

# *Veronica polita* subsp. *lilacina* (Plantaginaceae), a new plant record for India from Kashmir Himalaya

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**Abstract:** *Veronica polita* subsp. *lilacina* (T.Yamaz.) T.Yamaz. is reported as a new distribution record for India from the Kashmir Himalaya. A detailed description, photographic illustrations and comparison of diagnostic characters with the type subspecies are provided to validate the new record and facilitate easy field identification.

Keywords: Biodiversity, Distribution, Flora, Taxonomy.

## Introduction

The genus Veronica L., placed earlier under the family Scrophulariaceae, has been recently shifted to Plantaginaceae (Albach et al., 2004; Haston et al., 2009). Globally, Plantaginaceae are represented by c. 94 genera and 1,900 species (Christenhusz & Byng, 2016). Being one of the dominant and cosmopolitan genera in Plantaginaceae, Veronica comprises c. 450 species that grow in diverse habitats ranging from dry to aquatic environments (Albach et al., 2008). From the Indian subcontinent, Hooker (1897) reported 18 species while Agnihotri et al. (2014) recently reported 35 species from India, and a majority of these occur in the Himalaya. Pennell (1943) reported 28 species from the entire region of the Western Himalaya. From Jammu, Kashmir and Ladakh regions, falling under the Western Himalaya, 25 species have been reported (Stewart 1972; Aman et al., 2003).

Received: 15.06.2021; Revised & Accepted: 24.12.2021 Published Online: 31.03.2022 We collected plant specimens belonging to *Veronica* from different localities during recent floristic surveys in the Kashmir Himalaya. On detailed comparison of the diagnostic characters in the protologue (Yamazaki, 1957) and with the help of relevant taxonomic literature (Stewart, 1972; Iwatsuki *et al.* 1993; Aman *et al.*, 2003; Albach *et al.*, 2004; Rasheed *et al.*, 2018), the specimens were identified as *V. polita* subsp. *lilacina* (T.Yamaz.) T.Yamaz., a taxon previously reported from the Far East Asian countries of Korea and Japan (POWO, 2021). Therefore, the present report forms a new plant distributional record for India from the Kashmir Himalaya.

## Materials and Methods

The present study was carried out in Kashmir Himalaya, a region with a continental temperate climate, covering an area of about 15,000 km<sup>2</sup> (Gulzar et al., 2021). Over the last one decade, the region's temperature has ranged from an average daily maximum of 31°C and minimum of 15°C during summer to an average daily maximum of 4°C and minimum of -4°C during winter. The average annual precipitation is 1055 mm, mainly in the form of snow (Rashid et al., 2020). Alpine meadows and coniferous forests make up most of the region's natural vegetation (Khuroo et al., 2007; Dar & Khuroo, 2020). During our floristic surveys, we followed standard taxonomic methods for collecting, drying and processing herbarium specimens (Bridson & Forman, 1998). The voucher specimens have been deposited in the University

of Kashmir Herbarium (KASH). For identification, we consulted the relevant taxonomic literature (Yamazaki 1957; Stewart, 1972; Iwatsuki et al., 1993; Aman et al., 2003; Albach et al., 2004; Rasheed et al., 2018). In addition to this, we also examined the image of the holotype (TI 00080033) and other images of the taxon available online (http://wildplantsshimane.jp/Plates/ Veronica\_didyma\_var.\_lilacina.htm;https:// eol.org/media/7224463). Field photographs were taken using a Xiaomi Redmi Note7 mobile phone camera (Beijing, China). Microphotography of the diagnostic characters was carried out under a Leica S9D stereo zoom microscope (Wetzlar, Germany) integrated with LAS X image processing software (Leica, Wetzlar, Germany).

