. MORPHOLOGY****Genus**

Herbs, perennial, twining, roots often tuberous, sap watery. Leaves opposite, sometimes minute or absent. Flowers in lateral, sub-umbelliform cymes, rarely solitary, often large. Calyx 5 lobed, glandular. Corolla narrowly tubular, inflated at base, 5-lobed, lobes valvate in bud, more or less connate at tips. Corona double, outer series annular or copular, entire or 5-10 toothed or lobed, shorter or longer than staminal column, inner series of 5, short or long, linear or subulate processes, opposite to anthers, much longer than staminal column. Anthers short, erect, without appendages, pollinia solitary in each anther cell, erect or sub-horizontal, waxy, with pellucid margin, attached to corpuscula by short caudicles. Stigma included, truncate or shortly conical. Follicles usually slender, acuminate, smooth. Seeds usually oblong, margined, comose.

### **Species**

The four species of *Ceropegia* viz., *C. hirsute*, *C. bulbosa*, *C. macrantha* and *C. candelabrum* are occurring in Madhya Pradesh. The *Ceropegia bulbosa* is a twining, trailing, slender and glabrous herb. Roots are tuberous. Leaves ovate, 3-6 cm long, slightly cordate at base, fleshy and glabrous. Flowers pedunculate, umbelliform cymes. Calyx lobes lanceolate, 1.2 cm long, ciliate on margin. The flowers are pale gray at base, becoming greyish-purple towards the mouth. Corolla pale brown outside, reddish brown inside, purple striate, 2.5 cm long, lobes narrow, densely brown pilose. Outer corona lobes rounded to shortly acute, glabrous, equal to gynostegium, inner lobes straight, linear. Follicles 10 cm long, terete, tapering to a slender point, glabrous.

### **IV. Flowering and fruiting**

The flowering and fruiting occur during October – January. The flowers are Greenish in color. The tuber are approx 35 grams to 430 grams, five to twelve centimetres in diameter, sometime flattened caudex, gray to white colour.

### **V. NATURAL REGENERATION**

Natural regeneration is very scanty and requires porous soil with adequate moisture.

### **VI. ARTIFICIAL REGENERATION**

Artificial regeneration is possible through seeds and vegetative means especially by dividing rhizomes, tubers, corms or bulbs (including offsets) and from herbaceous stem cuttings.

The seed viability is very poor. Before collecting the seeds, pods should be allowed to dry on plant. The naturally dried pods should be collected and broken to collect seeds. Seed does not store well; sow as soon as possible. The seedlings require light shade for growth. Direct seed sowing may be done during rains. *In vitro*, seed germinate in gelatin, agar or other medium. The young seedlings are prone to frost. This plant is suitable for growing indoors. Watering should be moderate. The overwatering is harmful. Suitable for growing

in containers. The range of soil pH should be acidic (5.6 to 6.0) or slightly acidic (6.1 to 6.5).

## **VII. UTILIZATION**

### **1. Use as food**

In India, the tubers and leaves are eaten uncooked. In addition, they are eaten after being boiled and mixed with milk and/or sugar or with salt and other spices.

### **3. Use as medicine**

It is thought to be an aphrodisiac and is used in tonic form to treat digestive disturbances, colds and eye diseases

### **4. Traditional uses**

It is used traditionally in arthritis and cancer causing diseases in aboriginal pockets of satpura plateau of Madhya Pradesh.

## **VIII. THREAT STATUS AND CONSERVATION MEASURES**

It is a medicinal and prioritized herb species for conservation in the botanical garden (as per BSI guidelines).

## **IX. SOURCE INSTITUTIONS FOR DETAILED INFORMATION**

1. State Forest Research Institute, Polipathar, Jabalpur 482008 (M.P.)
2. Botanical Survey of India, Central Circle 10 Chatham Lines, Allahabad 211002 (UP)
3. Forest Research Institute, PO – New Forest, Dehradun (Uttaranchal)
4. Council of Scientific and Industrial Research, New Delhi.

