

INTRASPECIFIC VARIATIONS IN FLORAL MORPHOLOGY OF *DENDROBIUM APHYLLUM* (ROXB.) C.E.C.FISCH. FROM FOOT-HILLS OF EASTERN HIMALAYAS, WEST BENGAL, INDIA

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Abstract

Dendrobium aphyllum (Roxb.) C.E.C.Fisch was observed to exhibit intraspecific colour variation in its natural populations of West Bengal. Variations were observed in floral parts such as sepals, petals, and lip. The normal floral colour was pinkish white with pale yellow lip. The plant that showed variations was observed with pale purplish off-white flowers having pale lemon-green lip. The present communication reports these variations, in detail.

Introduction

THE GENUS *Dendrobium* Sw. comprises about more than 1,600 species in the world (POWO, 2023) and 137 species have been reported to occur in India (Misra, 2019). *D. aphyllum* is distributed up to 1500 m amsl in India (Singh *et al.*, 2019); its mature stem (pseudobulb) becomes leaf- less in spring, followed by flowering.

Material and Methods

While working on epiphytic orchids in Terai region (foot-hills of Himalayas) of West Bengal, the author came across an interesting specimen of an epiphytic orchid. After critical examination and comparison with other authenticated specimens and literature (Chowlu, 2022; Gogoi, 2017; King and Pantling, 1898; Misra, 2019; Pradhan, 1979; Rao, 2009; Singh *et al.*, 2019), the unknown specimen (specimen B) was identified as a colour variant of *Dendrobium aphyllum* (specimen A). Herbarium specimens were prepared by a standard method (Jain and Rao, 1977).

Species Description

Dendrobium aphyllum (Roxb.) C.E.C.Fisch

Plant epiphytic herb. *Stem* 27-92 cm long, cylindrical, pendent, and light green. *Leaves* 4-8 cm long and 0.7-2.6 cm in diameter, ovate-lanceolate, acute, alternate, and light green. *Roots* thin and branched. *Inflorescence* racemose, *rachis* very short and thin (0.2 cm long), *floral bracts* very short, ovate, apex acute, 1-2 flowered. *Flower* 3.1-4.2 cm across, dorsal sepal, and sepals pale pinkish white, *lip* 3-lobed, pale yellow with purple veins basally, base with a short claw, front edge hairy. *Pollinia* 4, oblong, yellow.

Flowering and Fruiting

February-April

Distribution

India (Assam, Manipur, Meghalaya, Nagaland, Tripura, Arunachal Pradesh, Sikkim, West Bengal, Odisha), Bhutan, Nepal, Bangladesh, Burma, Thailand, Cambodia, Vietnam, China, and Malaysia.

Biological Status

Common (in West Bengal)

Notes

The detailed variations between two specimens of *Dendrobium aphyllum* (Fig. 1 Specimen A; Fig. 2, Specimen B) in plant characters *i.e.*, plant height, stem height, leaf size, inflorescence, and flower characters are presented in Table 1. Significant variations were noted in flower characters in both the specimens (Figs. 1-2). The flower colour of Specimen A was pale pinkish white with pale yellow lip, whereas in specimen B, the colour of flowers was pale purplish off-white with pale lemon-green lip. All floral parts *i.e.*, dorsal sepal, lateral sepals, lateral petals, and lip of variant species were more or less same in size of both specimen A and specimen B. Such intraspecific variations in *D. aphyllum* have also been reported earlier from populations of Western Himalayas (Vij *et al.*, 2013). Morphological variations have also been reported earlier in some other orchid species, in Assam by Gogoi *et al.* (2012), in Darjeeling by Roy (2021, 2022), and in Himachal Pradesh by Verma *et al.* (2013).

Locally, it was widely available mostly on tree trunks and branches of phorophytes. The local availability



Fig. 1. a-g. Intraspecific variations in *Dendrobium aphyllum* (Specimen A): a, Inflorescence; b, Flower with dorsal and lateral sepals, lateral petals and lip; c, Side view of flower; d, Lip; e, Column and ovary; f, Anther cap; g, Pollinia.

status of this species is common and the status of variant species is rare. Its natural populations have drastically reduced as compared to earlier times when

these plants were abundantly available in Terai and Dooars (foot hills of Himalayas) region of West Bengal. The commercialization of forest resource solely for making state revenue seems to be one of the major causes of habitat destruction, in the region. Hence, the species under investigation i.e. *D. aphyllum* needs urgent conservation measures. Attempts have been made earlier to propagate some of the orchid species *in vitro* using various explants (seeds, stem, root etc.) (Anuprabha and Pathak, 2020; Bhowmik and Rahman, 2022; Kaur and Pathak, 2015; Kaur *et al.*, 2017; Kumari and Pathak, 2021; Mutum *et al.*, 2022; Pathak *et al.*, 2016, 2017, 2022, 2023; Sembi *et al.*, 2020; Sunita *et al.*, 2021; Thakur and Pathak,

2020; Tripura *et al.*, 2022; Vasundhra *et al.*, 2021) so as to develop effective protocols for their *in vitro* propagation and conservation.

