

# TROPIDIA CURCULIGOIDES LINDL.- A RARE TERRESTRIAL ORCHID FROM THE LOWER GANGETIC PLAINS OF WEST BENGAL, INDIA

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## Abstract

*Tropidia curculigoides* Lindl. a rare terrestrial orchid is reported for the first time from Chilkiarh forest of Jhargram district, West Bengal, India. The present communication provides its taxonomic description, morphology of pollinium under SEM, habitat ecology, and distribution.

## Introduction

THE FAMILY Orchidaceae in India is represented by 1,256 species belonging to 155 genera; of these 388 species are endemic to India (Singh *et al.*, 2019). The genus *Tropidia* Lindl. comprising 32 species (Govaerts *et al.*, 2015; Lucksom, 2007) is distributed from tropical and subtropical Asia to SouthWest Pacific, Florida to tropical America; it is represented by 7 species in India. The taxon *Tropidia curculigoides* was previously reported from the Tista River Valley (Mitra *et al.*, 2020). During intensive floristic exploration in the Chilkiarh forest of the Jhargram district of West Bengal, one species of *Tropidia* was collected. The critical and comparative study of the live specimens based on perusal of literature (Hooker, 1890; Karthigeyan *et al.*, 2014; Kumar and Kumar, 2005; Kumar *et al.*, 2013; Lakra *et al.*, 2000; Misra, 2012; Mitra *et al.*, 2020) indicates that the taxon has not so far been recorded from the lower part of West Bengal.

## Material and Methods

### Collection of Plant Material

Plants were collected from Chilkiarh forest, Jhargram district, West Bengal, India [coordinates range between 22°27'10"N to 86°52'54"E and its elevation is 78 m amsl; Fig. 1], during August, 2019 to July, 2021 and preserved in the herbarium of the Department of Botany and Forestry, Vidyasagar University, Midnapore, West Bengal, India.

### Light and Scanning Electron Microscopy

The floral parts were dissected and measured. The photographs of both the vegetative and reproductive

parts of the flower were taken under the camera Nikon (Model-D3500) and Leica stereo zoom microscope (Model-S8APO). For the SEM study, the pollinia were mounted on stubs, gold-coated for 2 min and viewed using a Marlin scanning electron microscope (ZEISS FESEM SUPRA-40).

## Results and Discussion

### Taxonomic Description

***Tropidia curculigoides*** Lindl., Gen. Sp. Orchid Pl. 497. 1840. (Figs. 2-4).

Perennial, terrestrial herb *ca.* 30 cm tall, *rhizome* short, rigid; *roots* 2-3 mm in diameter, fleshy. *Stem* erect, unbranched or infrequently with branches, proximal portion naked, distal portion enclosed in leaf sheaths, internodes 2-4 cm long. *Leaves* are spirally around the stem, many, alternate, laxly spaced, papery, amplexicaul type of leaf base, leaf apex long acuminate-caudate. *Inflorescence* corymb-like, axillary or terminal, with near about 10 crowded flowers, 1.0-2.5 cm. *Floral bracts* imbricate, lanceolate, 5-8 mm, with longitudinal veins. *Flowers* are resupinate, greenish-white; pedicel and ovary 4-7 mm. *Sepals* lanceolate or oblong-lanceolate, 5-8 × 1.3-1.6 mm, apex long acuminate; lateral *sepals* are attached at base, apex recurved. *Petals* oblong-lance-shaped, 5-9 × 1.5 mm. *Lip* ovate-lance-shaped, cymbiform, 6-8 mm, concave-saccate at the base, with 2 typical lamellae on disk, apexes acuminate. *Column* 4 mm; *anther* ovoid, 1.5 mm; *rostellum* erect, obovate, 2 mm, apex 2-lobed-apiculate. *Pollinia* is a short, bifid, yellowish colour. *Fruit* sub-oblong, up to 1 cm × 5 mm.

*SEM Study of the Pollinia*

Pollinia 1-1.5 mm long, consisting of 3 parts *i.e.*, viscidium, pollinium sac, and stipe. Viscidium elliptic, dorsally convex, margins present, concave, smooth. Stipe narrow, 0.2-0.4  $\mu$ m long. Pollinarium cluster, cell surface of pollinia bottle shaped; every cell consists of bottle massula, columella separates or sometimes fused with each other; ventral surface pollinia flattened; midrib present, columella fused with each other and forms bridge like structure (Fig. 4).

*Flowering and Fruiting*

May to October.

