



Diversity of climber plants and their ethnomedicinal importance of Murshidabad District in West Bengal, India

Chandan Kumar Jana, Dipanwita Pal

Department of Botany, Kandi Raj College, Murshidabad, West Bengal, India

DOI: <https://doi.org/10.66856/ijbs.2026.11.4.11235>

Abstract

Climber plants are an important component of tropical and subtropical ecosystem. In West Bengal various ecological zones are found with rich diversity of climbers. The present study shows the diversity, ecological roles, distribution, and ethnomedicinal importance of climber plants in Murshidabad district of West Bengal. Literature reveals that climbers contribute significantly to forest structure, biodiversity maintenance and traditional healthcare systems. Approximately 35 ethnomedicinal climber species have been documented from different study sites of Murshidabad district. Out of 35 species, maximum 8 species in different families were used for cold and cough. Nowadays very common disease diabetes are found in most of village peoples. In this study 4 species were found for the treatment of Anxiety and Diabetes. Climber plants are extensively used in traditional medicine in West Bengal. Despite their ecological and economic importance, climbers remain underexplored and face threats from habitat destruction and urbanization. The paper highlights the need for systematic documentation and conservation strategies.

Keywords: Diversity, conservation, ethnomedicinal, anxiety and diabetes

Introduction

Climber plants constitute an important group of vascular plants that grow by attaching themselves to other plants or supporting structures for physical support. Climbers have weak stems and depend on external structures to reach sunlight and expand their growth. They are widely distributed in tropical and subtropical ecosystems and play a significant role in maintaining forest biodiversity and ecological balance. Apart from their ecological importance, climber plants are also valuable from medicinal, nutritional, and economic perspectives (Mety *et al.*, 2023; Singh *et al.*, 2024). In addition to their ecological roles, climbers possess considerable economic and ethnomedicinal importance, particularly in traditional healthcare systems across the Indian subcontinent (Jain, 1991)^[11]. Despite their importance, many climber species in India are facing threats due to habitat loss, over-harvesting, and climate change. The loss of these species not only affects ecosystem balance but also jeopardizes the livelihoods of communities that depend on them for medicinal purposes.

In recent years, scientific interest in climber plants has increased due to their potential applications in pharmacology, conservation biology and sustainable resource management. Therefore, the study of climber plants is essential to understand their diversity, ecological roles, and medicinal significance. The present study aims to explore the characteristics, distribution, and potential uses of climber plant species. In West Bengal, several ethnobotanical surveys have been conducted among tribal and rural communities of Purulia, Bankura, Birbhum, and Jalpaiguri districts, reporting medicinal climbers such as *Cardiospermum halicacabum*, *Pergularia daemia*, and *Abrus precatorius* (Mukherjee & Namhata, 2013^[15]; Das *et al.*, 2015).

However, Murshidabad district remains comparatively under explored with respect to climber diversity. Recent authors have stressed the importance of district-level

floristic and ethnobotanical documentation to address regional data gaps and support biodiversity conservation planning (Banerjee *et al.*, 2017)^[2]. The present study seeks to bridge this gap by providing a focused and comprehensive account of climbers in Murshidabad district. The different parts of climber plants such as leaves, roots, stems and fruits are utilized for the treatment of various diseases.

Materials and Methods

1. Study area

Murshidabad district is situated in the central part of West Bengal, occupies a unique biogeographical position between the lower Gangetic plains and the Rarh region. The district is characterized by extensive river systems, floodplains, wetlands, agricultural landscapes, fallow lands, and village groves, all of which provide suitable habitats for the luxuriant growth of climbers. The Gangetic alluvial plains of West Bengal are especially favourable for climber diversity owing to fertile soils, high moisture availability, and prolonged growing seasons (Prain, 1903)^[20]. Murshidabad district is located in the central part of West Bengal, India, between 23°43' - 24°52' N latitude and 87°49' - 88°44' E longitude. The district is traversed by the Bhagirathi- Hoogly river system and experiences a tropical monsoon climate with an average annual rainfall of approximately 1,400-1,600mm.

2. Field Survey and Collection

The study of climber plants at different sites of Murshidabad district was carried out from January 2023 to January 2025 in all seasons of the year. Specimens were collected following Standard Floristic methods (Jain & Rao, 1977)^[12]. Field notes included habitat type, climbing nature, flowering and fruiting period. Collected specimens were identified using standard floras such as Flora of British India (Hooker, 1872^[10]-1897), Bengal Plants (Prain, 1903)^[20], and

Flora of West Bengal (Hara et.al.,1972) [8]. Few climber plants were preserved as herbarium in the department of Botany, Kandi Raj College.

