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Phytogeographical Affinity Of Barunei Hill, Odisha, India

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Abstract
The phytogeography of Barunei Hill provides information on plant species that show strong affinity with nearby states and at the global level. Barunei Hill is a part of the Eastern Ghats discontinuous range of mountains. A total of 149 plant species were enumerated, having 135 genera and 54 families at Barunei Hill. The recorded 149 plant species are compared with the phytogeographical affinity of five states and six nearby countries and continents. The study found that Barunei Hill shares the strongest affinity with Bangladesh (87.24%), Sri Lanka (80.53%), Myanmar (73.15%), Nepal (62.41%), Africa (46.30%), and Australia (38.92%). Barunei Hill also has affinity with Tamil Nadu (47.65%), Andhra Pradesh/Telangana (46.30%), Jharkhand/Bihar (22.14%), West Bengal (20.80%), and Madhya Pradesh/Chhattisgarh (16.77%). A total of 24.83% of the recorded plant species of Barunei hill are present across Countries, and 4.02% are absent in those landmasses. The Phytogeographical study is needed for conservation as it shows how plant species are distributed and related across regions. This Phytogeographical study is needed for conservation as it shows how plant species are distributed and related across regions. In the present study, the plant species of Barunei Hill showed significant affinity with Bangladesh.
Key Words: *- Barunei Hill, Eastern Ghat, Phytogeography affinity, Conservation.*

INTRODUCTION

Phytogeographical analysis are useful for understanding patterns of plant species distribution, tracing floristic affinities, habitat protection, ecosystem responses to climate change, identifying biodiversity hotspots, and supporting conservation planning. This helps sustainable use of terrestrial ecosystems, which include Sustainable Development Goals (SDGs) 13 and 15. Tropical forests are the most significant centre of biodiversity globally. Forest ecosystems perform all the ecological roles that are vital for sustaining life on Earth, but anthropogenic pressures are weakening their stability and resilience (Behera and Bhadra, 2024). The primary forests of Asia, particularly those in the Western and Eastern Ghats of peninsular India, are undergoing rapid decline due to deforestation, forest fire, excessive extraction of medicinal plants, urbanization, habitat destruction, the spread of non-native species, and ecologically inferior species, following extensive alterations in land-use patterns (Sahu et al., 2010; Pattanayak et al., 2025). According to The Sustainable Development Goals (SDG) Extended Report for 2024, the proportion of the world's total land area covered by forest has declined from 31.9% in 2000 (4.2 billion hectares) to 31.5% in 2010, further decreasing to 31.2% (4.1 billion hectares) by 2020 (https://www.unsdsn.org/resources/the-sustainable-development-report-2024).

India's exceptional floristic diversity is attributed to complex topographical conditions, pronounced climatic gradients, and diverse ecological niches that support extensive taxonomic diversity (Bhadra et al., 2020). The documented 49,441 species of India out of approximately 465,688 globally identified plants, encompassing prokaryotes, eukaryotic microorganisms, fungi, lichens, and vascular plants, thereby constituting 11.4% of the world's known species diversity with a remarkably high endemism rate of 28% (Stephen et al., 2015; BSI, 2019). India encompasses four biodiversity hot spot regions: The Himalayan region, The Western Ghats, The Indo-Burma, and The Sundaland. The physiographical framework of the subcontinent comprises six distinct geological and ecological zones: The Himalayan region, The Indo-Gangetic plains, The Peninsular shield (Deccan Plateau), The Desert area, The coastal plains, and The insular territories (Singh, 2020).

Phytogeographically, India's vegetation is classified into distinct botanical provinces based on floral composition (Hooker, 1890) and climate (Prain, 1903). India boasts a rich biodiversity, characterized by a diverse floral distribution shaped by various climatic regimes, topographical variations, and edaphic factors (Bhadra and Pattanayak, 2018). From the northern Himalayas to the southern Nilgiris Hills and Western Ghats, an extensive spectrum of floral diversity and habitat variation can be observed. Gamble

(1892) observed that Odisha represents a transition zone between the Himalayan and South Indian elements of the Indian flora. Odisha in eastern India is rich in biodiversity, representing a unique assemblage of both northern and southern Indian flora (Sahu et al., 2018). Phytogeographical affinity study by Suresh and Sukumar (1999) resulted Nilgiri Biosphere Reserve in the highest affinity with Indomalayan (27.7%) and Indian regions (30.3%). Another study on Vegetation Diversity at Tons Valley in Garhwal Himalaya was done by Rana et al., (2001). A Phyto diversity study was conducted by Noor and Satapathy (2020) on Dhauligiri Hill, Odisha. In the Similipal Biosphere Reserve, also part of the Eastern Ghats, Phytogeographical affinities of Tree Species was studied by Sahu et al., (2018).