*Habitat Ecology*

Rare, grows on lateritic soil in moist and shady places in the undergrowth of trees like *Stychnosnux-vomica L.*, *Adina cordifolia* (Rox.) Hook.f as well as lianas like *Bauhinia vahlii* Wight. & Arn., *Ichnocarpus frutescens* R. Br. along with some herbs like *Typhonium trilobatum* (L.) Schoot., *Tacca leontopetaloides* (L.) Kuntze, *Amorphophallus bulbifer* (Roxb.) Blume., *Dioscorea bulbifera* Linn. and *Oplismenus burmannii* (Retz.) P Beauv.

*Distribution*

World: Australia, Borneo, Cambodia, China, Jawa, Laos, Lesser Sunda Island, Malaysia, Myanmar, New

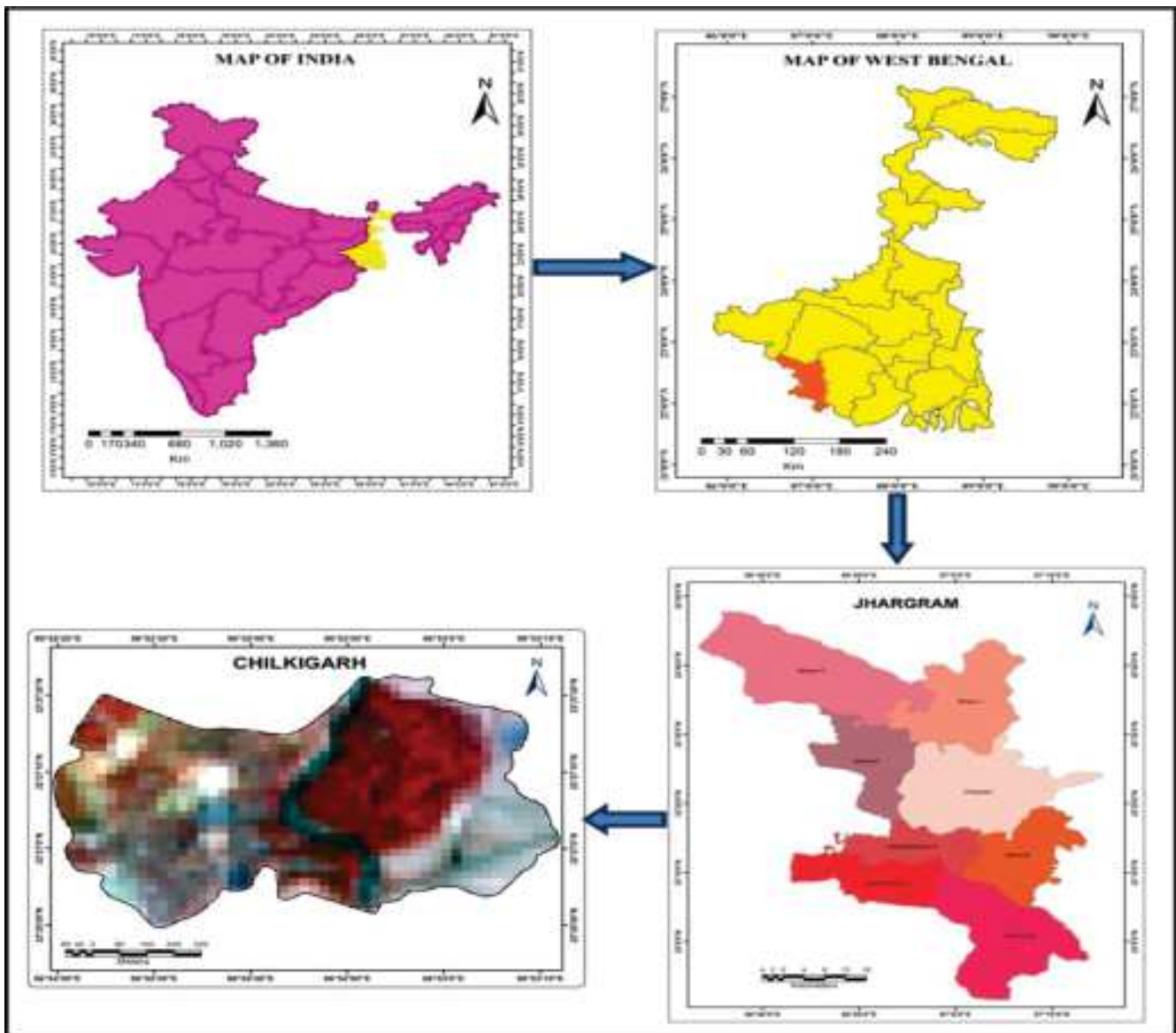


Fig.1. Map showing the study area at Chilkgarh forest with Jhargram district, West Bengal, India.