Results and Discussion

The study of climbing plants and their ethno-botanical importance were recorded from the different sites of Murshidabad district.

Scientific name – *Abrus precatorius* L.

Family- Fabaceae

Vernacular name – Kunch

Climbing nature – Twining its stems

Flowering time- August - November

Reproduction – By seeds

Medicinal uses –

1. Leaves are used as a nerve tonic, applied topically for skin diseases, wounds, decoctions are consumed orally for coughs, colds, fever and mouth ulcers.
2. Roots are applied for abdominal pain and rheumatic pain.

Scientific name – *Argyrea nervosa* (Burm.f.) Bojer

Family- Convolvulaceae

Vernacular name – Ghentu lata

Climbing nature – Woody climber

Flowering time- August - October

Reproduction – By seeds

Medicinal uses –

1. Fresh leaves are widely used for skin ailments.
2. The plant is regarded as a 'Medhya' (intellect enhancer). Root extracts are used to treat neurological disorders.
3. A common local practice in West Bengal is the consumption of medicated milk prepared with the roots to enhance sexual vigor, increase muscle bulk and treat emaciation.

Scientific name – *Asparagus racemosus* Willd.

Family- Asparagaceae

Vernacular name – Satamul

Climbing nature – Twiner

Flowering time- September - December

Reproduction – By seeds & tuberous root suckers.

Medicinal uses –

1. It is known as powerful female tonic. It is used to treat infertility, regulate menstrual cycles and increase breast milk secretion in nursing mothers.

Scientific name – *Bauhinia vahlii* Wight & Arn.

Family- Fabaceae

Vernacular name – Ban-sirish

Climbing nature – Large woody climber

Flowering time- April - June

Reproduction – By seeds

Medicinal uses –

1. Leaf extracts help regulate blood sugar level.
2. Leaves are used to treat wounds and ulcers.
3. It is commonly used for its anti-inflammatory properties like arthritis.

Scientific name – *Calamus viminalis* Willd.

Family- Arecaceae

Vernacular name – Boro Bet

Climbing nature – Scrambler

Flowering time- September - May

Reproduction – By seeds & rhizomatous offsets.

Medicinal uses –

1. Leaf extracts are traditionally taken orally to alleviate labour pain.

Scientific name – *Cardiospermum halicacabum* L.

Family- Sapindaceae

Vernacular name – Lataphatkari

Climbing nature – Axillary Tendril

Flowering time- June–October

Reproduction – by seeds

Medicinal uses –

1. It is valued for its potential to treat swollen joints, fever and respiratory complaints.

Scientific name – *Centella asiatica* (L.) Urb.

Family- Apiaceae

Vernacular name – Thankuni

Climbing nature – Creeping herb

Flowering time- July- October

Reproduction – By seeds and vegetative runners

Medicinal uses –

1. It is widely used topically to promote wound healing, reduce scarring and treat minor burns, psoriasis, eczema and scleroderma.
2. Its active compounds stimulate collagen synthesis which enhance skin cell proliferation.
3. It is used as a brain tonic which may enhance memory.
4. It possesses anti anxiety and antidepressant properties which help to manage stress.
5. It has anti-inflammatory and antioxidant activities which help in rheumatoid arthritis and gastric ulcers.

Scientific name – *Cissampelos pareira* L.

Family- Menispermaceae

Vernacular name – Lata pipul, Akanadi

Climbing nature – Herbaceous twiner

Flowering time- July–October

Reproduction –By seeds

Medicinal uses –

1. It is used to treat diarrhea and indigestion.
2. It is used to manage menstrual problems, hormonal imbalance and easing childbirth hence it often called "Midwife's herb".

Scientific name – *Coccinia grandis* (L.)

Family-Cucurbitaceae

Vernacular name – Telakucha

Climbing nature – Axillary tendrils.

Flowering time- July and September or December and April.

Reproduction – By seeds

Medicinal uses –

1. Leaf and root juice is widely used to lower blood sugar levels.
2. Traditionally it is used to treat asthma, bronchitis and constipation.

Scientific name – *Cocculus hirsutus* (L.) Diels

Family- Menispermaceae

Vernacular name –Jaljamni

Climbing nature – Twining shrub

Flowering time- June–October

Reproduction –By seeds.

