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Nervilia pangteyana sp. nov., a terrestrial orchid from western Himalaya, India

Jeewan Singh Jalal, Pankaj Kumar and Gopal S. Rawat

J. Singh Jalal, Dept of Botany, Kumaun Univ., IN-263001 Nainital, India. – P. Kumar (pankajsahani@rediffmail.com) and G. S. Rawat, Dept of Habitat Ecology, Wildlife Inst. of India, Chandrabani, IN-248001 Dehradun, India.

Nervilia pangteyana J. S. Jalal, Kumar & G. S. Rawat (Orchidaceae), a new species from western Himalaya (Uttarakhand), India is described, illustrated and compared with its closest relative. In addition, a key is given to distinguish between species of *Nervilia* in the western Himalayas.

The genus *Nervilia* Commerson ex Gaudichaud was established in 1829 by the French naturalist Charles Gaudichaud-Beaupré and it currently comprises 70 species distributed from tropical and subtropical Africa to the Pacifics (Govaerts et al. 2011). The genus is represented by 15 species in India, of which 6 are endemic (Misra 2007).

While conducting a routine orchid survey in Kumaun Himalaya as a part of a 'Dept of Science and Technology'funded project, a few patches of *Nervilia* were found in the foothills of Himalaya. Some specimens were collected during August 2009 in vegetative condition. It could be seen that the leaves were clearly distinct from any other *Nervilia* found in this region. Some plants were maintained live in the Orchidarium of Kumaun Univ. In June 2010, flowers were observed both in the wild and in the Orchidarium. Flowers were solitary on a short peduncle and remained for less than 3 days. It took another few days for the leaves to emerge again. After consulting orchid experts and referring to orchid floras, we decided to describe it as new species of *Nervilia* sect. *Linervia* Schltr.

Nervilia pangteyana J. S. Jalal, Kumar & G. S. Rawat sp. nov. (Fig. 1–3)

Nerviliae infundibulifoliae similis, internodiis 5 (nec 2), stolonis absentia (nec praesentia), sepalis oblanceolatis 1-nervatis (nec linealiter oblanceolatis 3-nervatis), labello non saccato glandulose punctato, sacco viridi ulterius pallide purpurascenti venis angustis atropurpureis longitudinaliter viridibus ad 3/4plo longitudinis, demum leniter albis postea atroroseis ultra callum labelli in parte dimidia inferiore (nec labello ubique viridi marginibus pallidioribus, callis 2 gibbosis longitudinalibus e loborum lateralum insertione parallelis apicaliter convergentibus (nec hypochilio lineis duabus papillosis, epichilio una linea papillosa solum), lobis lateralibus ovatis (nec triangularibus), lobo medio non canaliculato (nec canaliculato) albo rosee suffuso et marronine maculato marginibus albis, parte dimidia inferiore trapezoidea infra angusta apice decurvo rotundato (nec obovato vel orbiculari, apice rotundato) differt.

Type: India, Uttarakhand, Nainital, Sitabani, 900 m a.s.l., 16 Aug 2009, Jalal 15051 (holotype: WII).

Etymology

This specific epithet is dedicated to the retired Professor Yash Pal Singh Pangtey, a renowned plant taxonomist from Kumaun Univ.

Description

Terrestrial herb, 7.0-9.5 cm tall. Corm white, globose or subglobose, fleshy, with 2-3 nodes, 1.3 cm in diameter. Leaf solitary, emerging just after flowering, dark green, thin, membranous, $2.5-3.3 \times 3.4-4.0$ cm, with entire margin and acute apex, deeply cordate at base, 5-7-veined, with dorsal surface with dark purple prominent lines in young stage that fade with age; petiole erect or sub-erect, 3-4 cm long, sheathing at the base, underground portion white and aboveground portion dark purple. Inflorescence 1-flowered, erect, 8.0–8.5 cm long, light green on lower side and light marooncolored on the upper side, with a single tubular sheath; bract lanceolate, 1-2 mm long, acute to acuminate, shorter than ovary. Flower solitary, at right angle to scape, widely opened, 1.7-1.9 cm across, resupinate; pedicel and ovary 3-4 mm long, dark brown, tinged with green; ovary ovoid, 2-3 mm long; sepals linear-oblanceolate, $15-16 \times 2-3$ mm, acute, 1-veined, greenish brown, with dark brown streaks and fleck; petals linear-oblanceolate, acute, $13-14 \times ca 2 \text{ mm}$, 3-veined, slightly shorter than sepals; lip oblong or oblanceolate, 16-17×4-5 mm, 3-lobed near middle, reflexed



Figure 1. *Nervilia pangteyana* sp. nov. (A) plant with flower, (B) corm, (C) close-up of flower, (D) plant with leaf, (E) side view of flower, (F) dissected flower, (G) labellum, (H) volumn with ovary and pedicel. Illustration by Dr J. S. Jalal, Jalal 15051 (WII).

at right angle, saccate at the base, slightly tubular above, pinkish–white, suffused with pink veins; lateral lobes suberect, obtuse to almost rounded at apex, arching over the column; mid-lobe ovate, ca 9×4 mm, acute; disk glabrous, with 2 closely placed thin lamellae, green from base of the hypochile to half of the epichile followed by white and then pink and gibbose. Column clavate, 8 mm long, upper stigma portion broad, white, lower half thin, greenish-purplish, glabrous; anther ovoid, cap white.

