



RESEARCH ARTICLE

Phryma leptostachya L. (Phrymaceae): An addition to the flora of Western Himalayas, India

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Abstract

Phryma leptostachya L. is reported from Chabba Village in Ramban district, Jammu and Kashmir, as a new distributional record for the flora of Western Himalayas. In India, the distribution of this species was previously reported only in the states of Assam, Mizoram, and Meghalaya.

Keywords

Chabba Village; new record; Ramban district

Introduction

The genus *Phryma* (Phrymaceae) was proposed by Linnaeus in 1753 based on a single species, *P. leptostachya*. At present, the genus comprises of 3 species viz. *P. oblongifolia* Koidz., *P. nana* Koidz. and *P. Leptostachya* L. (1). *Phryma leptostachya* is a herbaceous terrestrial species distributed mainly in east Asia and eastern North America (2). The species is having unusually long hooked tips on the calyx and a single-seeded fruit, which accounts for its isolated taxonomic position (3). The species exhibits a wide range of intraspecific variation within different geographical populations. The previous researchers (4) recorded differences in shape of leaves, pubescence of rachises and calyces, and size of corollae in Japanese and North American races of *P. leptostachya*. It was also observed that the population of *P. leptostachya* in the North Eastern Himalayas shows some morphotypic variations from the Japanese plants mainly on the indumentum present on the stem and rachis and fewer exerted corolla (5). The plant possesses high economic potentialities (6) in China as the plant parts are used to cure human scabies.

While exploring the floristic diversity of Ramban district, Jammu & Kashmir, the first author observed an interesting population of a species in Chabba village at an elevation range of 1886 m. Ramban district is situated on the Chenab River's banks at an altitude range from 701–3331 m. Chabba Village of Ramban district is an important corridor, which connect Jammu Division with Kashmir Division via National Highway-NH44 and is unexplored and remote district of the Union Territory. Detailed taxonomic studies with perusal of relevant literature (7-27), comparison with the available herbarium specimens and consultation with experts, its identity has been confirmed as *P. leptostachya*, a species hitherto not reported from Western Himalayas. Previously this species was reported only from North eastern states of India viz. Assam, Meghalaya and Mizoram (5). Therefore, it is reported here as a new record to the flora of Western Himalayas (Fig. 1).



Fig. 1. (A. & B.) *Phryma leptostachya*. Habit; (C) Inflorescence.

Materials and Methods

The live specimens collected from the Chabba Village of the study area were examined for detailed micromorphological characters using a Leica stereo microscope (S8 APO). For the confirmation of the identity of the taxon, the specimens available at various herbaria (BM, E, LINN, NY, and PH) were examined. The nomenclatural corrections were made according to Shenzhen code (28). Abbreviated author citations were given following the Authors of Plant Names (29). Acronyms of Herbaria were provided according to Index Herbariorum (30). The specimens of appropriate size with relevant parts were collected from the field and the herbarium specimens were prepared following the standard methods (31-32). The voucher specimens were deposited in the herbarium of CSIR-National Botanical Research Institute (LWG) for future reference.

Taxonomy

Phryma leptostachya L., Sp. Pl. 601.1735; Makino, Makino's New Illustrated Flora of Japan. 578. f. 2310. 1979; Panday *et al.*, J. Econ.Taxon. Bot. 36(4): 691. 2012.

Lectotype: Kalm, Herb. Linn.No. 755.1 (LINN-HL755-1, digital image!); designated by M. Qaiser in Nasir & Ali, Fl. West Pakistan, 46: 1-3. 1973.

Erect perennial herbs, 15–85 cm high; stem branched or unbranched, erect, quadrangular, lower nodes swollen, hairy. Leaves simple, opposite and decussate; lamina elliptic-ovate to broadly ovate, 5.6–8 × 1.5–3.5 cm, cuneate at base, decurrent into petioles, dentate along margin, acuminate at apex, pubes-

cent on abaxial surface, more on mid nerve and veins; prominently veined, veins 4–5 pairs, convergent; petioles 0.3–2 cm long. Inflorescence terminal and axillary; peduncle 8–22 cm long, erect. Flowers symmetrically zygomorphic, hypogynous, purple, hooked at apex, bracteate; bracteoles 2, linear, 1.4–1.5 mm long; stipe articulate. Calyx persistent in fruit, tubular, zygomorphic, perpendicular to the stem, 2.7–6.2 mm long at anthesis, with 5 ridges; 3 adaxial lobes linear, hooked at apex, purple; the other 2 abaxial lobes short subulate, margin ciliate. Persistent fruiting calyx, 5.4–9.8 mm long, parallel to the stem, brown with light spots. Corolla bilabiate, 5–6 mm long, whitish; upper lip shallowly bi-lipped, lower lip 3-lobed, pubescent at the abaxial side and at the apex of the throat. Stamens 4, dissimilar, didynamous, 2 large, 4.3–4.4 mm long, 2 short, 2.8–2.9 mm long, adnate near to the apex of the corolla tube, included within; filaments ca. 3.4 mm long, white, glabrous. Pistil ca. 3.6 mm long, stigma bifid; style curved, 1.8–1.9 mm long. Ovary 2.6–2.7 mm long. Fruits indehiscent, 1-seeded; achene glabrous, 4.8–5.3 × 0.7–1.5 mm, enclosed within the persistent epicalyx.

Phenology

July to October.

Distribution

Phryma leptostachya is distributed globally in Bhutan, China, Columbia, Japan, North America, Taiwan, and USA (31). In India, the species has earlier been recorded from Mizoram, Assam and Meghalaya (32) and this work reports from Jammu and Kashmir.

Specimens examined

India. Jammu & Kashmir, Ramban district, Chabba village, N 35.463333°, E75.297793°, 1886 m, 08 August 2021, Naresh Kumar 116982(LWG).

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Authors' contributions

NK contributed in plant collection, conceptualizing the ideas, workout, drafting and prepared original manuscript; PKM supervised the whole study, validated the identity, corrected the draft and edited the original manuscript; DA corrected the draft and edited the original manuscript, TSR supervised and edited the original manuscript.

Compliance with ethical standards

Conflict of interest: Authors do not have any conflict of interests to declare.

Ethical issues: None.

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