The Eastern Ghats, a discontinuous range of mountains spanning Odisha, Andhra Pradesh, Telangana, Tamil Nadu, and Karnataka, have a humid tropical monsoon climate with moderate to high temperatures and heavy rainfall (Behera et al., 2024). The Eastern Ghats range forms a discontinuous chain of mountains stretching from north of the Mahanadi River in Odisha to the Vaigai River in Tamil Nadu at the southern end of the peninsula. This discontinuous chain goes through five districts of Odisha, i.e., Kalahandi, Rayagada, Ganjam, Khordha, and Angul. The Eastern Ghats region is rich in plant diversity, with forests ranging from evergreen, semi-evergreen, moist deciduous, dry deciduous, to dry evergreen forest types (Swain, 2020).

Bio geographers consider the Barunei Hill of Khordha district to be a part of the Eastern Ghat of India. Barunei, a historical place carrying traditional significance, is home to the Barunei Temple situated at the northern foothill. The temple holds immense cultural and traditional significance and also functions as important sacred grove, contributing to the conservation of local biodiversity. Barunei Hill is rich in its rich floral diversity, and some rare, endemic, and threatened species. But a detailed investigation on the phytogeographical affinity of different plant taxa of Barunei forest is still to be achieved. The current research topic enlightens on the phytogeographical affinity of plant species explored in Barunei forest ecosystem.

MATERIALS AND METHODS

Study area

Barunei Hill, a majestic natural landmark in the Khordha district of Odisha, India, lies between 20°10'05.77" to 20°09'12.99" North Latitudes and 85°37'10.99" to 85°39'38.21" East Longitudes. Stretching approximately 5Km in length and 1.5Km in width, this hill is having elevation range of 80 - 300 meters above mean sea level (amsl), offering a panoramic view of the surrounding landscape. Located about 32 kilometers southwest of Bhubaneswar city centre, Barunei Hill is renowned for its breathtaking beauty, rich ecological and historical significance. The region experiences an annual rainfall of 1200-1400mm, contributing to its lush greenery and diverse flora. A comprehensive vegetation survey has been conducted on the hill encompassing sixteen field explorations (Fig. 1).

Seasonal field surveys were carried out to document the floristic composition of the study area. Plant specimens with photographs were collected, identified using regional floras, and deposited in the Herbarium of the Department of Botany, Centurion University of Technology and Management, Bhubaneswar, Odisha. The recorded species were classified into phytogeographical groups based on their global distribution, considering countries such as Australia, Sri Lanka, Myanmar, Nepal, Bangladesh, and Africa.

