Plant Archives Vol. 26, No. 2, 2026 pp. 1961-1966 e-ISSN:2581-6063 (online), ISSN:0972-5210

Plant Archives

Journal homepage: http://www.plantarchives.org

DOI Url : https://doi.org/10.51470/PLANTARCHIVES.2026.v26.no.2.269

DIVERSITY, DISTRIBUTION AND ETHNOBOTANICAL USES OF *Rauvolfia* L. (APOCYNACEAE) IN THE ANDAMAN AND NICOBAR ISLANDS, INDIA

Sagarika Kumari[1,2], Pragya Sourabh[2] and Lal Ji Singh[1*]

[1]Botanical Survey of India, Andaman and Nicobar Regional Centre, Sri Vijaya Puram, Andaman and Nicobar Islands, India.

[2]Department of Botany, Mansarovar Global University, Sehore-466111, Madhya Pradesh, India.

*Corresponding author E-mail: laljisingh1970@rediffmail.com,

https://orcid.org/0000-0003-3138-6148

(Date of Receiving-17-07-2026; Date of Revision-20-09-2026; Date of Acceptance-30-09-2026)

ABSTRACT

The paper describes for the first time the diversity, distribution and traditional practices of the genus *Rauvolfia* (Apocynaceae) among indigenous tribes and Ranchi community of Andaman and Nicobar Islands in great detail. In these Islands the genus is represented by 3 species *viz*., *Rauvolfia serpentina* (L.) Benth. Ex Kurz, *R. sumatrana* Jack and *R. tetraphylla* L. A key for the identification of species occurring in India is also provided.

***Key words*:** Rauvolfioideae, ethnobotany, taxonomy, tribes, medicinal use.

Introduction

Rauvolfia is a well known genus of flowering plants of the dogbane family, Apocynaceae, subfamily Rauvolfioideae (Endress *et al*., 2014) which has been well known since time immemorial for its significant medicinal potential, as documented across various traditional systems of medicine worldwide to treat a variety of diseases like hypertension, high blood pressure, snakebite, cancer, fevers and others. The genus was originally described by a French botanist Charles Plumier which was later validly published by Carl Linnaeus (1753). The genus name "*Rauvolfia*" is derived from the surname of German physician, botanist and explorer Leonhard Rauwolf (1535-1596), who documented his observations of various plants he encountered during his journey in the year 1582. The genus is characterized by evergreen shrubs or small trees, simple, opposite or whorled leaves, small tubular flowers, and fleshy berry like fruits. The genus can be distinguished by its milky latex, leaves arranged in whorls, salver form flowers and paired fleshy fruits.

Rauvolfia Plum. ex L. comprises of 78 species distributed across tropical and subtropical regions of the world (POWO, 2026). It occurs in a variety of habitats, including tropical forests, forest margins, and disturbed areas (Rao, 1956; MelloFilho, 1973; Mabberley, 1997; Koch *et al*., 2002; Koch, 2007; Karthikeyan *et al*, 2009; Lakra, 2023; Dutta *et al*., 2025). Among the species, *Rauvolfia serpentina* (L.) Benth. Ex Kurz is the most recognized due to its extensive use in the various traditional systems of medicines. In India the genus is recorded throughout the country including Andaman and Nicobar Islands (ANI). Karthikeyan *et al*., (2009) and Lakra (2023) listed 7 species and 1 variety. Subsequently in the year 2025 Dutta *et al*., listed 6 species *viz*., *Rauvolfia hookeri* S.R. Sriniv. & Chithra, *R. micrantha* Hook.f., *R. serpentina* (L.) Benth. Ex Kurz, *R. sumatrana* Jack, Malayan Misc., *R. tetraphylla* L. and *R. verticillata* (Lour.) Baill. for India.