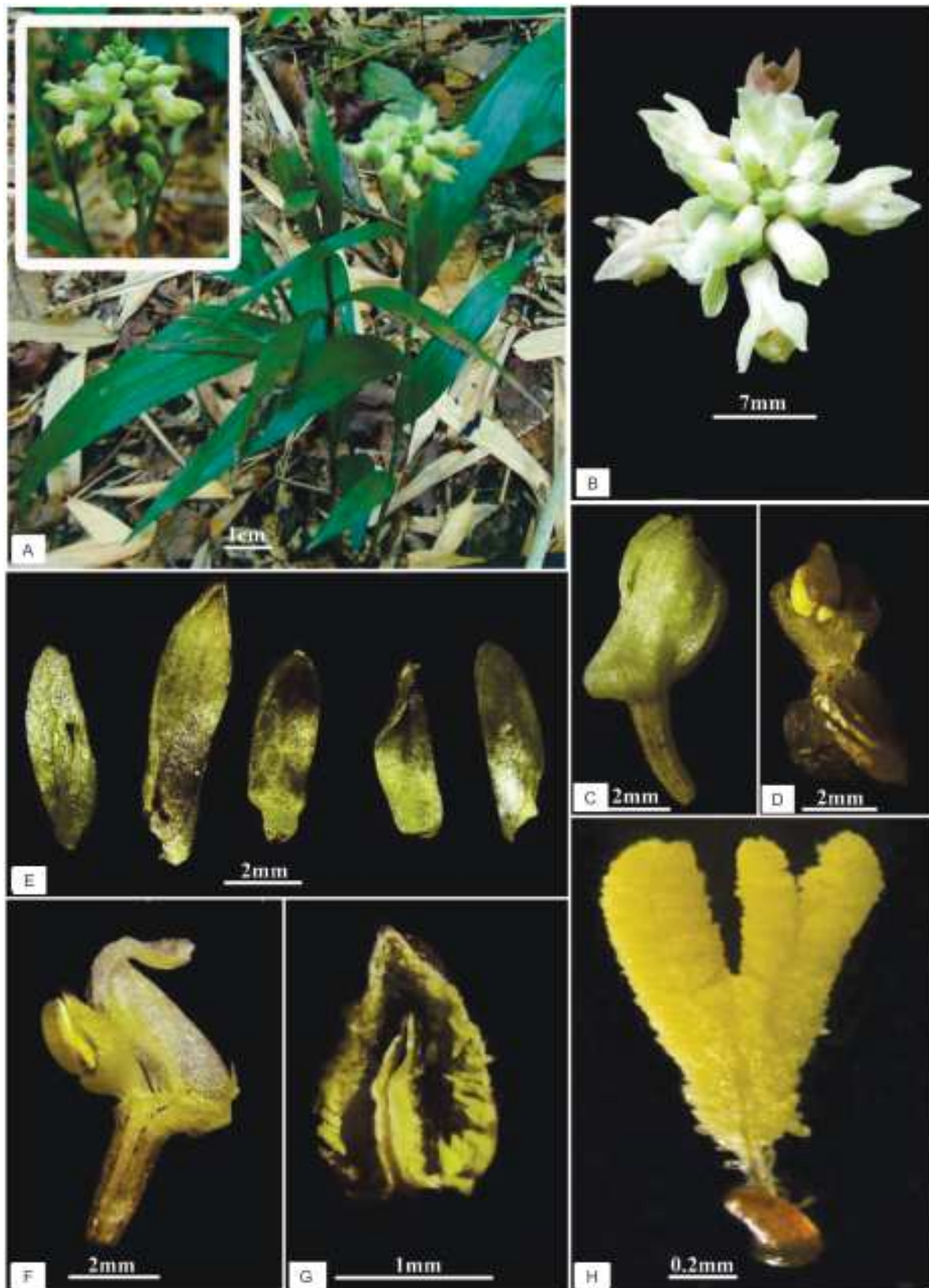


Fig. 2. A-H. Light microscopy of *Tropidia curculigoides* Lindl.: A, Habitat; B, An inflorescence (front view); C, A single Flower; D, Column; E, Petals; F, Dissected flower showing attachment of pollinia; G, Anther cap (inside view); H, Pollinarium [Photographs A-H from Saadi and Sinha 00942 (Vidyasagar University Herbarium)].

