

Arnebia nandadeviensis (Boraginaceae), a new species from India

K. Chandra Sekar*, R.S. Rawal, Sanjay Gairola, Balwant Rawat
G.B. Pant Institute of Himalayan Environment & Development, Kosi – Katarmal,
Almora – 263 643, Uttarakhand, India

Abstract:

A new species of *Arnebia* (Boraginaceae), *A. nandadeviensis* K. Chandra Sekar & R.S. Rawal, is described from India. [Journal of American Science 2009:5(2) 105-106] (ISSN: 1545-1003)

Keywords: *Arnebia nandadeviensis*, Nanda Devi Biosphere Reserve, Uttarakhand, India, new species.

1. Introduction

The genus *Arnebia* Forsk. is represented by *ca* 25 species, chiefly distributed in Mediterranean region of the world, especially in tropical Africa and Himalaya (Mabberley, 1998). In India the genus comprises 5 species distributed in Upper gangetic plains and the Himalayan region (Aswal and Mehrotra, 1994). The genus is characterized by white tubercles in the body of plant, flat torus, actinomorphic - campanulate corolla, imbricately folded corolla-lobes; globose inflorescence and 4 partite ovary.

Arnebia nandadeviensis was collected by the authors during ecological vegetational analysis of Nanda Devi Biosphere Reserve under the project entitled "Response assessment & processing of knowledge base to serve long term management and use of biodiversity in the Himalaya". This plant was growing on alpine slopes at an altitude of 3800 – 4000 m along with *Anaphalis royleana* DC., *Jurinea dolomiaea* Boiss. and *Poa alpina* L. Critical examination and perusal of literature and herbaria reveal that the plant represents a hitherto unrecognized species. *Arnebia nandadeviensis* closely resembles *Arnebia euchroma* I.M. Johnston but differs in a number of characters (Table 1).

2. Enumeration

Arnebia nandadeviensis K. Chandra Sekar & R. S. Rawal, sp. nov. [Photo. 1 & 2]

Arnebiae euchromae I.M. Johnston, habitu caespitoso, perenni; caule erecto, 10-35 cm; radice atrorubro; foliorum mediano-nervo distincto; inflorescentiis globosis; bracteis linearis-lanceolatis; corollarum tubis angustis; corollae limbo campanulato; stylo exerto; stigmatae distincte 2-partito et ovario globoso similis, sed radecalio-foliis oblanceolato-obovatis, obtusis; caulino-foliis latioribus (1-3 cm latis); inflorescentiis stipitalis, nutantibus; bracteis floribus longioribus; calycibus longioribus (1.7-

2.4 cm); limbis minore latioribus (*ca* 2 mm) et antheris longioribus (6-7 mm) differt.

Typus: India, Uttarakhand, Bageshwar, Nanda Devi Biosphere Reserve, Pindari, 3820 m a.s.l., 30° 16' 0.2" N Latitude, 80° 00' 23.6" E Longitude, 29.08.2008, R.S. Rawal, K. Chandra Sekar, Sanjay Gairola & Balwant Rawat 2895 (holo GBP; iso BSD).

