

## Analysis of High Himalayan *Astragalus* (*Leguminosae*) with Minute Calyx Lobes: New Synonyms of *A. minutidentatus*

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*Astragalus minutidentatus* Y.C.Ho, *A. sanjappae* Chaudhary & Khan and *A. jumlaensis* Podlech of *Leguminosae* were taxonomically revised and the circumscription is defined. From a comprehensive analysis of all these three species, we concluded that they are conspecific and thus propose the latter two to be treated as synonyms of the preceding name.

**Key words:** *Astragalus minutidentatus*, circumscription, *Fabaceae*, Himalaya.

While surveying the floristic diversity of North Sikkim, some specimens of an interesting *Astragalus* L. (*Leguminosae*) were collected by our research team from an interior valley of this part of the Himalaya. Unlike most of the other Eastern Himalayan members of the genus that are grown at high altitude, the calyces of the specimens are covered by subappressed black hairs and bear minute calyx lobes. Moreover, hairs on almost whole plant are distinctly flattened and subbasifixed which is evident by a very short obtuse appendix at base, peduncles are mostly under 2 cm long and definitely shorter than the subtending leaves, bearing few lilac or light purple flowers. Inspired by the examination of literature and the specimens including types, the recently collected materials were identified as *Astragalus sanjappae* Chaudhary & Khan (Chaudhary and Khan 2005). When they published *A. sanjappae*, Chaudhary and

Khan (2005) compared their species with *A. sikkimensis* Benth. ex Bunge and *A. tenuicaulis* Benth. ex Bunge and stated the distinction as “differs in having leaflets hairy on both sides, calyx teeth very minute (sometimes indistinct), keel petals shorter than wing petals and pods distinctly stipitate with stipe shorter than calyx tube” (p. 131). They also cited specimens from Garhwal Himalaya (Uttarakhand) and Nepal. Further, key to these three species was also provided. It is worthy to mention here that in *A. sanjappae* calyx teeth are small as described but widely triangular (lateral widest two teeth 0.33–0.36 × 0.65–0.68 mm) and standard petal is definitely narrowly obovate in the type specimens deposited at CAL (L.B.Chaudhary 225071, CAL0000012629–isotype; J.F.Duthie 986b, CAL113733–paratype; T.B.Shrestha & M.S.Bistha 2289–paratype) like our specimens in question (Figs. 1 (inset), 2G). Moreover, these features correspond to those of *A.*

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#### References

- Baker J.G. 1876. *Leguminosae*. In: Hooker J.D. (ed.), The Flora of British India 2: 56–306. L. Reeve & Co. Kent, London.
- Bunge A. 1868. Generis *Astragali* species gerontogaeae. Pars 1: Claves diagnosticae. Mém. Acad. Imp. Sci. Saint-Pétersburg 11: 1–140.
- Bunge A. 1869. Generis *Astragali* species gerontogaeae. Mém. Acad. Imp. Sci. Saint-Pétersburg 15: 1–254.
- Chaudhary L.B. and Khan Z.H. 2005. A new species of *Astragalus* L. (*Fabaceae*) from Indo-Nepal region. *Rheedea* 15(2): 129–131.
- Chaudhary L.B., Rana T.S. and Anand K.K. 2008. Current status of the systematics of *Astragalus* L. (*Fabaceae*) with special reference to the Himalayan species in India. *Taiwania* 53(4): 338–355.
- Grierson A.J.C. and Long D.G. 1987. *Leguminosae*. In: Grierson A.J.C. and Long D.G. (eds.), Flora of Bhutan 1(3): 607–738. Royal Botanic Garden Edinburgh, Edinburgh.
- Ho Y.-C. 1981. Prascurosores florum *Astragalorum* Sinensium (II). Bull. Bot. Res., Harbin 1(3):103–132 (in Chinese with Latin description).
- Ho Y.-C. 1993. Subgen. *Astragalus*. In: Fu K.-T. (ed.), Flora Reipublicae Popularis Sinicae 42(1): 171–218. Science Press, Beijing (in Chinese).
- IPNI 2021. International Plant Names Index. Published on the Internet; <http://www.ipni.org>, The Royal Botanic Gardens, Kew, Harvard University Herbaria & Libraries and Australian National Botanic Gardens [Retrieved on 21 April 2021].
- Podlech D. and Zarre S. 2013. A taxonomic revision of the genus *Astragalus* L. (*Leguminosae*) in the Old World 2: 823–1640. Naturhistorisches Museum, Wien.
- POWO 2021. Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet; <http://www.plantsoftheworldonline.org/> [Retrieved on 21 April 2021].
- Sanjappa M. 1992. Legumes of India. Bishen Singh Mahendra Pal Singh, Dehra Dun.
- Shrestha K.K., Bhattarai S. and Bhandari P. 2018. Handbook of Flowering Plants of Nepal. Vol. 1. Gymnosperms and Angiosperms, *Cycadaceae–Betulaceae*. Scientific Publishers, Jodhpur.
- Xu L.-R. and Podlech D. 2006. Some new taxa of *Astragalus* L. (*Leguminosae*) from China and Nepal. *Feddes Repert.* 117(3–4): 225–231.
- Xu L.-R. and Podlech D. 2010. *Astragalus* L. In: Wu Z.-Y., Raven P.H. and Hong D.-Y. (eds.), Flora of China 10: 328–453. Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.

J.Ghosh<sup>1</sup>, M.Midday<sup>1</sup>, D.S.Das<sup>2</sup>, D.Maity<sup>1</sup>: 微小な萼裂片をもつヒマラヤ高山帯のゲンゲ属 (マメ科)

#### *Astragalus minutidentatus*の新たなシノニム

マメ科ゲンゲ属のうち、中国西藏から記載された *Astragalus minutidentatus* Y.C.Ho, シッキムから記載された *A. sanjappae* Chaudhary & Khan, ネパールから記載された *A. jumlaensis* Podlech を分類学的に検討した結果、3種は同一種であることが明らかになり、*A. jumlaensis* と *A. sanjappae* は *A. minutidentatus* のシノニムである

という結論に達した。

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