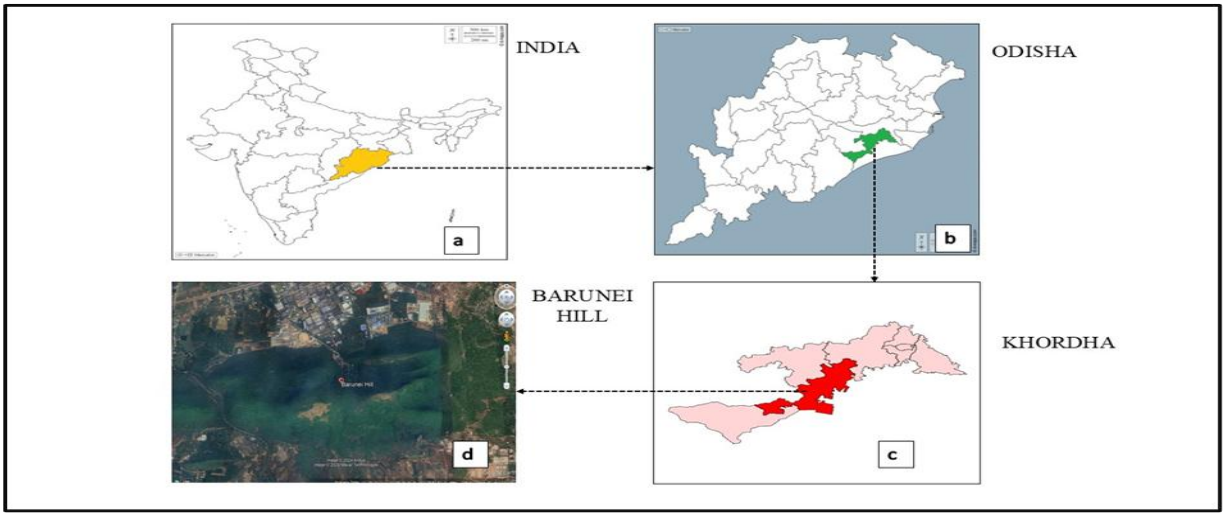

Figure 1. Study area. (a) India, (b) Odisha, (c) Khordha district, (d) Barunei hill

RESULT AND DISCUSSION

A total of 149 plant species were enumerated, having 135 genera and 54 families at Barunei Hill. The top ten dominant families include the highest number of species of Fabaceae (15) followed by Acanthaceae (11), Malvaceae (11), Euphorbiaceae (9), Rubiaceae (8), Apocynaceae (6), Rutaceae (6), Poaceae (5), Lamiaceae (4), and Moraceae (4). The affinity of plants in Barunei Hill with nearby countries is notably high, showing species count similarity with Bangladesh (87.24%), Sri Lanka (80.53%), Myanmar (73.15%), Nepal (62.41%), Africa (46.30%), and Australia (38.92%) (Table 2 and Fig. 2). The highest similarity is with Bangladesh (87.24%), which can be attributed to the strong phytogeographical affinity between India and Bangladesh arising from their shared tropical monsoon climate, comparable temperature and rainfall patterns, and common geographical features. In Barunei Hill, the Fabaceae family comprises the highest 15 species, all of which are present in Bangladesh. Abrus precatorius, Brachypterum scandens, Cajanus scarabaeoides, Cassia fistula, Crotalaria alata, Delonix regia, Gliricidia sepium, Mimosa pudica, Mucuna pruriens, Pleurolobus gangeticus, Pseudarthria viscida, Senegalia pennata, Senna tora, Tephrosia purpurea, and Vigna vexillata are those 15 Fabaceae species. Africa and Australia show relatively low affinities, with 69 and 58 common plant species with Barunei hills, respectively. A total of 24.83% of the recorded plant species of Barunei hill are present across Countries and Continents i.e. Australia, Sri Lanka, Myanmar, Nepal, Bangladesh, and Africa, whereas 4.02% are absent in those landmasses. Abrus precatorius, Abutilon indicum, Cajanus scarabaeoides, Canscora diffusa, Cardiospermum halicacabum, Cassia fistula, Cissampelos pareira, Combretum roxburghii, Corchorus aestuans, Crotalaria alata, Cyanotis axillaris, Cyperus cuspidatus, Cyperus rotundus, Dactyloctenium aegyptium, Datura metel, Delonix regia, Dioscorea bulbifera, Glinus oppositifolius, Gliricidia sepium, Ipomea obscura, Melochia corchorifolia, Mimosa pudica, Mirabilis jalapa, Mitracarpus hirtus, Mucuna pruriens, Ocimum americanum, Oldenlandia corymbosa, Oplismenus burmanni, Panicum trichoides, Parthenium hysterophorus, Pleurolobus gangeticus, Senegalia pennata, Senna tora, Solanum americanum, Tephrosia purpurea, Trema orientale, Tridax procumbens, and Urochloa panicoides are the names of the plant species comprising 24.83% of the total, which are present in all the surveyed regions. Barleria cuspidata, Eriocaulon sharmae, Hibiscus hirtus, Pseuderanthemum latifolium, Pteris pellucida, and Pterospermum xylocarpum are the plants absent in these regions (Table 1).

A herb, Eriocaulon sharmae, categorized as Critically Endangered under the IUCN status in World Flora Online, was not recorded in the landmass of countries and continents. According to the Database of Plants of the Indian Subcontinent, an herb, Lepidagathis hamiltoniana, is endemic to India. Psydrax dicoccos is a Vulnerable plant found in Sri Lanka, Myanmar, and Bangladesh.