Medicinal uses –

1. One of its most famous properties is that the juice of fresh leaves when mixed with water causes it to coagulate into a thick cooling jelly which is consumed to treat gonorrhea.
2. Root decoctions are used to treat rheumatoid arthritis.

Scientific name – *Combretum indicum* (L.) DeFilipps

Family- Combretaceae

Vernacular name – Madhumalati

Climbing nature –woody climber

Flowering time- March - August

Reproduction – Through side suckers, stem cuttings or root cuttings.

Medicinal uses –

1. Dried seeds or fruits are used to expel intestinal worms.
2. Crushed leaves are applied topically to treat boils, ulcers and eczema.

Scientific name – *Clematis gouriana* Roxb. ex DC.

Family- Ranunculaceae

Vernacular name – Chagalboti

Climbing nature –woody climber

Flowering time- November - February

Reproduction – Through seeds and stem cuttings.

Medicinal uses –

1. Paste made from roots and stems are applied topically to treat itches and skin allergies.
2. Juice of whole plants is applied to the forehead for headaches and colds.

Scientific name – *Clitoria ternatea* L.

Family- Fabaceae

Vernacular name – Aparajita

Climbing nature – Twining herb.

Flowering time- March and May or June and November

Reproduction –by seeds

Medicinal uses –

1. It is traditionally used to enhance memory, reduce anxiety.
2. It is widely used to treat chronic bronchitis, asthma.

Scientific name – *Dioscorea bulbifera* L.

Family- Dioscoreaceae

Vernacular name – Ban Alu

Climbing nature –Twining climber

Flowering time- September and November

Reproduction –Through aerial bulbils and seeds.

Medicinal uses –

1. Tubers are believed to have anti-diabetic properties.
2. Leaf and tuber pastes are applied topically to treat boils, ulcers eczema and skin infections.

Scientific name – *Dioscorea pentaphylla* L.

Family- Dioscoreaceae

Vernacular name – Kanta Alu

Climbing nature – Twiner

Flowering time- June- December

Reproduction –By axillary bulbils

Medicinal uses –

1. Tuber is used to treat stomach aches and chronic dysentery.

Scientific name – *Entada rheedii* Spreng.

Family- Fabaceae

Vernacular name – Gila or Gila-lata

Climbing nature –Woody climber

Flowering time- December and April

Reproduction –via massive woody pods

Medicinal uses –

1. Leaf, bark and root pastes are applied to treat wounds, burns and ulcers.
2. Bark and root powder are traditional remedies for diarrhoea and dysentery.

Scientific name – *Gloriosa superba* L.

Family- Liliaceae

Vernacular name – Ulatchandal

Climbing nature – Tendril climber

Flowering time- July - August

Reproduction – By V-shaped underground tubers & seeds.

Medicinal uses –

1. Tuber paste applied to the palms and soles of feet to induce labor.

Scientific name – *Hiptage benghalensis* (L.) Kurz

Family-Malpighiaceae

Vernacular name – Madhabilata

Climbing nature –Large woody climber

Flowering time- January - May

Reproduction – By seed

Medicinal uses –

1. It is traditionally believed to improve digestion and ease flatulence and biliousness.
2. Fresh leaf paste are applied topically to treat skin diseases like scabies, boils.

Scientific name – *Ichnocarpus frutescens* (L.) W.T.Aiton

Family-Apocynaceae

Vernacular name – Shyamalata

Climbing nature –Woody climber

Flowering time- August- December

Reproduction –By seeds and vegetative cuttings

Medicinal uses –

1. Decoction from stem and leaves is used to treat chronic fevers and coughs.
2. Root powder administered with milk is traditionally used as a blood purifier.

Scientific name – *Ipomoea purpurea* (L.) Roth

Family- Convolvulaceae

Vernacular name – Nil kalmi

Climbing nature –Annual twiner

Flowering time- April to October

Reproduction – By seeds

Medicinal uses –

1. Leaves and seeds are used as a laxative to treat constipation.
2. Seeds are used as anthelmintic and diuretic.

Scientific name – *Ipomoea Aquatica* Forssk.

Family- Convolvulaceae

Vernacular name – Kalmi shak

Climbing nature –Creeping

Flowering time- April to October

Reproduction – By seeds, stem cuttings

Medicinal uses –

1. Decoction of leaves is used to increase breast milk flow in lactating mothers.

Scientific name – *Lygodium flexuosum* (L.) Sw.