ANI is one of the hotspots of biodiversity and recognized as a rich and unique phytogeographical region with high endemism in India (Singh *et al*., 2014, 2021a, b, 2025, 2026; Singh and Misra, 2020; Singh and Ranjan, 2021). It consists of two groups of islands (Andaman group and Nicobar group of Islands) with 572 Islands. Both groups are separated by 10° channel, a wide gap of

160 km with heavy tidal flows, making sea difficult for transportation. The indigenous floras of these islands are sharing close affinities with floras of Myanmar and Malaysia, Sri Lanka, Sumatra, North-East India and Peninsular India. The ANI is home to six indigenous Scheduled tribes, 4 from Negrito origin viz. Great Andamanese, Jarawa, Onge, Sentinelese and 2 from Mongoloid origin viz. Nicobarese and Shompen. And many communities from mainland migrated or were settled here at different times for administrative, rehabilitation or economic reasons. The Ranchi community (Chotanagpur tribes) people belonging to tribal groups such as Oraon, Munda, Kharia, Turi and Santhal were brought by the British during the late 19th and early 20thcentuaries as forest and plantation labourers. Today they are commonly known as the Ranchi community in the islands.

This Indian island is famous for its indigenous traditions, but there is no detail taxonomic study along with their traditional uses on the genus so far we recorded here the diversity, distribution of the genus *Rauvolfia* and their traditional uses in the ANI. During botanical surveys only 3 species *viz.*, *R. serpentina*, *R. sumatrana* and *R. tetraphylla* are spotted and found occurring naturally in these islands. A comprehensive description, photographs, distribution, and an identification key, is provided for the *Rauvolfia* species occurring in India.

Materials and Methods

Field surveys were carried out from 2023 to 2025 to gather information and document the traditional uses of *Rauvolfia* species across islands. To verify the validity of the taxa, we undertook morphological comparisons on specimens collected during various field excursions, housed in Indian herbaria (CAL, PBL) and digital herbaria (eFloras 2008, WCSP 2012, The Plant List 2013, GBIF 2020, JSTOR 2020, The Herbarium Catalogue 2021, POWO 2026) and consulted the relevant literature. The morphological analysis and description of *Rauvolfia* species are based on the examination of freshly collected and herbarium specimens. The microphotographs were undertaken by binocular microscope (Olympus SZ 61).

Results

Rauvolfia L.

Shrubs or small tree. Leaves in whorls of 3-5, rarely opposite, usually with glands in the axils. Inflorescence a terminal or axillary cyme or whorl of cymes. Sepals without colleters inside or only at sepal corners. Corolla lobes overlapping to the left in bud, mature corolla salver form; lobes sub-symmetrical, ovate or elliptic, apex obtuse to rounded. Stamens free from the pistil head, completely included in the corolla-tube; filaments short and narrow; anthers ovate to lanceolate base cordate, apex acute to obtuse, fertile entire length. Disk annular, shorter than the ovary. Ovary syncarpous and bilocular of 2 carpels, connate at base or of 2 ovules per carpel; style filiform. Fruit a drupe of 2 separate endocarps within a single fleshy mesocarp of 2 parts connate at the base or of 2 separate parts, sometimes with one not developing. Seeds ovoid, flattened.

In ANI the genus is represented by 3 species;

1. ***Rauvolfia serpentina* (L.) Benth. Ex Kurz in Forest Fl. Burma 2:171(1877) - Fig. 1, 4**

Hook.f., Fl. Brit. India 3:632. 1882; Chakrav., Bull. Bot. Soc. Bengal 9(1):3. 1955; Sulochna, J. Indian Bot. Soc 38:578. 1959; M. Gangop. & Chakrab., J. Econ. Taxon. Bot. 16:52. 1992; A. Datta & M.P. Nayar in Prasanna, Fasc. Fl. India 30: 200. f.46. 2021. *Ophioxylon serpentinum* L., Sp. Pl. 2: 1043. 1753.