The phytogeographical affinity of nearby states is obtained with the flora of Madhya Pradesh (Verma et al., 1993), the flora of Odisha (Saxena and Brahman., 1994-1996), the flora of Bihar (Singh et al., 2001), and the flora of Andhra Pradesh (Pullaiah et al., 1997). The analysis of species distribution across different states demonstrated considerable variation. Tamil Nadu exhibited the highest species richness, with 71 species, accounting for 47.65% of the total recorded diversity of Barunei hill. This was closely followed by Andhra Pradesh/Telangana, where 69 species were documented, representing 46.30%. Comparatively lower values were observed in Jharkhand/Bihar, which together supported 33 species (22.14%), and in West Bengal, with 31 species (20.80%). The lowest species richness was recorded in Madhya Pradesh/Chhattisgarh, with only 25 species, contributing 16.77 % of the total (Table 3 and Fig. 3).

In recent decades, human activities and climate change have significantly disrupted the natural ecosystem, causing a loss of biodiversity worldwide. Nearly fifty percent of the world's species are available in tropical regions, which constitute under 7% of the Earth's land area, rendering the impacts of biodiversity loss particularly severe in these areas (Sagar et al., 2003). The Eastern Ghats of India are experiencing anthropogenic stress such as unauthorized timber extraction, soil mining, cattle grazing, fuel wood and non-timber forest product collection, etc (Sahu et al., 2018). It is crucial for conservation and management strategies to understand the distribution and ecological interactions of plant species. Phytogeographical studies are essential for analysing the geographical distribution, migration, and ecological relationships of plant taxa (Lausi and Nimis., 1985). India, considered as one of the world's mega-biodiversity nations, has enormous floristic diversity due to its diverse climatic, edaphic, and physiographical circumstances. In the present study, plant species of Barunei Hill showed a significant affinity with other countries. After Bangladesh, Sri Lanka shows the highest similarity in plant species with the Barunei Hill. Plants in the Barunei Hill occur not only within India but also outside Indian political boundary across the globe,

encompassing neighbouring countries like Myanmar, Nepal as well as other continents like Africa, and Australia.

CONCLUSION

Studying and documenting the plants of an area is important for planning conservation policy and landscape management especially natural forest. Understanding the species origin, migration, and ecological role in an ecosystem is crucial for strengthening the objective of protected areas. This also increases the biogeographical significance of the place. The plant diversity of the Barunei Hill shows that species can grow and adapt both inside and outside the presently studied area of Barunei hills of Khordha district, Odisha. More research will enable detailed biogeographical mapping of the Barunei hill with other parts of Indian subcontinent and other continents in relation to edaphic and climatological factors.

Table 1. List of 149 Plant species of Barunei Hill and their phytogeographical affinity

Sl. No.	Plants Name	Family	Australia	Sri Lanka	Myanmar	Nepal	Bangladesh	Africa
1	Abrus precatorius L.	Fabaceae	+	+	+	+	+	+
2	Abutilon indicum (L.) Sweet	Malvaceae	+	+	+	+	+	+
3	Adiantum caudatum L.	Pteridaceae	-	+	+	+	+	-
4	Aganosma heynei (Spreng.) I.M.Turner	Apocyanaceae	-	+	+	+	+	-
5	Alangium salviifolium (L.f.) Wangerin	Cornaceae	-	+	+	+	+	+
6	Allophylus serratus (Roxb.) Kurz	Sapindaceae	-	+	-	+	+	-
7	Alstonia scholaris (L.) R.Br	Apocyanaceae	+	+	+	+	+	-
8	Alternanthera sessilis (L.) DC.	Amaranthaceae	+	+	+	+	+	+
9	Ampelocissus latifolia (Roxb.) Planch.	Vitaceae	-	-	-	+	+	-
10	Anacardium occidentale L.	Anacardiaceae	-	+	+	-	+	+
11	Andrographis paniculata (Burm.f.) Wall. ex Nees	Acanthaceae	-	+	+	+	+	-
12	Artocarpus heterophyllus Lam.	Moraceae	-	+	+	+	+	-
13	Atalantia monophylla (Roxb.) A. DC.	Rutaceae	-	+	+	-	+	-
14	Azadirachta indica A. Juss.	Meliaceae	-	+	+	+	+	+
15	Bambusa vulgaris Schrad. ex J.C.Wendl	Poaceae	-	+	+	-	-	-
16	Barleria cristata L.	Acanthaceae	-	+	+	+	+	-

