A new definition of the genus Petrocodon (Gesneriaceae)

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Abstract

Based on molecular studies, the small Chinese genus Petrocodon (two species and one variety) has been recently enlarged to include the monotypic genera Calcareoboea, Paralagarosolen and Tengia. It is shown here that the (6–7) species of Lagarosolen, the monotypic Dolicholoma, a few species of Didymocarpus, and a number of new species that have recently been published (but not formally described) under Petrocodon and Lagarosolen should be included in this genus. This raises the size of the genus from five to around 20 species. With respect to the floral diversity (corolla form, size, and coloration; with the exception of Tengia, the androecium is always diandrous) and inferred pollination syndromes (different forms of melittophily, ornithophily, psycho- and/or sphingophily), Petrocodon represents one of the most varied genera of Old World Gesneriaceae, comparable to some New World genera.

Key words: Calcareoboea, Didymocarpus, Dolicholoma, Lamiales, Lagarosolen, molecular systematics, Paralagarosolen, pollination syndromes, Tengia

Introduction

A recent molecular phylogenetic study (Möller et al. 2009) revealed that the Chinese genera Petrocodon (three species with small, white, urceolate flowers, with buzz-pollination syndrome) and Calcareoboea (monotypic in its original concept, with large, long-tubular, bright red, apparently ornithophilous flowers) form a strongly supported clade. This was confirmed in the study of Wang et al. (2011) who also added Paralagarosolen (with long-tubed hypocrateriform flowers) and Tengia (with flowers similar to Petrocodon, but with five fertile stamens) to the clade and expanded the definition of Petrocodon to include these four genera, with five species in total. The present paper provides molecular evidence that this definition is still too narrow and that some more genera have to be included in Petrocodon. In addition, the new definition demonstrates strikingly, and exemplarily for the Old World Gesneriaceae, how unreliable traditional generic definitions, often based exclusively on floral characters, are. Petrocodon emerges as one of the florage most diverse clades of Old World Gesneriaceae.

Material and Methods

Plant material

Leaf material for newly acquired sequences came from silica gel dried field collections. Most molecular data came from previous work (Möller et al. 2009, 2011a, Weber et al. 2011), sequences for three taxa were