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Ram Kumar Rajwade
 Department of Botany, Guru
 Ghasidas Vishwavidyalaya (A
 Central University), Bilaspur,
 Chhattisgarh, India

Devendra Kumar Patel
 Department of Botany, Guru
 Ghasidas Vishwavidyalaya (A
 Central University), Bilaspur,
 Chhattisgarh, India

Extended distribution of *Rauvolfia tetraphylla* (Apocynaceae) from Chhattisgarh to central India

Ram Kumar Rajwade and Devendra Kumar Patel

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Abstract

Koni village is situated in the Bilaspur Tehsil of the Bilaspur district, Chhattisgarh, India. It lies between 21.977978° N to 82.22908° E. It is located approximately 5 km from the tehsil headquarters in Bilaspur (C.G.). Extensive field studies were carried out from locations across June 2025 to April 2026. In this study, another species of *Rauvolfia* Plum. ex L. (*Rauvolfia tetraphylla* L.) that is shrubby in its natural environment was found in the extended distribution of this region of Chhattisgarh, Central India. The short description, based on the study of fresh specimens, includes their locality, phenology, and color photoplates of the plants, along with their distribution.

Keywords: Apocynaceae, Chhattisgarh, extended distribution, new report, *Rauvolfia tetraphylla* L

Introduction

Rauvolfia Plum. ex L. is a shrubby, lactiferous genus with flowers that belongs to the Apocynaceae family. It has an apically enlarged style that forms a stylar head and typically separate ovaries that are only connected by a common style or stylar head.

Rauvolfia Plum. ex L., a large pantropical genus, comprises 78 accepted species (POWO, 2026) [8] with high morphological diversity, and the genus is extended to the native range in the tropics and subtropics. It is also used as a medicine. *Rauvolfia* is represented by about four species in India (eflora of India, 2026) [2, 3], of which about one species occurs in the central Indian state (Verma *et al.*, 1989; Mudgal *et al.*, 1997; Shukla *et al.*, 2025) [4, 9, 12]. Central India has comparatively fewer records: earlier accounts reported only one species (Verma *et al.*, 1989; Mudgal *et al.*, 2001) [4, 12]. Regional checklists and recent surveys for Chhattisgarh showed similar results. A recent list by Shukla *et al.*, (2025) [9] reported a *Rauvolfia* species (*Rauvolfia serpentina* (L.) Benth. ex-Kurz) for the state, revealing inconsistencies among existing inventories and underscoring incomplete floristic knowledge for Central India and Chhattisgarh, thereby highlighting the urgent need for intensified field surveys and systematic taxonomic revision.

Materials and Methods

Study area and identification

Koni village is situated in the Bilaspur Tehsil of the Bilaspur district, Chhattisgarh. It lies between 21.977978° N to 82.22908° E. It is located approximately 5 km from the tehsil headquarters in Bilaspur. During the extensive field surveys conducted from June 2025 to April 2026 in the Koni village and its adjoining area of the Bilaspur district, Chhattisgarh, India, an interesting plant species of the genus *Rauvolfia* Plum. ex L. (Apocynaceae) was collected.

Representative specimens were collected, processed, and mounted on herbarium sheets. Microphotographs were obtained using a digital DSLR camera (Canon 700D). Specimens were identified by comparison with diagnostic descriptions and keys in primary floras and monographs and by consulting regional treatments and recent taxonomic accounts. (Verma *et al.*, 1989; Srivastava, 2004; Akare & Chaturvedi, 2018; Shukla *et al.*, 2025) [1, 9, 10, 12]. The nomenclature followed is as per POWO (2026) [8]. The voucher specimen was deposited at the herbarium of the Department of Botany, Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur, Chhattisgarh, India.

Corresponding Author:
Ram Kumar Rajwade
 Department of Botany, Guru
 Ghasidas Vishwavidyalaya (A
 Central University), Bilaspur,
 Chhattisgarh, India

Results and Discussions

The newly obtained specimens from Koni, Bilaspur (C.G.), were recognized as *Rauvolfia tetraphylla* L. after being carefully compared to diagnostic descriptions and local treatments. The produced voucher information was cross-checked using internet nomenclature tools and established taxonomic references. This is the plant species first unknown addition from Chhattisgarh to Central India and a significant expansion of the taxon's distribution, enhancing Chhattisgarh's flora.

In terms of biogeography, this record closes a distributional gap between previously identified populations and raises the possibility that Central India contains further, undiscovered variety. In terms of taxonomy, the result emphasizes the necessity of ongoing field surveys in conjunction with close examination of morphology and nomenclature in order to determine regional species limits.