Distribution and habitat

The new species is distributed at the outer fringe of the Corbett National Park, Sitabani, Uttarakhand, India. It grows

in Sal forest at 900 m a.s.l., in small colonies of 18–20 plants on moist and shaded forest floors together with *Nervilia crociformis* (Zollinger & Moritzi) Seidenf. and bryophytes.

Additional specimen examined (paratype)

India, Uttarakhand, Nainital, Sitabani, 16 Aug 2009, 900 m a.s.l., Jalal 15051 (WII).

Similar species

Nervilia pangteyana is similar to *Nervilia infundibulifolia* Blatter & McCann. The illustration of *Nervilia infundibulifolia* provided by Blatter and McCann (1932) shows thin hairs on the corm, but these appears to be superfluously



Figure 2. (A)–(F) *Nervilia pangteyana* sp. nov. (A) plant with flower, (B) plant with leaf, (C) close-up of flower, (D) petals and sepals, (E) column with ovary and pedicel, (F) labellum (Jalal 15051, WII). (G)–(I) *Nervilia infundibulifolia.* (G) flower (GT 2500, redrawn from Deva and Naithani 1986), (H) flower (redrawn from the painting of Miss E. Bell, BLAT), (I) labellum (adapted from Pearce and Cribb 2002).

added. They state that hairs are present on the column on the half below the stigma, whereas Pearce and Cribb (2002) state that hairs occur on the lower half, and Deva and Naithani (1986) claim the column to be glabrous. Blatter and McCann (1932) illustrated the leaves with dark patches that are more or less triangular with sides converging towards the apex, whereas the description states that it's thickened in the middle. Blatter and McCann (1932) and Pearce and Cribb (2002) describe the plant as having 2 internodes, whereas

N. pangteyana has at least 5 distinct internodes. Santapau and Kapadia (1966) illustrated the petals of *N. infundibulifolia* with 3 veins though in textual information they write that they have 1 vein. Chowdhery (1998) described and illustrated (Fig. 321) a plant from Arunachal Pradesh as *N. infundibulifolia*. On the basis of typical lip structure, hairs on leaves and two flowers, we believe his illustration to be of *N. plicata* (Andrews) Schltr. Seidenfaden and Arora (1982) considered *N. infundibulifolia* and *N. falcata* to be



Figure 3. Map of western Himalaya (India) showing the distribution of *Nervilia pangteyana* sp. nov.

questionable and treated them as conspecific, however, these two species and *N. pangteyana* are totally distinct from each other and can be easily differentiated. Maity et al. (2005) documented *N. infundibulifolia* from Sikkim Himalaya and noted a presence of two papillose lines on eypochile and one papillose line on epichile, wheareas *N. pangteyana* differs considerably from this description. The difference between these species are summarized in Table 1.

Key to species of *Nervilia* in the western Himalayas (India)

1. Flower solitary 2
– Flowers two or more than two
2. Mid-lobe of the lip fimbriate N. crociformis
– Mid lobe of the lip not fimbriate
3. Lip with hairs
– Lip glabrous N. mackinnonii
4. Callus gibbose, 2 running parallel from the place of
attachment of side-lobes and converging at the apex
N. pangteyana
- Callus papillose, 2 on hypochile and 1 on epichile
N. infundibulifolia
5. Flowers 2 N. plicata
- Flowers more than 2 6
6. Lip pale green to yellow, hypochile saccate
N. gammieana
– Lip white, hypochile non-saccate

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Table 1. Morphological differences between Nervilia pangteyana sp. nov. and N. infundibulifolia.

	N. pangteyana	N. infundibulifolia
Stolons	Absent	Present
Internodes	More than 5	2
Leaf margin	Wavy, entire	Wavy, minutely dentate-crenulate
Sepals	Oblanceolate, 1-nerved	Linear-oblanceolate, 3-nerved
Lip	Sac not gland-dotted	Sac gland-dotted
	Side lobes \pm ovate	Side lobes triangular (equilateral)
	Mid-vein of mid-lobe not channeled beneath	Mid-vein of mid-lobe channeled beneath
	Overall colour of the lip green at the sac and light purple above with thin dark purple veins and longitudinally running green to 3/4th of the length, followed by slight white and then dark pink over the callus on the later half of the lip	Overall colour of the lip green for the tube, sides lighter, mid-lobe white suffused with rose, maroon shades in patches with white margins
	Calli two, gibbose, longitudinal, running parallel to each other from the place of attachment of the side-lobes and converging at the apex	Hypochile with two papillose lines and one papillose line on epichile
	The latter half of mid-lobe trapezoidal and narrow below with decurved and rounded apex	The mid-lobe, obovate or orbicular, rounded at the apex

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