

Flemingia nana Roxb.: sal associated medicinal plant of Odisha state, India

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ABSTRACT

Flemingia nana Roxb. is one of the unexplored sal associated medicinal plant, distinct from all other *Flemingia* species in having a dwarf suffruticose habit, broadly obovate leaves, petiole longer than leaflets, reported to be used in ulcers and swellings. There is a less documentation available on its various usefulness. Keeping this in mind, an attempt has been made to present its botany, ecology, and associated plants to bring attention towards its conservation in natural habitat. The photographs are provided for the easy identification in the field.

Keywords: *Flemingia*, unexplored plant, ecology, conservation

INTRODUCTION

Flemingia is a genus of plants in the legume family Fabaceae. The generic name *Flemingia* Roxb. ex W.T. Aiton was validly published in Hortus Kewensis that listed six species (Ren and Gilbert 2010). Presently, the genus is comprising of about 30–35 species in the world (Lekhak et al. 2011) and 17 species and 1 variety in India (Gavade et al. 2016). *Flemingia* is native to South and South-East Asia, from India and Sri Lanka, to southern China and Indonesia and is widely distributed in subtropics of Taiwan, Cambodia, Laos, Myanmar, Thailand, Vietnam, Indonesia, Malaysia etc. *Flemingia* can tolerate

unsuitable conditions and can show growth after cutting and develops well in soils that are acidic, poorly drained and with low fertility (Phesatcha et al. 2021). Members of *Flemingia* are shrubs, or herbs or subshrubs; evergreen, or deciduous and perennial. They are generally about 0.2–1.5 m high. The stem is prostrate but weak. Leaves are small to medium-sized; not fasciculate, but alternate. The stem and leaves are pubescent, with dense hairs. Leaf blades are flat dorsoventrally. Flowers are aggregated in ‘inflorescences’; not crowded at the stem bases; in racemes, or in heads, or in panicles. Fruits are aerial, about 6–15 mm long; non-fleshy and hairy (Ren and Gilbert 2010). Among all *Flemingia*, *Flemingia nana* is one of the most unexplored plants and distinct from all other *Flemingia* species in having a dwarf suffruticose habit, broadly obovate leaves, petiole longer than leaflets. Leaves of the species fall down in post fruiting.

DESCRIPTION

Flemingin nana Roxb. FL. Ind. 3: 339. 1832; Prain in Journ. As. Soc. Beng 66: 441. 1876: Cooke Fl. Pres. Bombay 1: 391. 1903. *F. congesta* Roxb. ex-Ait. f. var *mana* (Roxb.) Baker in Hook. f. Fl. Brit. India, 2: 228. 1876.

A small shrub, up to 30 cm tall, underground stem and branchlets woody, round, glabrous, sub-herbaceous. Stipules 1.3 cm, linear, lanceolate. acute, striate, caducous, stipels 0. Leaves 3-foliolate, gland dotted, terminal leaflet 7-15 x 4-10 cm, rhomboid or elliptic, obovate, apex obtuse-acute. margin entire, glabrous above, pubescent on the nerves beneath, lateral leaf- lets 5-12 x 3.5-9 cm, base oblique, apex obtuse-acute,

margin entire. glabrous above, pubescent beneath, 3-nerved from base, petioles winged, tomentose, to 20 cm. Bracts caducous 3.5 mm. Racemes congested, axillary. to 12 cm, flowers 4 mm across, peduncle to 6 mm, pedicel to 5 mm; calyx tube 2 mm, lobes to 3.5 mm. triangular, acute, glandular pubescent; corolla pink, standard orbicular, 4 x 4 mm, wings 2 x 1 mm, keels hooded, 4 x 1.5 mm; stamens diadelphous (9+1), staminal sheath 4 x 2 mm, filaments 2 mm, alternately long and short; ovary pubescent. 1 mm. style curved 6 mm. Pod turgid, 1 x 0.5 cm, oblong, covered with viscid reddish glands, seeds 2, 2.5 mm, brown, round, glabrous, shining- Rare, in moist deciduous forests of Nallamalais, in black and damp soils and almost shady places (Haines 1922; Saxena and Brahmam 1995; Figure 1; Plate 1-2). Fl. and Fr: December to March.

ECOLOGY & DISTRIBUTION

Flemingia nana occurs in deciduous and mixed forests in shaded places at the margin of the forest. It is also found in Sal forests and in bamboo forests. It grows in open areas, roadsides, and along dried water streams, in black and damp soils at an altitude of ca. 100–500 m (Murthy et al. 1996; Gavade et al. 2020). It is native to Hainan, India, Myanmar, Thailand, and West Himalaya. In India it is found in Central and Eastern Himalayas, Odisha, Chhattisgarh, Bihar, Madhya Pradesh, Maharashtra, Uttar Pradesh, Uttarakhand etc.

ASSOCIATE PLANTS

It grows in association with *Shorea robusta*, *Asparagus racemosus*, *Casearia tomentosa*, *Celastrus paniculatus*, *Curculigo orchiodes*, *Desmodium gangeticum*, *Dioscorea*

pubera, *Diospyros melanoxylon*, *Croton roxburghii*, *Hemidesmus indicus*, *Flemingia macrophylla*, *Combretum roxburghii* etc (Present Study).



