Phytotaxa 195 (1): 065–072
www.mapress.com/phytotaxa/

Article

ISSN 1179-3155 (print edition)
PHYTOTAXA
ISSN 1179-3163 (online edition)

http://dx.doi.org/10.11646/phytotaxa.195.1.4

Petrocodon hunanensis (Gesneriaceae), a new species identified by both morphological and molecular evidence from limestone area in Hunan, China

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Abstract

Petrocodon hunanensis, a new species of Gesneriaceae from limestone area in Hunan Province, China, is described and illustrated. The new species is morphologically similar to *Petrocodon coriaceifolius*, but readily differs from the latter one in the growth form with terrestrial stems and distinct internodes, both surfaces of leaf densely with white pubescence, petiole densely with reddish-purple or white pubescence, zygomorphic corolla white or pale purple and 2–3 cm long, pedicels 0.3–2 (2.8) cm long, 4 stamens and 1 staminodes, ovary and capsule stipitate. Molecular evidences indicate that it is systematically similar to *P. hispidus*, but the morphologies of two relatives are obviously different.

Key words: *Calcareoboea, Didymocarpus, Dolicholoma, Lagarosolen,* limestone flora, molecular evidence, new species, *Paralagarosolen, Petrocodon, Tengia, Wentsaiboea*

Introduction

Based on the recent molecular studies (Wang *et al.* 2010; Möller *et al.* 2011; Wang *et al.* 2011; Weber *et al.* 2011a, 2011b; Xu *et al.* 2014), several genera have been integrated into *Petrocodon* Hance (1883: 167), including the monotypic genera *Calcareoboea* C.Y. Wu ex H.W. Li (1982: 241), *Paralagarosolen* Y.G. Wei (2004: 528), *Tengia* Chun (1946: 279), *Dolicholoma* D. Fang & W.T. Wang in Wang (1983: 18), all the species of *Lagarosolen* W.T. Wang (1984: 11), one species of *Wentsaiboea* D. Fang & D.H. Qin (2004: 533) (*Wentsaiboea tiandengensis* Yan Liu & B. Pan 2010: 739), three species of *Didymocarpus* Wall. (1819: 378) (*Didymocarpus niveolanosus* D. Fang & W.T. Wang in Wang & Pan 1982: 133, *Didymocarpus mollifolius* W.T. Wang 1984: 21, *Didymocarpus hancei* Hemsl. 1890: 229) and one species of *Primulina* Hance (1883: 169) (*Primulina guangxiensis* Yan Liu & W.B. Xu in Liu *et al.* 2011: 682). Consequently, the number of species in the genus *Petrocodon* increased to 26, including nine new species published recently, mainly distributed in southern China and northern Vietnam (Wei *et al.* 2010; Jiang *et al.* 2011; Weber *et al.* 2011a; Wen *et al.* 2012; Chen *et al.* 2014; Hong *et al.* 2014; Xu *et al.* 2014). The re-circumscription of *Petrocodon* increased the morphological variability of this genus (Weber *et al.* 2011a). For instance, *Petrocodon scopulorus* (Chun) Y.Z. Wang has an actinomorphic corolla with 4 or 5 stamens, while the other species have zygomorphic corollas and 2 stamens and 2 or 3 staminodes. Moreover, the corolla color and shape now include more types compared to the white and urceolate to campanulate forms of original *Petrocodon*.

During field investigations of the limestone areas of Hunan Province in 2013 and 2014, we collected plants with a corolla shape and leaf blade shape most similar to *Petrocodon coriaceifolius* (Y.G. Wei 2006: 273) Y.G. Wei & Mich. Möller in Weber *et al.* (2011a: 59). However, these plants have 4 stamens and 1 staminode which readily differentiates it from *P. coriaceifolius* (with 2 stamens and 2 staminodes). Eventually, we confirm it as a new species of the newly re-circumscribed genus, *Petrocodon* based on the morphological and molecular data and some relevant literatures (Wang 1984; Wei 2006; Wei *et al.* 2010; Jiang *et al.* 2011; Weber *et al.* 2011a; Wen *et al.* 2012; Chen *et al.* 2014; Hong *et al.* 2014; Xu *et al.* 2014;). Molecular evidences indicate that it is systematically similar to *P. hispidus* (W.T. Wang 1984: 12) A. Weber & Mich. Möller in Weber *et al.* (2011a: 60), but the morphologies of these two relatives are obviously

Accepted by Zhi-Qiang Zhang: 10 Dec. 2014; published: 22 Jan. 2015

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Appendix 1. GenBank accession numbers (Species: *trnL-F* / ITS).

Petrocodon coriaceifolius (Y.G. Wei) & Mich. Möller: HQ632943/ HQ633040; *Petrocodon dealbatus* Hance: FJ501537/ FJ501358; *Petrocodon hancei* (Hemsl.) A. Weber & Mich. Möller: HQ632944/ HQ633041; *Petrocodon hispidus* (W.T. Wang) A. Weber & Mich. Möller: HQ632939/ HQ633036; *Petrocodon niveolanosus* (D. Fang & W.T. Wang) A. Weber & Mich. Möller: JF697588/ JF697576; *Petrocodon scopulorum* (Chun) A. Weber & Mich. Möller: HQ632947/ HQ633044; *Chirita anachoreta* Hance: DQ872820/ DQ872837; *Chirita pumila* D. Don: FJ501491/ FJ501327; *Didymocarpus cortusifolius* (Hance) Levl.: HQ632898/ HQ632995; *Primulina heterotricha* (Merr.) Y.Z. Wang: DQ872816/ DQ872826; *Primulina tabacum* Hance: AJ492300/ FJ501352.

Appendix 2. Voucher with collection locality and herbarium where deposited in.

Petrocodon hunanensis X. L. Yu & Ming Li: J.J. Zhou 14082801, Hunan, China (CSFI); *Petrocodon mollifolius* (W.T. Wang) A. Weber & Mich. Möller: LJM 2012001, Yunnan, China (PE); *Didymocarpus yunnanensis* (Franch.) W.W. Smith: LPW 2012028, Sichuan, China (PE).