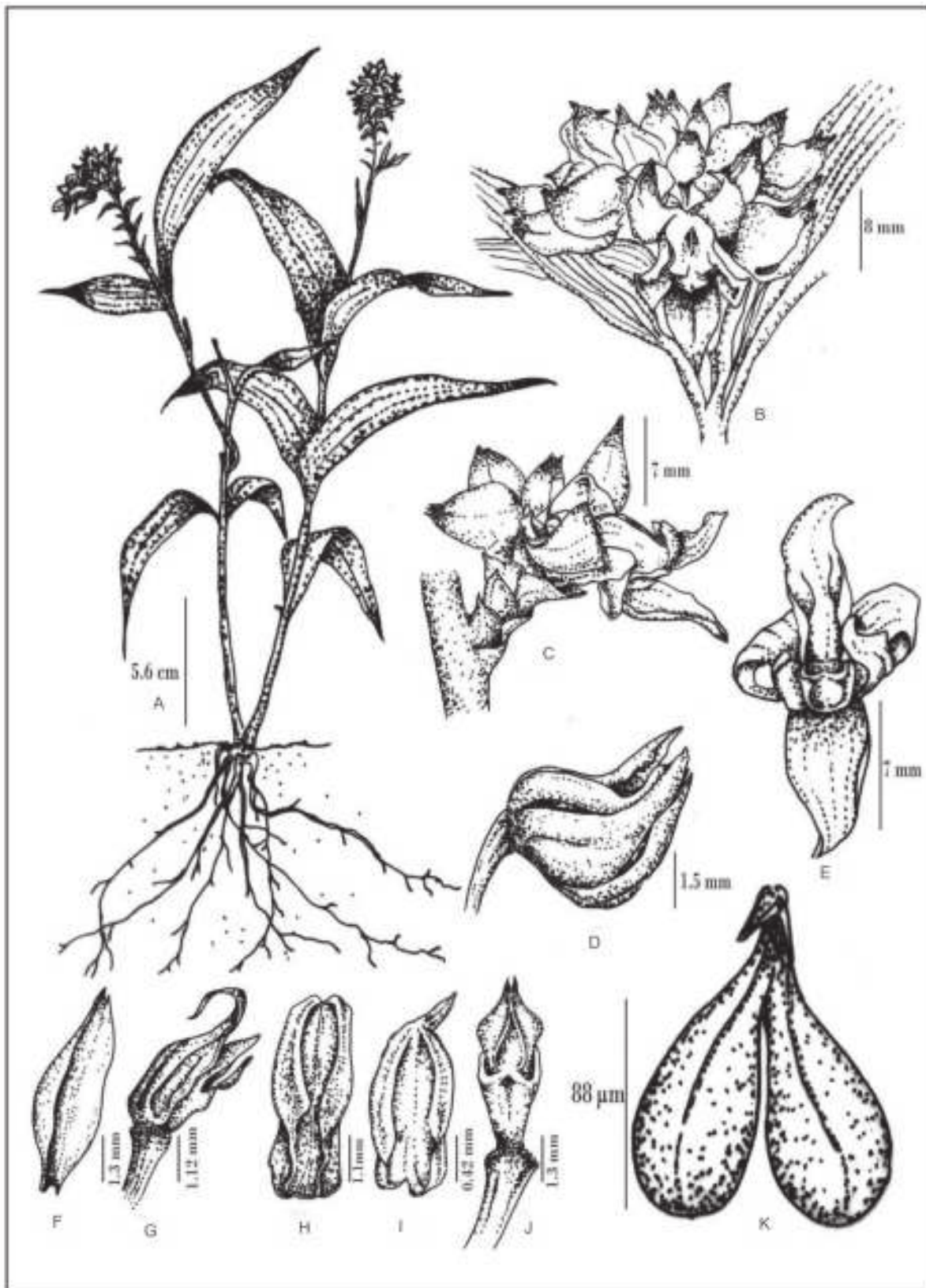


Fig. 3. A-K. *Tropidia curculigoides* Lindl.: A, Flowering plant; B-C, Inflorescence; D-E, A single flower; F, Petal; G, Dissected flower showing attachment of pollinia; H, Rostellum; I, Anther cap; J, Column; K, Pollinia [Photographs A-K from Saadi and Sinha 00942 (Vidyasagar University Herbarium)].