### **Taxonomic Treatment**

Veronica polita Fr., Novit. Fl. Svec. 1. 1828. subsp. lilacina (T.Yamaz.) T.Yamaz. in K.Iwats., T.Yamaz., Boufford & H.Ohba., Fl. Jap. 3a: 354. 1993. *Type*: JAPAN, **Tokoyo**, Honshu, Yokohama, *K. Hisauchi* 572 (holo TI [TI00080033 digital image!]). Fig. 1

Annual herbs, forming dense mats on the ground. Stems prostrate to ascending, up to 15 cm long. Lower leaves petiolate and opposite; upper leaves near the terminal flower sessile and alternate; leaf blade 5–7-lobed, ovate to orbicular,  $6-7 \times 4-5$ mm, sparsely pubescent to glabrous on the adaxial surface and densely pubescent on abaxial surface. Flowers solitary, terminal and axillary. Pedicels 5-6 mm long. Sepals 4, herbaceous,  $3-4 \times 1.8-$ 2.0 mm, ovate with overlapping base. Petals 4, whitish-pink,  $1.5-2.2 \times 1.6-2.2$  mm, each with 5-10 rose-purple lines towards the base. Stamens 2; filaments 1.2-1.5 mm long; anthers up to 0.8 mm long. Carpel single, ovary hairy, 0.4-0.6 × 0.5-0.7 mm in size; style c. 1 mm long; stigma capitate. Capsule reniform, 2.0–2.5 × 3.0–3.5 mm with a narrow sinus, surface puberulent consisting of long glandular and short eglandular hairs. Seeds ovate,  $c. 1.2 \times 1.1$  mm, transversely rugose on the dorsal side and deeply excavated on the ventral side.

*Flowering & fruiting*: Flowering from April to May and fruiting from May to June.

Habitat: Grows in open sunny habitats, wastelands, gardens and parks; associated species include: *Bellis perennis* L. and *Taraxacum officinale* F.H.Wigg. (both Asteraceae), *Medicago polymorpha* L. and *Trifolium dubium* Sibth. (both Fabaceae), *Veronica persica* Poir. (Plantaginaceae), *Lolium temulentum* L. and *Cynodon dactylon* (L.) Pers. (both Poaceae).

*Distribution*: The plant has been reported to occur in Korea, Japan mainlands and Nansei-shoto (POWO, 2021), and now recorded from the Kashmir Himalaya in India.

Specimens examined: INDIA, Jammu and Kashmir, University of Kashmir Campus Srinagar, 20.04.2021, Ruquia Gulzar & Anzar A. Khuroo 45833 (KASH); Sopore, Baramulla, 05.05.2021, Ruquia Gulzar & Anzar A. Khuroo 45834 (KASH); Wachi, Shopian 30.05.2021, Ruquia Gulzar & Anzar A. Khuroo 45835 (KASH).

*Notes*: The present study reports *V. polita* subsp. *lilacina* as a new record for India from the Kashmir Himalaya. The taxon was originally described as a variety of another species: V. didyma var. lilacina (Yamazaki, 1957). Veronica didyma is now regarded as a synonym of *V. polita* (POWO, 2021). Yamazaki (1993) raised the variety to subspecies level: V. polita subsp. lilacina (Iwatsuki et al., 1993; POWO, 2021). During the present study, the taxon was primarily determined based on the examination of freshly collected specimens from the Kashmir Himalaya (Ruquia Gulzar & Anzar A. Khuroo 45833, 45834, 45835 KASH) and their comparison with the diagnostic characters provided in the protologue of V. polita subsp. lilacina (Iwatsuki et al., 1993). Our specimens were distinct from V. polita subsp. polita and clearly resembled the protologue of V. polita subsp. lilacina in characters, such as stem length, pedicel length, corolla colour and seed shape (Table 1).



Fig. 1. Veronica polita subsp. lilacina (T.Yamaz.) T.Yamaz. a. Habit; b. Branch showing arrangement of leaves, inflorescence and infructescence; c. Pedicel; d. Adaxial leaf surface; e. Abaxial leaf surface; f. Open flower with rose-purple lines on petals; g. Abaxial view of herbaceous and hairy calyx; h. Corolla with two fertile stamens; i. Pistil with ovary, style and stigma; j. Fruit; k. Ventral view of seed; I. Dorsal view of seed (1,-1, from *Ruquia Gulzar & Anzar A. Khuroo* 45833).

Table 1. Comparis	on of diagnostic	characters betw	veen <i>Veronica po</i>	o <i>lita</i> subsp. <i>pol</i>	ita and V. J	<i>oolita</i> subsp.
lilacina.						

Characters	V. polita Fr. subsp. polita	V. polita subsp. lilacina (T.Yamaz.) T.Yamaz.
Stem	Up to 30 cm long	Up to 15 cm long
Pedicel	5–15 mm long	5–6 mm long
Corolla	Blue	Whitish with rose-purple lines
Seed	Elliptic	Ovate

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