Description

Under-shrubs, up to 1.5m high; branchlets pale brown, terete, striate when young. Leaves whorled (3-4 together) or rarely opposite, obovate to oblong-elliptic, 10-26 × 3-10 cm, acute to cuneate-attenuate at base,

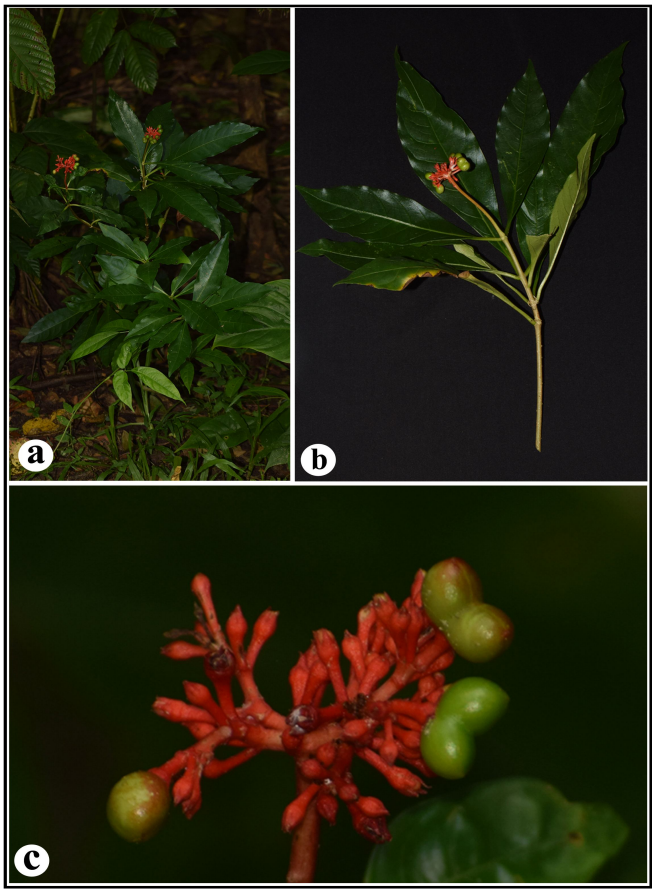


Fig. 1: *Rauvolfia serpentina* (L.) Benth.ex Kurz- a) Habit, b) Twig, c) Fruit.

shortly acutely acuminate at apex, entire, chartaceous to membranous, greenish brown to dark brown above when dry; petioles 4-20 mm long. Inflorescence terminal, condensed, thyrsiform cymes, 7-13 × 3-6 cm. Calyx campanulate, c. 3 × 2 mm, brown-pubescent; lobes 5, lanceolate, acute. Corolla slaver-shaped; tube 1-2 cm long, hairy at throat inside; petals 5, orbicular spathulate, glabrous. Stamens inserted. Ovaries 2, distinct; style glabrous; stigma bifid. Fruits drupaceous, 1-2 together, ovoid, glabrous, color bright green, turning orange-red when ripe, 2-seeded.

Phenology (Flowering and Fruiting): April to October

Distribution and habitat: India; Occur in dry deciduous to evergreen forest; up to 400m; Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Karnataka, Meghalaya, Mizoram, Odisha, Rajasthan, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh and West Bengal.

Mostly grows in moist shady places in tropical and subtropical forest, forest margins, growing along the roadside or footpath, also people growing in their garden for their personal uses.