17	Barleria cuspidata B.Heyne ex Nees	Acanthaceae	-	-	-	-	-	-
18	Barleria prionitis L.	Acanthaceae	-	+	+	+	+	-
19	Barleria strigosa willd	Acanthaceae	-	+	+	+	+	-
20	Benkara malabarica (Lam) Tir.	Rubiaceae	-	+	-	-	-	-
21	Blepharis maderaspatensis (L.) B Heyne ex Roth	Acanthaceae	-	+	+	+	+	+
22	Bonnaya ciliata (Colsm.) Spreng.	Linderniaceae	+	+	+	+	+	-
23	Borassus flabellifer L.	Arecaceae	-	+	+	-	+	-
24	Brachypterum scandens (Roxb.) Wight & Arn. ex Miq.	Fabaceae	-	+	+	+	+	-
25	Bridelia retusa (L.) A. Juss	Euphorbiaceae	-	+	+	+	+	-
26	Bridelia tomentosa Blume	Euphorbiaceae	+	+	+	+	+	-
27	Cajanus scarabaeoides (L.) Thouars	Fabaceae	+	+	+	+	+	+
28	Calamus guruba Buch.-Ham. ex Mart.	Arecaceae	-	-	-	-	+	-
29	Canscora diffusa (Vahl) R.Br. ex Roem. & Schult.	Gentianaceae	+	+	+	+	+	+
30	Capparis brevispina DC.	Capparaceae	-	+	-	-	-	-
31	Cardiospermum halicacabum Linn.	Sapindaceae	+	+	+	+	+	+
32	Carissa spinarum L.	Apocyanaceae	-	+	+	+	+	+

33	Cascabela thevetia (L.) Lippold	Apocyanaceae	-	-	-	+	+	-
34	Cassia fistula L.	Fabaceae	+	+	+	+	+	+
35	Cassytha filiformis L.	Lauraceae	+	+	+	-	+	+
36	Cipadessa baccifera (Roxb. ex Roth) Miq.	Meliaceae	-	+	+	+	+	-
37	Cissampelos pareira L.	Menispermaceae	+	+	+	+	+	+
38	Citrus aurantiifolia (Christm.) Swingle	Rutaceae	-	+	-	-	+	-
39	Cleistanthus monoicus (Lour.) Müll. Arg.	Phyllanthaceae	+	+	+	-	+	+
40	Cleome rutidosperma DC.	Cleomaceae	-	+	+	+	+	+
41	Clerodendrum infortunatum L.	Lamiaceae	-	+	+	+	+	-
42	Coleus strobilifer (Roxb) A. J. Paton	Lamiaceae	-	+	+	+	-	-
43	Combretum roxburghii spreng	Combretaceae	-	-	+	+	+	-
44	Commelina benghalensis L.	Commelinaceae	+	+	+	+	+	+
45	Corchorus aestuans L.	Malvaceae	+	+	+	+	+	+
46	Crotalaria alata Buch.-Ham. ex D.Don	Fabaceae	+	+	+	+	+	+
47	Croton sparsiflorus Baill.	Euphorbiaceae	-	+	+	+	+	-
48	Cyanotis axillaris (L.) D. Don ex Sweet	Commelinaceae	+	+	+	+	+	+
49	Cyperus cuspidatus Kunth	Cyperaceae	+	+	+	+	+	+

50	Cyperus neochinensis (Tang & F.T.Wang) Bauters	Cyperaceae	-	+	+	+	+	-
51	Cyperus rotundus L.	Cyperaceae	+	+	+	+	+	+
52	Cyperus strigosus L.	Cyperaceae	-	-	-	-	+	-
53	Dactyloctenium aegyptium (L.) wild	Poaceae	+	+	+	+	+	+
54	Datura metel L.	Solanaceae	+	+	+	+	+	+
55	Delonix regia (Bojer ex Hook.) Raf.	Fabaceae	+	+	+	+	+	+
56	Dioscorea bulbifera L.	Dioscoreaceae	+	+	+	+	+	+
57	Diospyros ferrea (willd.) Bakh.	Ebenaceae	-	+	+	-	+	+
58	Diospyros montana Roxb.	Ebenaceae	-	+	+	+	+	-
59	Diospyros melanoxylon Roxb.	Ebenaceae	-	+	-	-	+	-
60	Dracaena roxburghiana (Schult. & Schult.f.) Byng & Christenh.	Asparagaceae	-	-	-	-	+	-
61	Ecbolium viride (Forssk.) Alston	Acanthaceae	-	-	-	-	+	+
62	Elephantopus scaber L.	Asteraceae	-	-	-	-	+	+
63	Eriocaulon sharmae R. Ansari & NP Balakr	Eriocaulaceae	-	-	-	-	-	-
64	Eucalyptus globulus Labill.	Myrtaceae	-	-	-	-	+	-
65	Eugenia roxburghii DC.	Myrtaceae	-	+	+	-	+	-
66	Euphorbia hirta L.	Euphorbiaceae	-	+	+	-	+	-
67	Ficus hispida L.f.	Moraceae	+	+	+	+	+	-
68	Ficus racemosa L.	Moraceae	+	+	+	+	+	-