## **CEROPEGIA MACRANTHA WIGHT**

### **I. KNOWING THE SPECIES**

**Syn.** *C. raizadiana* Babu

### **II. DISTRIBUTION AND HABITAT**

In Madhya Pradesh, it is reported as a forest under growth in Hoshangabad district, Dhupgarh (1250m). Its distribution is occasional.

### **III. MORPHOLOGY**

Stout climbers with fusiform tubers and glabrous branches. Stem twining, branches glabrous or pilose. Leaves 10-18 cm long, generally ovate-lanceolate, sometimes ovate, glabrous or sparsely hairy on both the sides, petiole 6-13 mm long. Inflorescence of 4-8 flowered cymes, pedunculate. Pedicels 6-20 mm long, bracts subulate. Calyx 5-lobed, lobes linear, glabrous. Sepals 6-7 mm long. Corolla pale, tube 15-30 mm long, lower c. 1/3 part inflated, lobes 15-25 mm long, erect oblong-deltoid, corolla tube distinctly curved, tube not longer than the glabrous lobes. Coronal lobes ovate-lanceolate, vinous processes straight linear. Follicles 10-13 cm long.

### **IV. Flowering and fruiting**

Flowering and fruiting occur during July-October.

### **V. NATURAL REGENERATION**

Natural regeneration is scanty. It requires partial shade for its growth.

### **VI. ARTIFICIAL REGENERATION**

Conventionally, artificial propagation occurs through tubers. Micro propagation is the best alternative to flourish the species.



### ***In vitro* culture**

Node culture is the preferred technique for rapid micropropagation. Nodes of 1.0 cm each, harvested from young healthy shoots from garden raised plants are cultured on B5 medium supplemented with different concentrations of BA and AdS each in combination with 0.05 mg/L NAA. Multiple shoot formation of up to 12 shoots is observed within one week in presence of BAP (3 mg/L) and NAA (0.05 mg/L). Shoots are multiplied by subculture on the same medium. Shoots of 3-4 cm length are rooted in medium supplemented with 2 mg/L IBA. The rooted plantlets are hardened and successfully established in pots at 70% success rate. *In vitro* flowering can be observed at 0.5 mg/L BA+1 mg/L GA3. Shoots transferred to the medium containing kinetin (0.05 mg/L) + IBA (2 mg/L) show microtubers in 28 days while the shoots cultured in presence of 1 mg/L GA3 +0.5 mg/L of BA show 76% flowering leading to seed production and 65% of the seeds germinated in successive generations.

### ***Ex-vitro* propagation**

Twining species are normally multiplied via cuttings. Take a section of a stem about 20cm long and curl it flat on the surface of potted medium. Cover it slightly and rooting will occur in a matter of weeks. The cuttings don't need to have leaves attached, but make sure that it has nodes from where shoots will grow. Stems often develop roots when they touch soil. Fresh seed should be sown on a free-draining variation of the *Ceropegia* medium and germination occurs in less than 10 days. They grow quite fast and this is probably due to the high efficiency of photosynthesis in the young stem. As with Cactaceae they need to be sown on a sandy moist soil, preferably sterilized to avoid fungal attacks. Temperature for germination and seedling stage is best kept between 20 and 25°C. Plant seeds on the surface and spread them 2.5cm apart, if they're sown too close they need to be replanted at an early stage and it's better to wait for good seedling development before transplanting. Replanting can be done from the moment when the first real leaves are developed.

## **VII. UTILIZATION**

The plant extract is generally used in snake bite.

### **VIII. THREAT STATUS AND CONSERVATION MEASURES**

Least concern as per IUCN guidelines. It is a rare and prioritized herb species for conservation in the botanical garden (as per BSI guidelines). Its *ex-situ* and *in-situ* conservation is necessary to save and flourish the species.

### **IX. SOURCE INSTITUTIONS FOR DETAILED INFORMATION**

1. State Forest Research Institute, Polipathar, Jabalpur 482008 (M.P.)
2. Botanical Survey of India, Central Circle 10 Chatham Lines, Allahabad 211002 (UP)
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