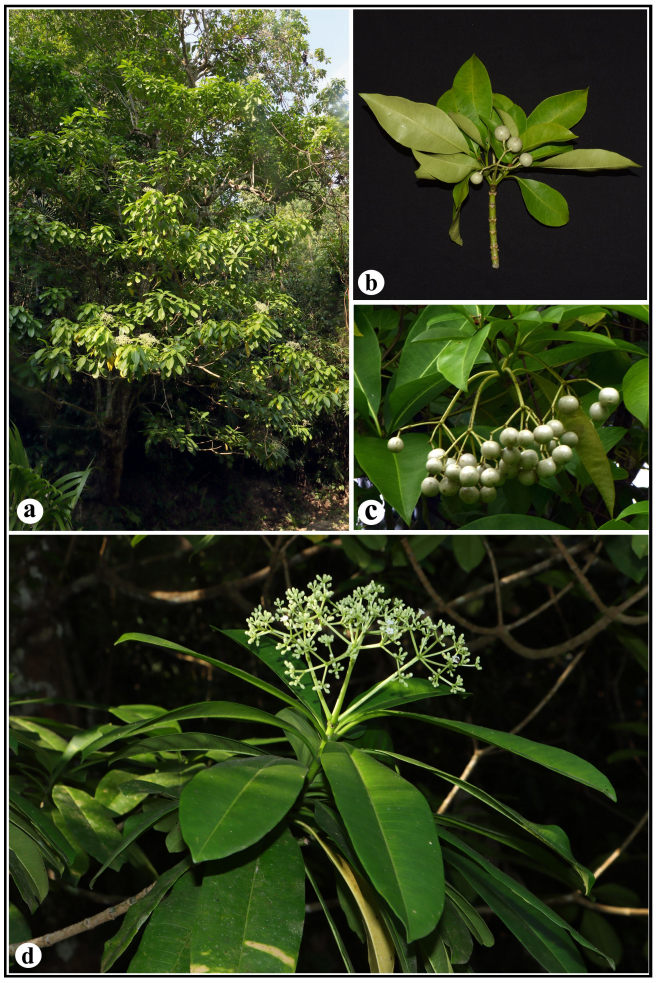


Fig. 2: *Rauvolfia sumatrana* Jack- a) Habit, b) Twig, c) Fruit, d) Inflorescence.

Etymology: The species name is given because of its long, tapering, snake-like roots and also its traditional association with the treatment of snakebite.

Common /Local Name: Sarpgandha

Ethnobotanical Uses: It has a wide range of therapeutic potentials. In ANI, Root extracts and other parts are used to treat various kind of ailments particularly to treat snake bite, toothache, diarrhoea, dysentery and anathematic, fever.

Specimen examined: Indian: Andaman and Nicobar Islands; Little Andaman – Krishna Nallah, 27.07.2024, Sagarika Kumari 33379 (PBL!).

2. *Rauvolfia sumatrana* Jack in Malayan Misc. 1(5): 22 (1820) – Fig. 2, 4

A. DC. in DC., Prodr. 8: 337. 1844; King & Gamble, J. Asiat. Soc. Bengal, Pt. 2, Nat, Hist. 74(2):424. 1908; M. Gangop. & Chakrab., J. Econ.Taxon. Bot. 16:52. 1992; A. Datta & M.P. Nayar in Prasanna, Fasc. Fl. India 30:204. F.47. 2021. *Cyrtosiphonia madurensis* Teijsm. & Binn., Cat. Hort. Bot. Bogor. 125. 1866.