69	Gardenia latifolia William Aiton.	Rubiaceae	-	-	-	-	+	-
70	Glinus oppositifolius (L.) Aug DC	Molluginaceae	+	+	+	+	+	+
71	Gliricidia sepium (Jacq.) Kunth	Fabaceae	+	+	+	+	+	+
72	Globba racemosa Sm.	Zingiberaceae	-	-	+	+	+	-
73	Glycosmis pentaphylla (Retz.) DC.	Rutaceae	-	+	+	+	+	-
74	Grewia abutilifolia Vent. ex Juss.	Malvaceae	-	+	+	-	+	-
75	Grewia hirsuta Vahl	Malvaceae	-	+	+	+	+	-
76	Gymnosporia emarginata (Willd.) Thwaites	Celastraceae	-	+	-	-	-	-
77	Helicteres isora L.	Malvaceae	-	+	+	+	+	-
78	Hibiscus hirtus L.	Malvaceae	-	-	-	-	-	-
79	Holarrhena pubescens Wall. ex G. Don	Apocynaceae	-	-	+	+	+	+
80	Hugonia mystax L.	Linaceae	-	+	-	-	-	-
81	Ichnocarpus frutescens (L.) W.T.Aiton	Apocyanaceae	+	+	+	+	+	-
82	Ipomea obscura (L.) ker Gawl	Convolvulaceae	+	+	+	+	+	+
83	Jasminum arborescens Roxb.	Olacaceae	-	-	+	+	-	-

84	Jatropha gossypifolia L.	Euphorbiaceae	+	+	-	-	-	+
85	Knoxia sumatrensis (Retz.) DC.	Rubiaceae	+	+	+	+	+	-
86	Lannea coromandelica (Houtt.) Merr.	Anacardiaceae	-	+	+	+	+	-
87	Lepidagathis hamiltoniana Wall.	Acanthaceae	-	-	-	-	+	-
88	Luffa aegyptiaca Mill.	Cucurbitaceae	-	+	-	-	+	+
89	Lygodium flexuosum (Linn.) Sw	Lygodiaceae	+	+	+	+	+	-
90	Mallotus philippensis (Lam.) Müll.Arg.	Euphorbiaceae	+	+	+	+	+	-
91	Mangifera indica L.	Anacardiaceae	-	+	+	+	+	+
92	Melochia corchorifolia L.	Malvaceae	+	+	+	+	+	+
93	Memecylon umbellatum Burm.f.	Melastomataceae	-	-	+	-	-	-
94	Merremia tridentata (L.) Hallier f. subsp.hastata	Convolvulaceae	+	+	+	-	+	+
95	Mickelopteris cordata (Hook. & Grev.) Fraser-Jenk.	Pteridaceae	-	+	+	-	+	-
96	Mimosa pudica L.	Fabaceae	+	+	+	+	+	+
97	Mirabilis jalapa L.	Nyctaginaceae	+	+	+	+	+	+
98	Mitracarpus hirtus (L.) DC.	Rubiaceae	+	+	+	+	+	+
99	Mollugo verticillata L.	Molluginaceae	-	-	-	-	-	+
100	Morinda pubescens sm	Rubiaceae	-	+	-	-	+	-
101	Mucuna pruriens (L.) DC.	Fabaceae	+	+	+	+	+	+
102	Murraya koenigii (L.) Spreng.	Rutaceae	-	+	-	+	+	-
103	Naringi crenulata (Roxb.) Nicolson	Rutaceae	-	+	-	-	-	-
104	Nicoteba betonica (L.) Lindau	Acanthaceae	-	+	-	-	+	+
105	Ochna obtusata DC.	Ochnaceae	-	+	-	-	-	-
106	Ocimum americanum L.	Lamiaceae	+	+	+	+	+	+