Figure 1: Habit and habitat of *Flemingia nana*

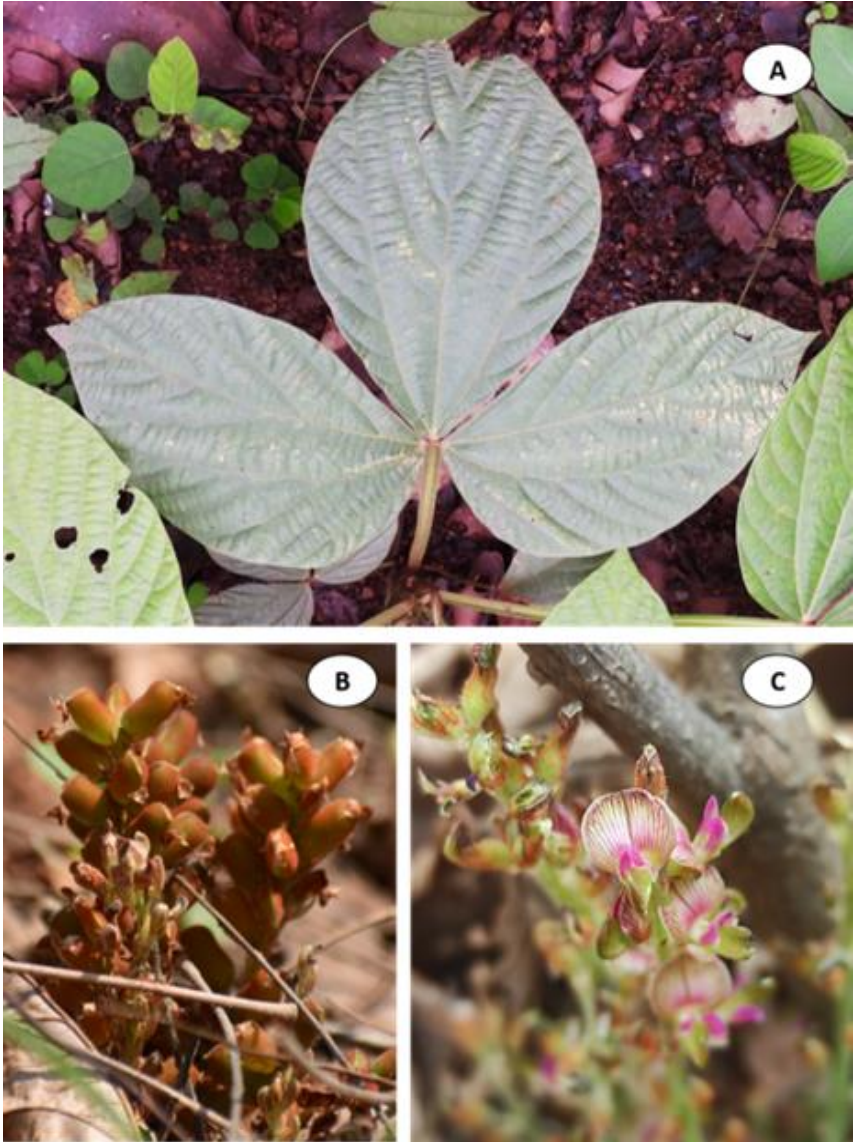


Plate 1: Vegetative parts of *Flemingia nana*; A) Leaf, B) Fruits, C) Flowers



Plate 2: Flowers and fruits in *Flemingia nana*

MEDICINAL VALUES

About fifteen species of *Flemingia* are occur in India. These are *Flemingia strobilifera*, *F. chappar*, *F. vestita*, *F. macrophylla* and *F. grahamiana*. The roots of *F. strobilifera* are used in treating epilepsy. The dried pods of *F. macrophylla* and *F. grahamiana* yield warrus by gentle shaking and rubbing to denude them of their outer hairy covering. The tubers of *F. vestita* have been used as vermifuge and anthelmintic (Gahlot et al. 2011). But there is a very less or no documentation available on the medicinal values of *Flemingia nana*. Medicinal values of roots of *Flemingia nana* are reported to be used in ulcers and swellings. This unexplored plant opens a new research field for the researchers. The evaluation of phytochemical components of the plant is needed in the future as it may contain various novel bioactive compounds.

PHARMACOLOGICAL VALUES OF FLEMINGIA

The genus *Flemingia* is rich in bioactive compounds and shows diverse pharmacological activities. *F. strobilifera* contains bioactive compounds like glycine, leucine, aspartic acid, and proline as free amino acids and glycine, norvaline, leucine, serine, proline, alanine, valine, and methionine etc (Madan et al. 2013). *F. vestita* contains Isoflavonoids such as formononetin, genistein, pseudobaptigenin and daidzein (Muliar et al. 2022). *F. chappar* contains fatty acids, steroids, flavonoids, tannins, and carbohydrate (Ghalot et al. 2011). The genus *Flemingia* possess pharmacological activities like anti-inflammatory, analgesic, anti-diabetic, anti-oxidant, anti-ulcer, antibacterial, wound healing, antipyretic, antibacterial,

antifungal, antileishmanial, immunomodulatory, Cytotoxicity activity, Hepatoprotective activity, Neuroprotective activity etc (Ghalot et al. 2011; Madan et al. 2013; Muliari et al. 2022).

CONCLUSION

The available literature shows the less exploration on the therapeutic usefulness for these plants. So far, very less or no documentation available on medicinal values of this plant. This unexplored plant must be characterized for their beneficiary effects and studied at pre-clinical and clinical trial levels. However, with the huge availability of millions of plant species on the earth there is always a possibility for the exploration of plants with tremendous beneficial effects. In the present review, one such unpopular plant has been discussed, which is backed by ethnomedical lead along with pharmacological and therapeutic information and still there are hundreds of unexplored medicinal plants that need much detailed survey. The isolation, identification of active principles and pharmacological studies of the active phytoconstituents of the discussed plant may be considered and studied elaborately in order to be employed in the treatment of various diseases

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