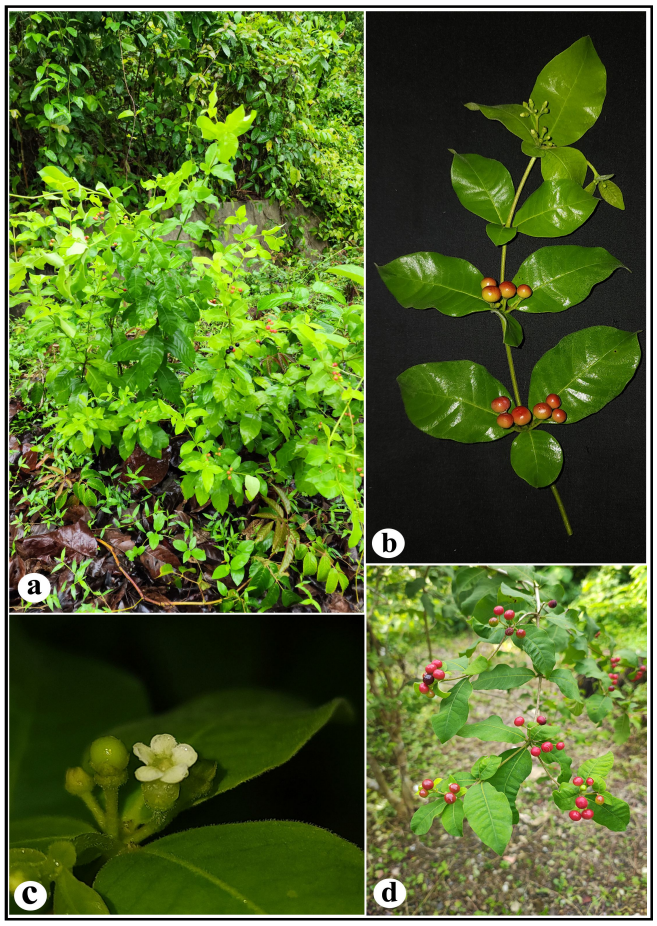


Fig. 3: *Rauvolfia tetraphylla* L.- a) Habit, b) Twig, c) Flower, d) Fruit.

Rauvolfia madurensis (Teijsm. & Binn.) Burck ex Koord.-Schum., Syst. Verz. 1(247): 174. 1912.

Description

Tree, upto10m high; branchlets pale brown, striate, angled when young. Leaves whorled 4 at each node, cuneate-oblanceolate or oblong-elliptic, 32 -35 cm × 8-9.5 cm, cuneate- at base, shortly acuminate to apicuate at apex, entire, chartaceous to thinly coriaceous, glabrous, upper side dark green, light green beneath, mid vein prominent at lower side of the leaf, petioles 4 cm long. Inflorescences terminal, umbellate cymes, 7-20 × 2-11 cm, glabrous. Calyx campanulate, 1.5mm × 1mm, glabrous; lobes 5, suborbicular. Corolla salver-shaped; twisted lobes, throat covered with white hairs protecting the anthers, corolla tube c. 3-4 mm long. Stamens inserted below the throat. Disk c. 1 mm long. Ovaries 2, distinct, c. 1mm across; style filiform, stigma collared. Fruits drupaceous, 1-2 together, ovoid, globose or ellipsoid, color sage (gray green) or citrine (dull greenish white), turning purple-black when ripe, 2-seeded.

Phenology (Flowering and Fruiting): March- May

Distribution and habitat: India; Andaman & Nicobar Islands. Occur in lowland rain forest, mixed deciduous forest at low elevation; up to 100 m.

Etymology: The specific epithet “sumatrana” refers to Sumatra, Indonesia, type location from where the species was originally described.

Common /Local Name: Not known locally (in these islands).

Ethnobotanical Uses: Plant is being used to treat gastrointestinal problem and severe headaches.

Specimen examined: INDIA: Andaman and Nicobar Islands: North Andaman: Interview Island: near to watch House No. 1, 27.09.2010, G.S. Lakra & V. M. Radhakrishnan 28802 (PBL!); Interview Island Watch Tower No. 1 forest, 24.02.2011, G.S. Lakra 28845 (PBL!); Interview Island: way to cave forest, 25.02.2011, G.S. Lakra 28860 (PBL!); South Andaman: Rutland near ghasnallah, 22.02.2004, K. Karthigeyan 21328 (PBL!); Wandur, 20.12.2003, K. Karthigeyan 19667 (PBL!), Neil Island, 16.11.1978, P. Basu 7045 (PBL!); Colinpur, 12.05.1976, N.G. Nair 3678 (PBL!); Colinpur, 29.03.1980, Jerome Xaxa 7945 (PBL!); 4 Km North from Hutbay, 26.05.2004, L. Rasingam 19838 (PBL!); South Nicobar: Campbell Bay on road to Pygmalion Point, 28.07.1976, N.P. Balakrishnan 4057 (PBL!); Pulopatia (W), 22.10.2009, C. Murugan 28276 (PBL!); Jamakuhn, 27.10.2009, C. Murugan 27778 (PBL!); Great Nicobar Dongi Nalla, 19.01.2004, J. Jayanthi 19994 (PBL!); Campbell Bay 7 Km way to Joginder Nager, Great Nicobar Island; 26.09.1989, S. K. Srivastava 14890 (PBL!); Gt. Nicobar Island, Kopenheat, 29.09.1980, R.P. Dwivedi 8027 (PBL!); Gt. Nicobar Island, Koshin Don, 04.02.1980, R.P. Dwivedi 7818 (PBL!); 40 km on North-South Rd. Great Nicobar Island, 28.11.1978, N.G. Nair 7134 (PBL!);Little Andaman Nanjappa Nagar, 28.07.2024, Sagarika Kumari 33383 (PBL!).