Family- Lygodiaceae

Vernacular name – Bhutraj

Climbing nature – Climbing fern (using its fronds)

Flowering time- Does not produce flowers. Spore production typically from August to February.

Reproduction – By spores and creeping rhizomes.

Medicinal uses –

1. Rhizomes and roots are used to treat jaundice.
2. Rachis tied around the forehead to alleviate headaches.

Scientific name – *Marsilea quadrifolia* L.

Family- Marsileaceae

Vernacular name – Susni shak

Climbing nature – creeping herbaceous fern

Flowering time- It produces sporocarps during November to February

Reproduction – By creeping rhizome and spores

Medicinal uses –

1. The leaves are fried with ghee and consumed at night to treat insomnia and anxiety.

Scientific name – *Merremia gangetica* (L.) Cufod

Family- Convolvulaceae

Vernacular name – Bhuikamri

Climbing nature – Prostrate, creeping herb

Flowering time- September to March

Reproduction – By creeping stem

Medicinal uses –

1. Decoctions of leaves is used as a diuretic to increase urine output.
2. Leaf juice is used as ear drops to relieve abscesses.

Scientific name – *Mikania micrantha* Kunth

Family- Asteraceae

Vernacular name – Asam lata

Climbing nature – Herbaceous twinner by its stems

Flowering time- October to February

Reproduction – by seeds and stem fragments

Medicinal uses –

1. Fresh leaf paste is used topically to stop bleeding from minor cuts.

Scientific name – *Operculina turpethum* (L.) Silva Manso

Family- Convolvulaceae

Vernacular name – Tevudi

Climbing nature – Herbaceous twinner

Flowering time- March- December

Reproduction – Through seeds, nodal cuttings

Medicinal uses –

1. Act as a blood purifier and is applied topically or taken internally for skin diseases.

Scientific name – *Oxalis corniculata* L.

Family- Oxalidaceae

Vernacular name – Amrul

Climbing nature – Creeping herb

Flowering time- November - March

Reproduction – By creeping stems, seeds

Medicinal uses –

1. The leaf juice is mixed with curd to treat diarrhea and dysentery.

Scientific name – *Passiflora suberosa* L.

Family- Passifloraceae

Vernacular name – Begambahar

Climbing nature – Axillary tendrils

Flowering time- July- February

Reproduction – By seeds, stem cuttings

Medicinal uses –

1. Used to help manage fasting blood glucose.
2. Used as a mild sedative to treat anxiety and insomnia.

Scientific name – *Pergularia daemia* (Forssk.) Chiov

Family- Apocynaceae

Vernacular name – Chagalbati

Climbing nature – Herbaceous twinner

Flowering time- July - January

Reproduction – By seeds

Medicinal uses –

1. Used to treat menstrual irregularities.
2. Leaf paste is applied externally to reduce rheumatic swellings.

Scientific name – *Pueraria tuberosa* (Willd.) DC

Family- Fabaceae

Vernacular name – Bhuinkumra

Climbing nature – woody climber

Flowering time- March and April

Reproduction – By seeds

Medicinal uses –

1. Powdered tubers are mixed with cow's milk to enhance breast milk production in nursing mothers.
2. Used as a general tonic to promote weight gain in children and adults.

Scientific name – *Scindapsus officinalis* (Roxb.) Schott.

Family- Arecaceae

Vernacular name – Gajapipal

Climbing nature – Root climber

Flowering time- August - November

Reproduction – By stem cuttings.

Medicinal uses –

1. Dried fruit powder mixed with honey is a potent remedy for asthma, Bronchitis and chronic coughs.

Scientific name – *Smilax Prolifera* Roxb.

Family- Smilacaceae

Vernacular name – Kumarika

Climbing nature – Tendril Climber

Flowering time- May- November

Reproduction – By tuberous underground rhizome & seeds.

Medicinal uses –

1. A decoction made from roots is used to treat dysuria and other urinary tract infection.

Scientific name – *Smilax zeylanica* L

Family- Smilacaceae

Vernacular name – Kumarika

Climbing nature – Stipular tendrils

Flowering time- April and September

Reproduction – by seeds

Medicinal uses –

1. Root decoctions act as a blood purifier.
2. Root powder mixed with honey is consumed to relieve rheumatism.

Scientific name – *Tinospora cordifolia* (Willd.) Hook.f. & Thomson

Family- Menispermaceae

Vernacular name – Gulancha

Climbing nature –Twining shrub

Flowering time- March to June

Reproduction –By seeds , stem cuttings

Medicinal uses –Stem decoction often called ‘Kadha’ is a standard rural remedy for chronic fever.