Perennial tufted herbs; root 1-1.5 cm thick, dark red. Stems few, 10-35 cm high, erect, terete, spreading bristly. Radical leaves 7-10, petioled, oblanceolate to obovate, 10-14 x 1-2.6 cm, obtuse at apex, entire, with distinct single pale green median nerve, glandular-downy, not bristly especially along margin, gradually tapering to broad petiole; petiole 1.5-2.3 cm long, pale green-yellow. Cauline leaves 8-12, sessile, alternate below, almost opposite towards the inflorescence, acute at apex, tapering towards base, slightly glandular-hairy or bristly-ciliate, with single pale green nerve; lower leaves elliptic – lanceolate or lanceolate, 3-8 x 1-2 cm, glandular-hairy above, appressed bristly-ciliate beneath; upper ones ovate or ovate-lanceolate, 3.2-4.8 x 2-3 cm, bristly-ciliate. Inflorescence globose, capitate, stalked at apex of non-branching stem, 6.5-8.5 x 3.5-4.2 cm, nodding; stalk 0.5-1.5 cm long. Bracts numerous, exceeding the flowers, linear-lanceolate, 1.8-2.7 cm long and 2-5 mm wide, entire, acuminate, dense bristly-ciliate along margin, pale green; bristle 1-3 mm long. Flowers nodding, densely covered by bracts, 2-3.2 cm long, pedicelled; pedicel 0.8-1.2 cm long. Calyx slightly longer than corolla, 1.7-2.4 cm long, bristly; lobes linear, 1.4-1.8 cm long, bristly towards apex. Corolla dark red, the narrow tube 1.6-2 cm long; limb campanulate, 1-2 mm long, *ca* 2 mm across, obtuse, bristly along the margin. Anthers attached near the middle of corolla tube, 6-7 mm long, stalked; stalk 1-2 mm long. Style exerted; stigma distinctly 2-parted. Ovary globose, 2-3 mm across, ovules small.

Flowering and fruiting: June – August.

Ecology: Scarcely growing on alpine slopes at an altitude of 3800 – 4000 m.

Distribution: India, Pindari (Nanda Devi Biosphere Reserve), Uttarakhand.

Etymology: The specific epithet '*nandadeviensis*' is based on the type locality, Nanda Devi Biosphere Reserve.

Note: *Arnebia nandadeviensis* is closely allied to *Arnebia euchroma* I.M. Johnston in general appearance having tufted perennial habit; 10-35 cm erect stem, dark red root; distinct median nerve of leaves; globose inflorescence; linear-lanceolate bracts; narrow corolla tube, campanulate corolla-limb; exerted style, distinctly 2-parted stigma and globose ovary but differs from the latter in having oblanceolate-obovate, obtuse radical leaves; wider cauline leaves (1-3 cm); stalked with nodding inflorescence; numerous bracts exceeding the flowers; longer calyx (1.7-2.4 cm) with less wider limb (ca 2 mm) and longer anther (6-7 mm).

Acknowledgements

The authors are thankful to Dr. L.M.S. Palni, Director, G.B. Pant Institute of Himalayan Environment & Development, Kosi-Katarmal, Almora for providing facilities and encouragements. Sincere thanks to Dr. V.J. Nair, Scientist Emeritus, BSI, Coimbatore for providing the latin diagnosis. The authors are thankful to Dr. V. Sampath Kumar, Scientist-C, BSI, Coimbatore for helping and valuable suggestions.

Table 1. Distinction between *Arnebia euchroma* I.M. Johnston and *Arnebia nandadeviensis* sp. nov.

	<i>Arnebia euchroma</i>	<i>Arnebia nandadeviensis</i>
Radical leaves	lanceolate or lanceolate-linear to linear	oblanceolate to obovate
	acute at apex	obtuse at apex
Cauline leaves	less than 1 cm wide (3-7 mm)	more than 1 cm wide (1-3 cm)
Inflorescence	sessile	stalked (0.5-1.5 cm long)
	erect	nodding
Bracts	few	numerous
	not exceeding the flowers	exceeding the flowers
Calyx	slightly shorter than the corolla (ca 1.2 cm)	longer than the corolla (1.7-2.4 cm)
Corolla	1.2-1.5 cm long	1.6-2 cm long
	limb half length of corolla-tube (7-8 mm)	limb not half length of corolla-tube (1-2 mm)
	limb ca 8 mm across	limb ca 2 mm across
Anthers	ca 2.5 mm long	6-7 mm long



Fig.1 *Arnebia nandadeviensis* sp. nov. along with associate plants



Fig.2 A twig showing the nodding inflorescence along with cauline leaves

References

- Mabberley, D.J. (1998). The plant book. 2nd revised edition. Cambridge University press. pp. 56.
- Aswal, B.S. and B.N. Mehrotra (1994). *Flora of Lahaul-Spiti*. Bishen Singh Mahendra Pal Singh, Dehradun. pp. 441-456.