107	Olax scandens Roxb.	Olacaceae	-	+	+	-	+	-
108	Oldenlandia corymbosa Wight & Arn.	Rubiaceae	+	+	+	+	+	+
109	Oplismenus burmanni (Retz.) P.Beauv.	Poaceae	+	+	+	+	+	+
110	Panicum trichoides Sw.	Poaceae	+	+	+	+	+	+
111	Parthenium hysterophorus L.	Asteraceae	+	-	-	+	+	+
112	Parthenium hysterophorus L.	Asteraceae	+	-	-	+	+	-
113	Passiflora foetida L.	Passifloraceae	+	+	+	-	+	+
114	Phyllanthus vitis-idaea (Burm.f.) J.Koenig ex Roxb.	Phyllanthaceae	-	+	+	-	+	-
115	Pleurolobus gangeticus (L.) J.St.-Hil. ex H.Ohashi & K.Ohashi	Fabaceae	+	+	+	+	+	+
116	Polyalthia suberosa (Roxb.) Thwaites	Annonaceae	-	+	+	-	+	-
117	Pseudarthria viscida (L.) wight & Arn	Fabaceae	-	+	+	-	+	-
118	Pseuderanthemum latifolium (Vahl) B.Hansen	Acanthaceae	-	-	-	-	-	-
119	Psydrax dicoccos Gaertn.	Rubiaceae	-	+	+	-	+	-
120	Pteris pellucida C.Presl	Pteridaceae	-	-	-	-	-	-
121	Pterospermum xylocarpum (Gaertn.) Santapau & Wagh	Malvaceae	-	-	-	-	-	-
122	Ricinus communis L.	Euphorbiaceae	+	+	-	-	+	+
123	Senegalia pennata (L.) Maslin	Fabaceae	+	+	+	+	+	+
124	Senna tora (L.) Roxb.	Fabaceae	+	+	+	+	+	+
125	Sesamum indicum L.	Pedaliaceae	-	+	+	+	+	+
126	Shorea robusta C.F.Gaertn.	Dipterocarpaceae	-	-	-	+	+	-

127	Sida acuta Burm.f.	Malvaceae	-	+	+	+	+	+
128	Sida cordata (Burm.f.) Borss.Waalk.	Malvaceae	-	+	-	-	+	-
129	Solanum americanum Mill.	Solanaceae	+	+	+	+	+	+
130	Solanum sisymbriifolium Lam.	Solanaceae	+	-	-	+	+	+
131	Stachytarpheta urticifolia Sims	Verbenaceae	+	+	-	-	-	+
132	Stereospermum colais (Buch.-Ham. ex Dillwyn) Mabb.	Bignoniaceae	-	+	+	-	+	-
133	Suregada multiflora (A. Juss.) Baill	Euphorbiaceae	-	-	+	-	+	-
134	Tarenna asiatica (L.) Kuntze ex K.Schum.	Rubiaceae	-	+	-	-	+	-
135	Taxotrophis taxoides (B.Heyne ex Roth) Chew ex	Moraceae	-	-	+	-	+	-
136	Tephrosia purpurea (L.) Pers.	Fabaceae	+	+	+	+	+	+
137	Tinospora cordifolia (Willd.) Hook. f. & Thomson	Menispermaceae	-	+	+	-	+	-
138	Torenia crustacea (L.) Cham. & Schltdl.	Linderniaceae	-	+	+	+	+	+
139	Trema orientale (L.) Blume	Cannabaceae	+	+	+	+	+	+
140	Tridax procumbens L.	Asteraceae	+	+	+	+	+	+
141	Triumfetta pentandra A.Rich.	Malvaceae	-	+	-	-	+	+

142	Urochloa panicoides P.Beauv.	Poaceae	+	+	+	+	+	+
143	Ventilago denticulata Willd.	Rhamnaceae	-	-	+	+	+	-
144	Vigna vexillata (L.) A. Rich	Fabaceae	-	+	+	+	+	+
145	Vitex pinnata L.	Lamiaceae	-	+	+	-	+	-
146	Xanthium strumarium L.	Euphorbiaceae	-	+	+	+	+	+
147	Zanthoxylum asiaticum (L.) Appelhans, Groppo & J. Wen	Rutaceae	-	+	+	+	+	+
148	Ziziphus mauritiana Lam.	Rhamnaceae	-	+	+	+	+	+
149	Ziziphus oenoplia (L.) Mill.	Rhamnaceae	+	+	+	+	+	-

Table 2. Analytical result of affinities of different countries and continents with Barunei Hill Plant species.

