

Molineria fakimense (Hypoxidaceae), a new species from Nagaland, India

N. Odyuo¹, D.K. Roy^{1*} and H.B. Khamdi²

¹Botanical Survey of India, Eastern Regional Centre, Lower New Colony, Laitumkhrah, Shillong – 793003, Meghalaya, India.

²Wildlife Warden, Kiphire Wildlife Division, Kiphire – 798611, Nagaland, India.

*E-mail: dilipbsierc@gmail.com

Abstract

A new species, *Molineria fakimense* N. Odyuo, D.K. Roy & H.B. Khamdi is described and illustrated from Nagaland, India. Key to distinguish the closely related species is provided.

Keywords: Fakim village, *Molineria*, Nagaland, New Species, Northeast India

Introduction

Hypoxidaceae, are a family of herbaceous perennial monocotyledons with *c.* 200 species under 7 genera namely *Curculigo* Gaertn., *Empodium* Salisb., *Hypoxidia* F. Friedmann, *Hypoxis* L., *Molineria* Colla, *Pauridia* Harv. and *Rhodohypoxis* Nel (Snijman & Kocyan, 2013) that are mainly distributed in the southern hemisphere of the Old World and in the North America (Sánchez-Ken, 2010). The family has high economic values as many species are utilized for food, traditional medicines, and ornamental purposes (Venukumar & Latha, 2002; Prajapati, 2003).

Molineria is characterized and distinguished from its allied genus *Curculigo* by having comparatively a smaller and unbeaked seed without an extended end in the funicle and striate testa ornamentation (Kocyan *et al.*, 2011). *Molineria* comprises seven species and two varieties (Talukdar *et al.*, 2015; Govaerts, 2016). In India, the genus is represented by all seven species and one variety namely *M. capitulata* (Lour.) Herb., *M. crassifolia* Baker, *M. gracilis* Kurz, *M. latifolia* (Dryand. ex W.T. Aiton) Herb. ex Kurz, *M. oligantha* C.E.C. Fisch., *M. prainiana* Deb, *M. prainiana* Deb var. *josephii* D.K. Roy, D. Verma & Talukdar and *M. trichocarpa* (Wight) N.P. Balakr., of which *M. oligantha*, *M. prainiana* and *M. prainiana* var. *josephii* are endemics (Talukdar *et al.*, 2015).

During a recent field exploration in Fakim village areas in Kiphire Wildlife Division, Nagaland, northeast India during the months of April and May 2016 as part of Approved Research

Programme – State Flora of Nagaland, India by the Botanical Survey of India, we have collected a very gigantic *Molineria* species that was growing in moist places on the banks of streams in evergreen forest floors. Observations in the field and careful studies of the voucher specimens have revealed a number of morphological differences from all other known taxa of the genus. Therefore, it is described here as a new species with colour photographs and a comparative table showing the differences between its allied species.

***Molineria fakimense* Odyuo, D.K. Roy & Khamdi, sp. nov.** Figs. 1,2

This new species differs from *M. prainiana* in having densely capitate raceme, to 8 cm long, bract subglobose to oblong, densely brownish tomentose ovary; from *M. crassifolia* in non-tomentose lamina surface abaxially, comparatively longer, to 2.5 cm long pedicel, bract densely hairy along midrib and margins abaxially; from *M. capitulata* in having larger lamina with hairs in dense along veins and on abaxial surface, capitate stigma, longer style (to 1.5 cm) and from them in comparatively gigantic habit (to 2.5 m high), broader lamina (to 26 cm long), longer pseudopetiole (to 130 cm long) and wider scape (to 2 cm long).

Type: INDIA, Nagaland, Kiphire district, Pongro subdivision, Fakim village, 2000 m, 2.5.2016, N. Odyuo & D.K. Roy 135599 (Holotype, ASSAM; Isotype, ASSAM).

Herb, to 2.5 m high, rhizomatous; rhizomes tuberous, thick with creeping, slender stolons. Leaves 5–7, elliptic-oblong, 145–155 × 23–26 cm,



Fig. 1. *Molineria fakimense* Odyuo, D.K. Roy & Khamdi: a. Habit; b. Leaves; c. Basal parts of pseudopetioles with inflorescences; d. Rhizome.



Fig. 2. *Molineria fakimense* Odyuo, D.K. Roy & Khamdi: a. Inflorescences; b. Flower with bract; c. Bract; d. Perianth segments (abaxial view); e. Outer perianth segments (adaxial view); f. Inner perianth segments (adaxial view); g. Stamens; h. Ovary with pedicel; i. Gynoecium.

Table 1. Comparison of morphological characters between *M. prainiana*, *M. capitulata*, *M. crassifolia* and *M. fakimense*