Key to species of *Rauvolfia* Plum. ex L. in Chhattisgarh:

1a. Leaves lanceolate, acute; flower purplish white, large up to 2.5 cm; fruit

Bilobed..... *Rauvolfia serpentina*.

1b. Leaves are ovate or oblong and hairy; the flower is creamy white, minute up to 0.4cm; fruit is purple, unlobed..... *Rauvolfia tetraphylla*.

Taxonomic descriptions

***Rauvolfia tetraphylla* L.** First published in Sp. Pl.: 208 (1753).

Perennial Shrub, an erect, dichotomously branched, small, woody shrub approximately one metre high. Leaves, simple, 8-12×1.8-3.5 cm, 3-4 at the nodes, mostly 4 in each whorl of very unequal sizes; petiole 0.2-0.5 cm; elliptic, acute at the apex, cuneate at the base, pubescent above and glabrous

beneath, margin entire and ciliate; lateral veins 5-12 pairs; peduncle 1-4 cm long, ciliate. A flower, small, white or cream-colored, 0.2×0.2 cm across. Shortly peduncled, arranged in a few-flowered auxiliary umbellate cyme. The calyx is lobed, short, rounded, ciliated, and 0.2 cm long. The corolla tube is dilated at the top, 0.4 cm long; the lobes are short, rounded, unexpanded, and ciliate. Stamens 5, included, 0.02 cm long. Ovary superior, carpel 2, collateral to each carpel. Drupe: 0.5-0.7 cm in dia., dark purple to black at maturity, jointed to the top, ovoid, and glabrous. Seed two: ovoid, rugose (Plate 1).

Flowering & fruiting: May-August.

Specimen examined: India: Chhattisgarh: Bilaspur distr., Koni (22.1277730 N, 82.1384890 E; 277 m AMSL): 15.04.2026 (Flowering); Ram Kumar Rajwade & Devendra Kumar Patel [RKRp-002; Herb. of Dept. of Botany, Guru Ghasidas Vishwavidyalaya, Bilaspur, India].

Distribution: India: Andaman Is., Assam, Andhra Pradesh, Bihar, Chhattisgarh [study area], Delhi, Kerala, Karnataka, Orissa, Punjab, Tamil Nadu, Uttar Pradesh, and West Bengal.

Native to: America (Central, Northern South), Bangladesh, Belize, Bolivia, Colombia, Costa Rica, China (South-Central, Southeast), Dominican Republic, Ecuador, El Salvador, Florida, French Guiana, Guatemala, Haiti, Hainan, Honduras, Jamaica, Leeward Islands, Mexico (Central, Gulf, Northeast, Northwest, Southeast, Southwest), Nicaragua, Panama, Peru, Nepal, Queensland, Taiwan, Trinidad, Tobago, Vietnam, Venezuela, West Indies, Windward Islands, (POWO, 2026) ^[8].

Table 1: Distinguishing characters of *Rauvolfia* Plum. ex L., in Chhattisgarh, Central India

S. No.	Characters	<i>Rauvolfia tetraphylla</i> L.	<i>Rauvolfia serpentina</i> L.
1.	Stem	More than 2 metres	More than 1 meter
2.	Leaves	Ovate-oblong, 3-4 in each node.	15×3 cm, lanceolate, acute, alternate, 2-3 leaves in each node
3.	Inflorescence	1-1.5 cm, cyme	7-15 cm, cyme
4.	Flower	Creamy white, small, 0.4 × 0.4 cm, ciliated	Purplish white, large, 2.5×1.5 cm, non-ciliated
5.	Fruit	Unilobed, greenish purple, turning black after ripening; 0.8 × 0.6 cm.	Bilobed, green, and black after ripening; 1.1-1.4 × 0.5-1 cm
6.	Distribution	Bilaspur*	Bilaspur, Raipur, Rajnandgaon

[Abbreviation: *- new distributed area]



Plate 1: *Rauvolfia tetraphylla* L. A- Habit; B, C - Inflorescence; D - Close view of flowers; E- Side view of Flowers; F, G - Immature and mature fruits

Conclusions

The main human-caused threats to the plant life include destruction of natural habitat, deforestation, uncontrolled human activities etc. Several local taxa in the Bilaspur District are in danger of going extinct due to these influences. Therefore, immediate conservation action is necessary, including community-based awareness and stewardship programs, restoration strategies, protection of important habitat patches, and focused population monitoring. Along with these activities, all possible efforts should be made to protect and multiply the valuable plant species for future generations.

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