Sl. No.	Countries / Continents of Plant species occurrence	No. of Plant Species occurring out of 149 on Barunei Hill	Percentage (%)
1	Bangladesh	130	87.24%
2	Sri Lanka	120	80.53%
3	Myanmar	109	73.15%
4	Nepal	93	62.41%
5	Africa	69	46.30%
6	Australia	58	38.92%

Table 3. Analytical result of affinities of different States of India with Barunei Hill Plant species.

Sl. No.	State of Plant species occurrence	No. of Plant Species occurring out of 149 on Barunei Hill	Percentage (%)
1	Tamil Nadu	71	47.65%
2	Andhra Pradesh/Telangana	69	46.30%
3	Jharkhand / Bihar	33	22.14%
4	West Bengal	31	20.80%
5	Madhya Pradesh/Chhattisgarh	25	16.77%

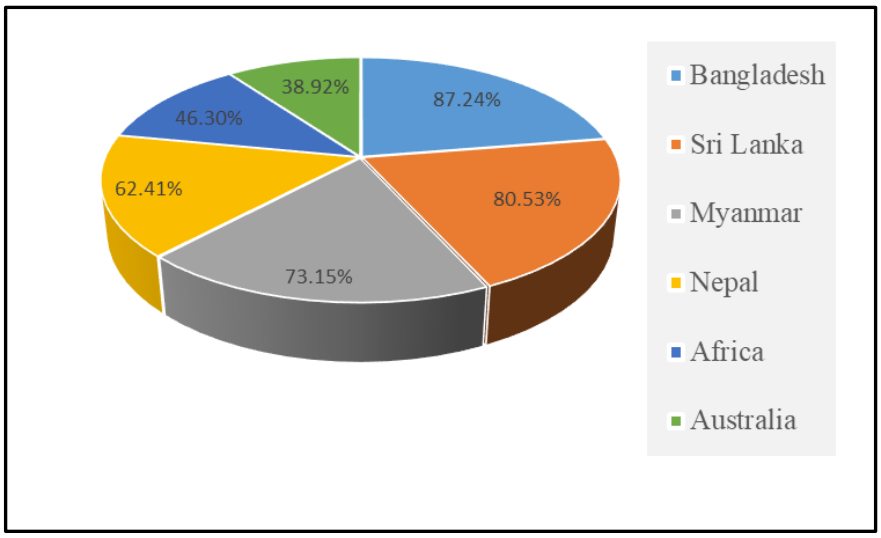

Figure 2. Phytogeographical affinities of Barunei Hill with countries and continents

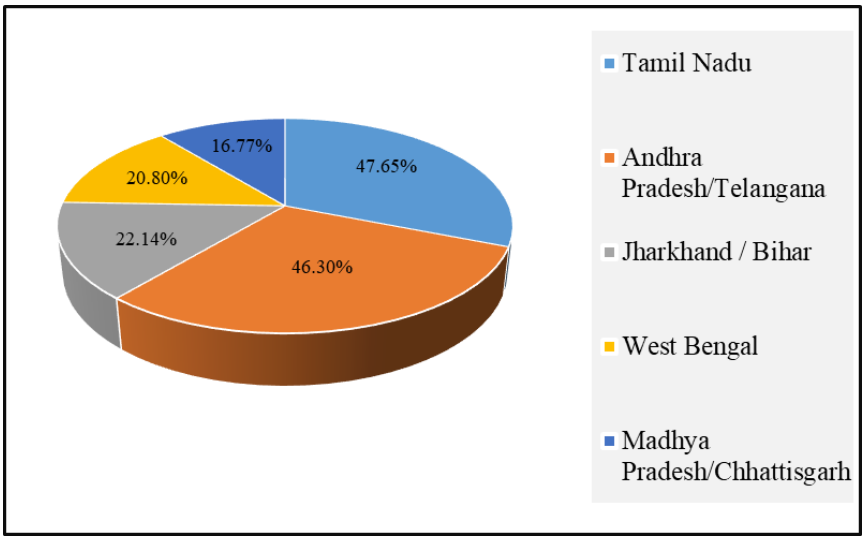

Figure 3. Phytogeographical affinities of Barunei Hill with different states of India

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