Characters	<i>M. capitulata</i>	<i>M. crassifolia</i>	<i>M. prainiana</i>	<i>M. fakimense</i> , sp. nov.
Pseudopetiole (length)	30–80 cm long	30–40 cm long	35–50 cm long	95–130 cm long
Leaf blade	60–90 × 7.5–20 cm, veins hairy or glabrescent on lower surface	60–100 × 7.5–10 cm, densely white-tomentose on lower surface	60–70 × 5.5–12.5 cm, pilose on lower surface	145–155 × 23–26 cm, densely hairy along veins on lower surface
Scape	Slender, 7.5–23 × 0.5–1 cm, villous	Flattened, 5–20 × 0.5–1 cm, densely tomentose	Flattened, 15–35 × 0.5–1 cm, densely tomentose or woolly	Flattened, 15–26 × 1.5–2 cm, densely brown-tomentose or woolly
Raceme	Dense capitate, 3–7 cm long	Dense capitate, 3–7 cm long	Lax, elongated, 8–15 cm long	Dense capitate, 6–8 cm long
Bract	Ovate-lanceolate to lanceolate, 2.5–5 × 0.5–0.7 cm, hairy abaxially	Ovate-lanceolate, 1.5–3 × 0.5–1 cm, margin and apex often hairy or glabrous	Lanceolate, 2–4 × 0.3–0.7 cm, villous along midrib abaxially, margins ciliate	Lanceolate, 7–8 × 0.8–1 cm, hairy along midrib and margin abaxially
Pedicel	5–7 mm long	c. 2 mm long	5–15 mm long	20–25 mm long
Style	6–7 mm long	6–7 mm long	8–9 mm long	12–15 mm long
Stigma	Subcapitate	Capitate	Capitate	Capitate
Ovary	Subglobose to oblong, 5–7 mm long, densely brownish tomentose	Oblong-ovoid, 5–10 mm, densely brown-tomentose	Clavate-oblong, 4–5 mm long, villous with stellate hairs	Subglobose to oblong, 8–10 mm, densely brownish tomentose

plicate, entire at margins, acuminate at apex, papery, glabrous on upper surface, densely hairy along veins on lower surface; pseudopetioles 95–130 × 1.5–4 cm, densely tomentose. Scapes flattened, 15–26 × 1.5–2 cm, densely brown-tomentose. Racemes densely capitate, 6–8 × 5.5–6.5 cm, many flowered. Flowers bracteate, bisexual, trimerous 2.5 cm across; bract 1, lanceolate, 7–8 × 0.8–1 cm, densely hairy at margins, glabrous on upper surface, densely hairy along midrib on lower surface; pedicels 2–2.5 cm long, brown-tomentose. Perianth segments 6, in two alternative whorls (3+3), free, imbricate, yellow; outer segments elliptic-lanceolate, 1.3–1.5 × 0.5–0.7 cm, obtuse at apex, glabrous above, tomentose beneath; inner ones elliptic-ovate, 1.2–1.5 × 0.6–0.8 cm, midvein hairy beneath. Stamens 6; filaments 2–3 mm long; anthers erect, dorsifixed, lanceolate, 7–8 mm long, sagittate at base, ditheous, longitudinally dehiscence. Ovary inferior, 0.8–1.0 × 0.5–0.7 cm,

densely tomentose, 3-loculed; style subulate, 1.2–1.5 cm long; stigma capitate, 0.2–2.5 mm, yellow. Fruits not seen.

Flowering: April–June.

Distribution: India, Nagaland (Kiphire district).

Endemic.

Etymology: The species epithet is named after the type locality, i.e., Fakim village under Pongro subdivision of Kiphire district, Nagaland.

Key to *Molineria fakimense* and its closely related species

1. Racemes in dense capitate, densely flowered, to 8 cm long 2
1. Racemes elongated, laxly flowered, to 15 cm long **M. prainiana**
2. Lamina densely white-tomentose abaxially; margins and apex of bracts often hairy or glabrous **M. crassifolia**

2. Lamina hirsute on veins or surface abaxially; margins and apex of bract densely hairy . . . 3
3. Lamina 60–90 × 7.5–20 cm, sparsely hairy on veins abaxially; pedicels to 7 mm long; stigma subcapitate **M. capitulata**
3. Lamina 145–155 × 23–26 cm, densely hairy along veins and surface abaxially; pedicels to 25 mm long; stigma capitate . . . **M. fakimense**

Acknowledgements

Authors are grateful to Dr. P. Singh, Director, Botanical Survey of India (BSI), Kolkata and to Dr. A.A. Mao, Scientist 'E' and Head of Office, Eastern Regional Centre, BSI, Shillong, for facilities and encouragement. The assistance from Fakim Village Council under Pongro Subdivision of Kiphire District, Nagaland during the field tour is also gratefully acknowledged.

Literature Cited

- Govaerts, R. 2016.** *World checklist of Hypoxidaceae*. Facilitated by the Royal Botanic Gardens, Kew. Published on the internet; [http:// apps.kew.org/wcsp/](http://apps.kew.org/wcsp/) Retrieved 20.3.2016.
- Kocyan, A., Snijman, D.A., Forest, F., Devey, D.S., Freudenstein, J.V., Wiland-Szymańska, J., Chase, M.W. & P.J. Rudall 2011.** Molecular phylogenetics of Hypoxidaceae – Evidence from plastid DNA data and inferences on morphology and biogeography. *Molec. Phylogen. Evol.* **60**: 122–136.
- Prajapati, H.A. 2003.** Direct *in vitro* regeneration of *Curculigo orchioides* Gaertn., an endangered anticarcinogenic herb. *Curr. Sci.* **84**: 747–749.
- Sánchez-Ken, J.G. 2010.** *Hypoxis colliculata* (Hypoxidaceae), a new species from Mexico and a key to the American species with black seeds. *Acta Bot. Mex.* **92**: 1–9.
- Snijman, D.A. & Kocyan, A. 2013.** The genus *Pauridia* (Hypoxidaceae) amplified to include *Hypoxis* sect. *Ianthe*, *Saniella* and *Spiloxene*, with revised nomenclature and typification. *Phytotaxa* **116**: 19–33.
- Talukdar, A.D., Verma, D., Roy, D.K. & M.D. Choudhury 2015.** A new variety of *Molineria prainiana* (Hypoxidaceae) from northeast India. *J. Jap. Bot.* **90**: 61–65.
- Venukumar, M.R. & M.S. Latha 2002.** Antioxidant activity of *Curculigo orchioides* in carbon tetrachloride induced hepatopathy in rats. *Indian J. Clin. Biochem.* **17**: 80–87.

Received: 31.5.2016

Revised and Accepted: 14.11.2016