Scientific name – *Tylophora indica* (Burm.f.) Merr.

Family-Apocynaceae

Vernacular name – Antamul

Climbing nature – Stem twiner

Flowering time- July to October

Reproduction –By seeds and nodal cuttings

Medicinal uses – Used to treat bronchial asthma.

Table 1: Categories of climber and their numbers

Categories of climber	Number of Species
Twiner	13
climber	10
tendrill	06
Creepers	05
Scrambler	01
Total	35

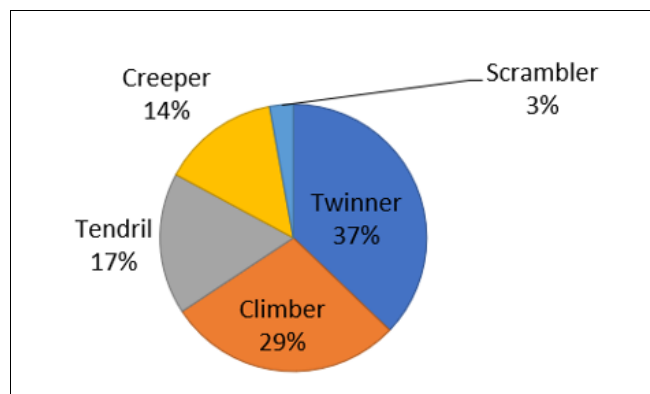
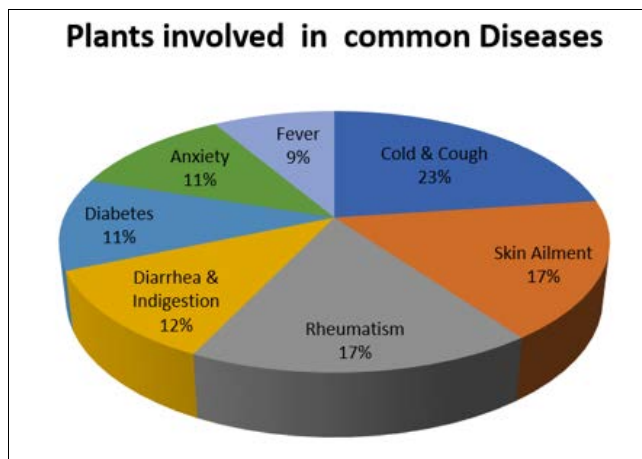


Fig 1: Showed climbing nature in different study sites

Table 2: Showed total number of genus in different families from study sites.

Sl. No.	Name of family	Number of genus
1.	Fabaceae	05
2.	Convolvulaceae	05
3.	Menispermaceae	03
4.	Apocynaceae	03
5.	Arecaceae	02
6.	Dioscoreaceae	02
7.	Smilacaceae	02
8.	Sapindaceae	01
9.	Apiaceae	01
10.	Cucurbitaceae	01
11.	Combretaceae	01
12.	Ranunculaceae	01
13.	Asparagaceae	01
14.	Malpighiaceae	01
15.	Oxalidaceae	01
16.	Asteraceae	01
17.	Passifloraceae	01
18.	Liliaceae	01
19.	Marsileaceae	01
20.	Lygodiaceae	01



Conclusion

Present study highlighted the significance of threatened climber species in India, emphasizing their medicinal, ecological, and conservation value. The documentation of 35 species provides a foundation for informed conservation strategies and sustainable use. Climber plants represent a vital yet underappreciated component of West Bengal's biodiversity. Their ecological roles, coupled with significant ethnomedicinal value, highlight their importance in both natural ecosystems and human livelihoods. However, increasing anthropogenic pressures threaten their diversity and distribution. Comprehensive research, conservation planning and sustainable utilization are essential to preserve this unique plant group for future generations.

Acknowledgement

The authors of Botany department are grateful to Dr. Soma Datta, Principal of Kandi Raj College for her continuous encouragement. We are also thankful to all our 6th semester Botany [Honours] students for collecting information from different study places.