3. *Rauvolfia tetraphylla* L. in Sp. Pl.: 208 (1753) – Fig. 3, 4

Sulochana, J. Indian Bot. Soc. 38:586.1959; Subba Rao, Curr. Sci. 29:25. 1960; Meher-Homji, Curr. Sci. 33:589. 1964; A. Datta & M.P. Nayar in Prasanna, Fasc. Fl. India 30:207.f.48. 2021. *Rauvolfia hirsute* Jacq., Enum. Syst. Pl. 14. 1760. *Rauvolfia tomentosa* Jacq., Enum. Syst. Pl. 14. 1760. *Rauvolfia subpubescens* L., Mant. Pl. 2:345. 1771. *Rauvolfia heterophylla* Roem. & Schult., Syst. Veg. ed. 15 bis 4: 805. 1819. *Rauvolfia canescens* L. Sp. Pl. ed. 2.1:303. 1762.

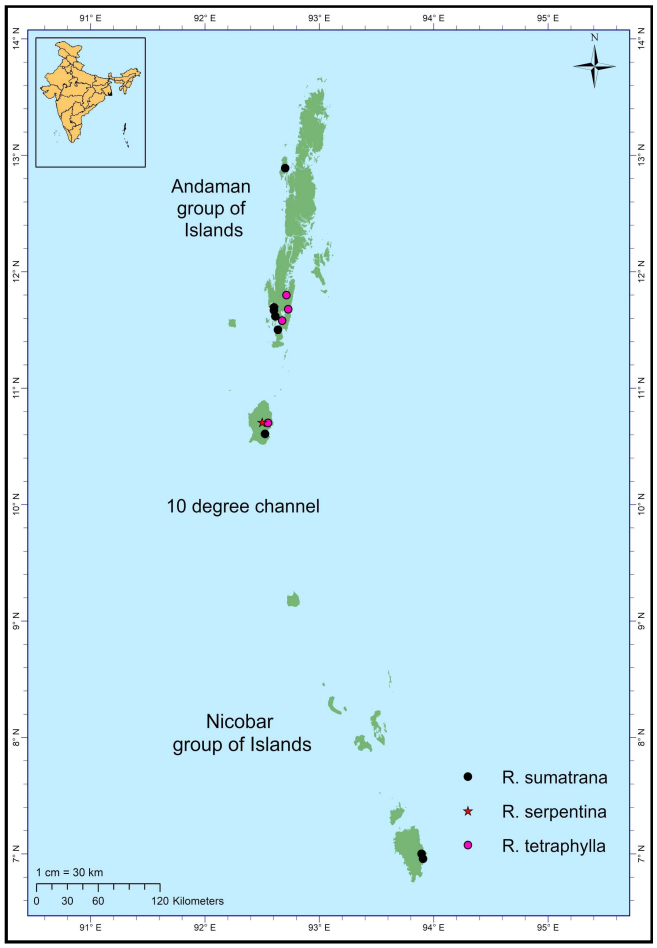


Fig. 4: Map of the Andaman and Nicobar Islands showing distribution of *Rauvolfia* species.

Description

Under-shrubs, 30-70cm high; branches dichotomously spreading, terete, pubescent. Leaves 3-4-nately whorled,

usually 4 in each whorl of unequal size, broadly elliptic to elliptic-oblong, 1.2-10 × 1.2-4.5 cm, obtuse to cuneate at base, acute, acuminate or rounded at apex, entire at margins, shortly pubescent; petioles 0.2-0.4 cm long. Flowers small, c. 0.5 cm long, creamy white, few flowered in axillary, umbellate cymes; peduncles 1-2.5 cm. Calyx pubescent. Corolla tube 0.2-0.3 cm; lobes short, apex obtuse; stamens 5, included. Fruit a drupe, globose, 0.5-0.7 cm across, color green, turning red and purple-black when semi ripe and ripe respectively, 2-seeded, rugose.