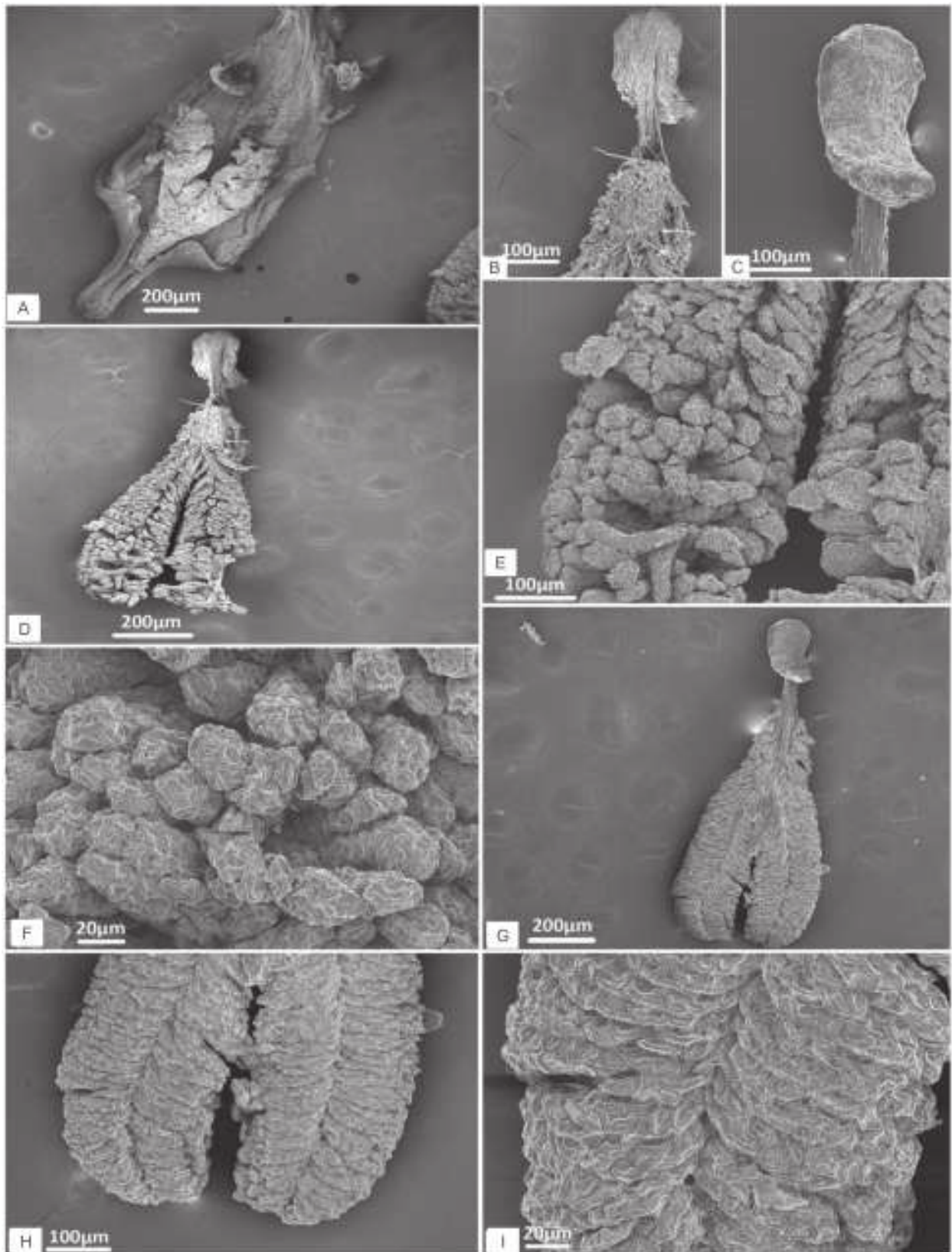


Fig. 4. A-I. Ultrastructure of pollinia in *Tropidia curculigoides* Lindl.: A, Pollinia; B, Dorsal surface of viscidium; C, Ventral view of viscidium; D, Dorsal view of pollinia; E-F, Enlarged dorsal view of pollinia; G, Ventral view of pollinia; H-I, Enlarged ventral view of pollinia [Photographs A-I from Saadi *et al.*, 00952 (Vidyasagar University Herbarium)].

Caledonia, Papua New Guinea, Sulawesi, Sumatera, Taiwan, Thailand, Vietnam.

India: Arunachal Pradesh, Assam, Meghalaya, Sikkim, and West Bengal (Tista River Valley, Chilkigarh forest-present study).

#### *Specimen Examined*

India: West Bengal, Jhargram district, Chilkigarh forest, 78 amsl, 22°27'10"N, 86°52'54"E, 20.08.2019; Saadi and Sinha 00942 (Vidyasagar University Herbarium); Same locality, 19.07.2021; Saadi *et al.*, 00952 (Vidyasagar University Herbarium).

The orchids of the Jhargram district need to be conserved with appropriate measures so as to protect them and prevent their extinction. The present communication refers to the extended distribution of *Tropidia curculigoides* Lindl. from the lower Gangetic plain of West Bengal, India.

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