References

1. Bandyopadhyay S, Mukherjee SK. Climbing Plants of West Bengal: A Field Guide. Kolkata: Botanical Survey of India, 2018.
2. Banerjee A, Mukherjee A, Ghosh S. Floristic diversity and conservation status of medicinal plants in West Bengal. Indian Journal of Traditional Knowledge, 2017;16(3):456–464.
3. Chatterjee S, Roy P. Land-use change and biodiversity loss in the Gangetic plains of eastern India. Environmental Monitoring and Assessment, 2022;194:512.
4. Dash SS, Padhy S, Mohanty RC. Diversity and distribution of climbers in tropical deciduous forests of India. Tropical Ecology, 2017;58(3):567–578.
5. Gentry AH. The distribution and evolution of climbing plants. Plant Systematics and Evolution, 1991;177:3–49.
6. Ghosh S. Diversity and ethnobotany of climbing plants in Birbhum and adjacent districts, West Bengal, India. Indian Journal of Ethnobotany, 2020;22(2):134–145.
7. Guha Bakshi DN. Flora of Murshidabad District, West Bengal, India. Scientific Publishers, Jodhpur, India, 1984, pp.1-440.
8. Hara H, Chater AO, Williams LHJ. An enumeration of the flowering plants of Nepal (Vol.1). British Museum (Natural History), 1972.

9. Hossain MK, Rahman MM. A taxonomic review of the family *Convolvulaceae* in Eastern India. *Bangladesh Journal of Plant Taxonomy*,2019;26(1):17–29. <https://doi.org/10.3329/bjpt.v26i1.42021>
10. Hooker JD. The flora of British India (Vols.1-7). London: L. Reeve & Co., 1872-1897.
11. Jain SK. Dictionary of Indian folk medicine and ethnobotany. New Delhi: Deep Publications, 1991.
12. Jain SK, Rao RR. A handbook of field and herbarium methods. New Delhi: Deep Publications, 1977.
13. Kumar V, Singh P, Sharma A. Pharmacological validation of medicinal climbers used in Indian traditional medicine. *Journal of Ethnopharmacology*,2021;268:113602.
14. Lakshminarasimhan P, Dash SS, Singh P, Chowdhery HJ (Editors). Flora of West Bengal. Volume 4. Botanical Survey of India, Kolkata, 2019, pp. 1-734.
15. Mukherjee A, Namhata D. Ethnomedicinal plant diversity in West Bengal. *Journal of Economic and Taxonomic Botany*,2013;37(2):389–401.
16. Mukherjee A, Banerjee D, Das S. Floristic diversity of vascular plants in southern West Bengal. *Indian Forester*,2019;145(4):345–356.
17. Parthasarathy N, Muthuramkumar S, Reddy MS. Patterns of liana diversity in tropical forests. *Forest Ecology and Management*,2004;190:15–31.
18. Paul TK, Lakshminarasimhan P, Chowdhery HJ, Dash SS, Singh P (Editors). Flora of West Bengal. Volume 2. Botanical Survey of India, Kolkata, 2015, pp. 1-439.
19. Paul S, Dutta S. Traditional medicinal plant knowledge in eastern India: Trends and conservation challenges. *Biodiversity and Conservation*,2023;32:1845–1862.
20. Prain D. Bengal Plants. Volumes 1 & 2. Calcutta, 1903, pp. 1-1319.
21. Ranjan V, Lakshminarasimhan P, Dash SS, Chowdhery HJ (Editors). Flora of West Bengal. Volume 3. Botanical Survey of India, Kolkata, 2016, pp. 1-439.
22. Saha D, Pal R. Medicinal uses of climbing plants in rural Murshidabad: Traditional knowledge of the Rajbanshi community. *Journal of Ethnopharmacology*,2021;267:113500. <https://doi.org/10.1016/j.jep.2020.113500>
23. Saha D, Mondal R, Ghosh S. Indigenous medicinal plant use in lower Gangetic plains of West Bengal. *Ethnobotany Research and Applications*,2022;23:1–15.
24. Samanta A, Dutta S. Ethnobotanical studies in West Bengal. *Indian Journal of Traditional Knowledge*,2012;11(1):122–130.
25. Schnitzer SA. Testing ecological theory with lianas. *New Phytologist*,2018;220(2):366–380.
26. Sharma BD, Balakrishnan NP. Flora of West Bengal (Vol. 1–3). Howrah: Botanical Survey of India, 1984.
27. Singh NP, Khanna KK, Mudgal V. Flora of Murshidabad District, West Bengal. Kolkata: Botanical Survey of India, 2001.
28. Yuan C, Lin L, Chen Y. Increasing liana abundance and its ecological consequences in tropical forests. *Global Ecology and Biogeography*,2021;30(5):1032–1044.