Phenology (Flowering and Fruiting): April- October.

Distribution and habitat: India; Occur in dry deciduous to evergreen forest; up to 500 m; Andaman & Nicobar Islands, Andhra Pradesh, Bihar, Karnataka, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

Etymology: The specific epithet 'tetraphylla' refers to the arrangement of leaves in whorls of four at each node of the plant.

Common /Local Name: Barachandrika; sans.:Gandhanakuli; Tam.: Pampukaalaachchodi.

Ethnobotanical Uses: The whole plant is used to treat insects. helminthiasis wound, piles, skin infections stomach aches, diarrhoea, muscle and joint pains.

Specimen examined: India: Andaman and Nicobar Islands; Little Andaman Dam-1, 04.04.2012, Lal Ji Singh 31347 (PBL!), Silviculture (Shoal Bay); 16.08.2024, Sagarika Kumari 33314 (PBL!).

Discussion

The ANI is home to three species of *Rauvolfia*. Among them, *R. sumatrana* occurs wild only in the tropical humid rainforests of these islands and is not found in cultivation. The remaining 2 species i.e., *R. serpentina* and *R. tetraphylla*, grow both in the wild and under cultivation. During surveys, we found that due to its very restricted distribution, *R. sumatrana* is not used as widely as the other two species in these islands. In India *R. sumatrana* is only recorded from ANI. Habitat disturbance of natural population was also recorded in these islands due to soil erosion and other anthropogenic activities, particularly the clearing of vegetation for pathways. Due to their narrow distribution and limited population sizes, we recommended collaborative efforts among conservation organizations and local authorities and communities for its conservation.

The present study revealed that the genus is represented by 6 species in India. A taxonomic key to the species of *Rauvolfia* in India is provided here.

Key to the species of *Rauvolfia* in India:

1. Tree.....*R. sumatrana*
   Shrub/undershrub.....2
2. Leaves in whorl and unequal in size flower urseolate.....*R. tetraphylla*
   Leaves all of same size flower non urseolate/ campanulate.....3
3. Inflorescencecyme.....4
   Inflorescence raceme corymb..... *R. verticillate*
4. Drupe slightly flattened.....*R. serpentine*
   Drupe rounded.....5
5. Drupe distinctly rugose.....*R. hookeri*
   Drupe sparsely rugose.....*R. micrantha*

Conclusion

The present study provides an account on their taxonomic details and their traditional uses of the genus *Rauvolfia* in ANI and critically analyzed threat and vision into the traditional uses by indigenous people. It is a significant output for further research activities and future prospects for conserving this genus.

Acknowledgements

Authors are grateful to Dr. Kanad Das, Director, Botanical Survey of India, Kolkata for constant support and facilities. The authors are thankful to Prof. (Dr.) R.S. Yadav, Editor-in-Chief, Plant Archives and anonymous reviewers for critical comments and suggestions that helped to improve the manuscript. Authors are thankful to Prof A.K. Pandey, Pro-Chancellor, Mansarovar Global University, Bhopal, M.P., India for their critical review and constructive suggestions that helped to improve the manuscript. Authors are thankful to the Department of Environment and Forests, Andaman and Nicobar Islands for giving necessary permission and providing logistic support during the field studies. Thanks are due to Scientists, Researchers and Staff of Andaman and Nicobar Regional Centre (PBL) of Botanical Survey of India for their help.

References

Dutta, A., Kumar A. and Dash S.S. (2025). In Flora of India Vol. 16, Eds S.S. Dash, U.L. Tiwari and A.A. Mao. Botanical Survey of India, 496-507.

e-Floras (2008). "Missouri Botanical Garden."St. Louis, M.O. and Harvard University Herbaria, Cambridge, M.A. http://www.efloras.org.from Brazil. *Novon*, **17**, 462–471.