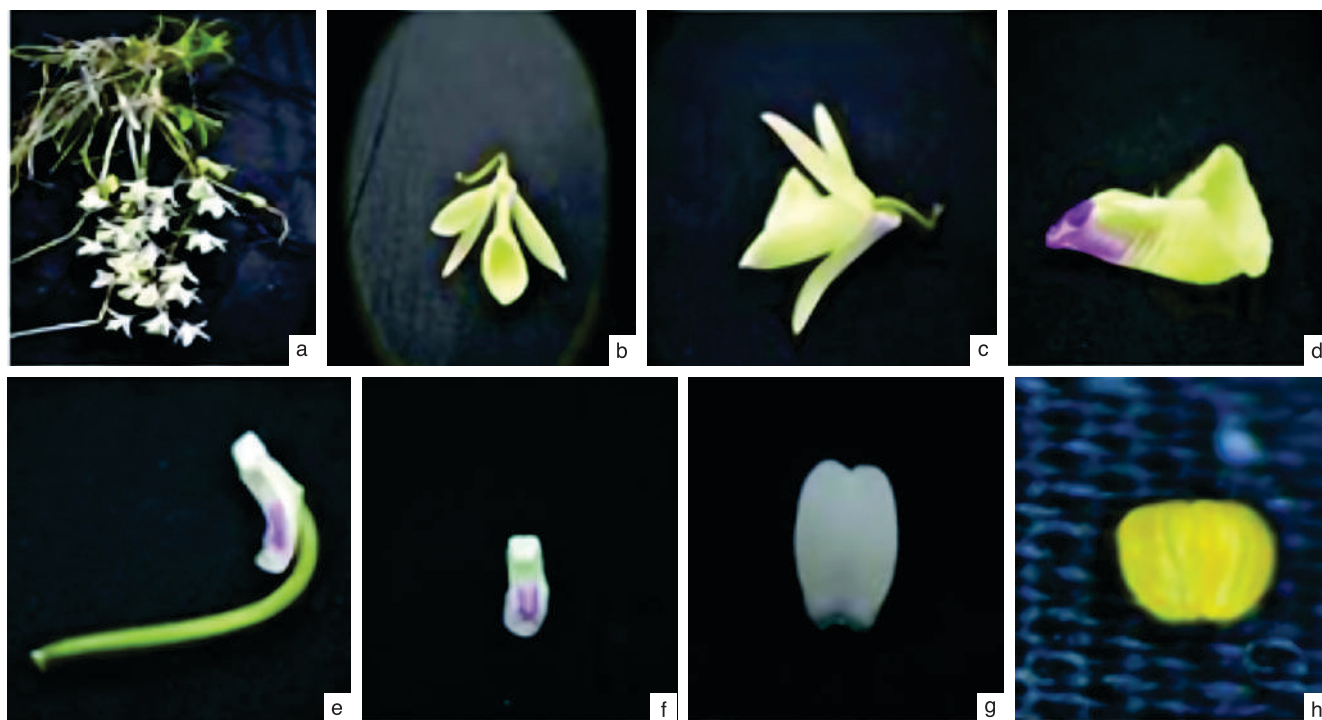


Fig. 2. a-h. Intraspecific variations in *Dendrobium aphyllum* (Specimen B): a, Inflorescence; b, Flower with dorsal and lateral sepals, lateral petals and lip; c, Side view of flower; d, Lip; e, Column and ovary; f, Column; g, Anther cap; h, Pollinia.

Table 1. Comparative morphology of normal (A) and variant (B) species of *Dendrobium aphyllum*.

Characters	Specimen A	Specimen B
Plant height	30-95 cm	38-60 cm
Stem height	27-92 cm, light green	35-57 cm, deep green
Leaf size	4-8 × 0.7-2.6 cm, light green	7.5-8.2 × 2.3-2.5 cm, green
Inflorescence	Racemose, very short, thin, 2 flowers	Racemose, very short, thin, 2 flowers
Flower	Pale pinkish white with pale yellow lip colour, 3.1-4.2 cm across	Pale purplish off-white with pale lemon-green lip colour, 4-4.2 cm across
Dorsal sepal	2.4-2.8 × 0.8-0.9 cm, pale pinkish white	2-2.2 × 0.6-0.7 cm, pale purplish off-white
Lateral sepals	2.5-2.9 × 0.4-0.6 cm, pale pinkish white	2.8-3.0 × 0.5-0.6 cm, pale purplish off-white
Lateral petals	2.2-2.5 × 0.8-0.9 cm, pale pinkish white	2.6-2.7 × 0.9-1 cm, pale purplish off-white
Lip/ Labellum	Lip simple, 2.8-3.0 × 2.6-2.8 cm when expanded, lip pale yellow with pinkish veins, surface pubescent with hairy front margin, basal half is trumpet shape, arched over column, basal part shortly clawed	Lip simple, 2.9-3.0 × 2.5-2.7 cm, lip pale lemon-green with pinkish veins, surface pubescent with hairy front margin, basal half is trumpet shape, arched over column, basal part shortly clawed
Column	1.0-1.2 × 0.2 cm (with column foot), light pink with white colour. Cap 0.2 × 0.2 cm, white in colour	1.0-1.2 × 0.2 cm (with column foot), pale lemon green with purple stripe. Cap 0.2 × 0.2 cm, white in colour
Pollinia	4, oblong, yellow, 0.1 cm across	4, oblong, yellow, 0.1 cm across
Ovary	3-3.3 × 0.2-0.3 cm, pinkish green in colour	2.5-2.8 × 0.2-0.3 cm, purplish lemon green

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