Endress, M.E., Liede-Schumann S. and Meve U. (2014). An updated classification of Apocynaceae. *Phytotaxa*, **159(3)**, 175-194.

Karthikeyan, S., Sanjappa M. and Moorthy S. (2009). Flowering Plants of India, Dicotyledons (Acanthaceae-Avicenniaceae) vol. I. Botanical Survey of India, Calcutta. 137

Koch, I. (2002). Estudos das Espe´ciesNeotropicais do *Geˆnero Rauvolfia* L. (Apocynaceae). Ph.D. Thesis, Universidade Estadual de Campinas, Campinas, Sa˜o Paulo, Brasil.

Koch, I. (2007). Taxonomic Novelties in Rauvolfia (Apocynaceae, Rauvolfioideae).

Lakra, G.S. (2023). Apocynaceae in Flora of Andaman and Nicobar Islands Vol. II eds. Karthigeyan K, Pandey R P and Mao A A. Botanical Survey of India, 258-259.

Mabberley, D.J. (1997). The Plant-Book. Cambridge Univ. Press, Cambridge.

Mello, Filho L.E. (1973). Novasobservac¸o˜essobre as espe´ciesamericanas do *geˆnero Rauvolfia* (Plum.) L. (Apocynaceae). *Revista Brasil. Biol*, **33(4)**, 507–520.

POWO (2026). Plants of the World Online. Royal Botanic Gardens, Kew. Available at; https//powo.science.kew.org.

Rao, A.S. (1956). A revision of Rauvolfia with particular reference to the American species. *Ann. Missouri Bot. Gard.*, **43**, 253–355.

Singh, L.J., Murugan C. and Singh P. (2014). Plant Genetic Diversity of Endemic Species in the Andaman and Nicobar Islands. Nat. Conf. on Islands Biodiversity, U.P. State Biodiversity Board, Lucknow 49–57.

Singh, L.J. and Misra D.R. (2020). "Reappraisal of the genus *Cycas* L. (Cycadaceae) in Andaman and Nicobar Islands, India. *Indian Journal of Forestry*, **43(1)**, 46-57.

Singh, L.J. and Ranjan V. (2021). "New Vistas in Indian Flora".Vol. 1 and 2: Bishen Singh Mahendra Pal Singh, Dehra Dun, Uttarakhand, India, 417 and 819.

Singh, L.J., Ekka G.A., Vivek C.P. and Misra D.R. (2021a). Gymnosperms of the Andaman and Nicobar Islands: An Overview in: eds. L.J. Singh and V. Ranjan. New Vistas in Indian Flora, Bishen Singh Mahendra Pal Singh, Dehra Dun, India, **1**, 265–278.

Singh, L.J., Ranjan V. Sinha B.K. *et al*. (2021b). An Overview of Phytodiversity of the Andaman and Nicobar Islands, India in L.J. Singh and V. Ranjan (eds.). New Vistas in Indian Flora. Bishen Singh Mahendra Pal Singh, Dehra Dun, India **2**, 381–399.

Singh, L.J., Prakash, R.O., Mahadevakumar, S., Midigesi, A.K., Naik, M.C., Dhole, P.A.,. & Ekka, G.A. (2025). History and emended description of an endemic Musa L. of Andaman and Nicobar Islands, India: M. indandamanensis L.J. Singh (Musaceae). -Botany Letters, 172(2): 166–182. https://doi.org/10.1080/ 23818107. 2024.2440900

Singh, L.J., Mahadevakumar, S., Dhole, P.A., Midigesi, A.K. & Ekka, G.A. (2026). The Changing Paradigms of Phyto-Diversity in Andaman Group of Islands of the Indo-Burma Biodiversity Hotspot, -*In*: Pullaiah, T. (ed.) Biodiversity Hotspot of the Indo-Burma Region. Apple Academic Press, pp. 45–48.

The Plant List (2013). Version 1.1. http://www.thepl antli st.org/

WCSP (2012). World checklist of selected plant families. Facilitated by the Royal Botanic Gardens, Kew. http:// wcsp.scien ce.kew.org/