



Article

Cytological and phylogenetic study of *Petrocosmea hexiensis* (Gesneriaceae), a new species from Chongqing, China

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Abstract

A new species, *Petrocosmea hexiensis*, is described and illustrated from Hexi in the Nanchuan district of Chongqing, China. The new species is similar to *Petrocosmea duclouxii*, but differs mainly in having a longer corolla tube and ovate-rhombic to rhombic leaves with truncated bases. Cytological and phylogenetic studies of the new species demonstrate that it has the same chromosome number as other species of *Petrocosmea* and that its closest relative is *P. duclouxii*.

Introduction

The genus *Petrocosmea* Oliver (1887) belongs to Gesneriaceae, subfam. Cyrtandroideae, tribe Didymocarpeae and consists of 33 species with 4 varieties mostly distributed in China. The genus has been divided into three sections (Wang 1985, Li & Wang 2004, Burt 1998, 2001, Wei & Wen 2009, Qiu *et al.* 2011): sect. *Petrocosmea* Craib (1919: 269), sect. *Anisochilus* Hemsley (1899: 2599) and sect. *Deinanthera* Wang (1985: 49). Plants of uncertain identity were collected in Chongqing Province, which was the first record of *Petrocosmea* from this province. These plants belong to sect. *Anisochilus*, because of their abaxial corolla lip that is 2× longer than the adaxial lip. Recently several new species of Gesneriaceae have been discovered in the limestone regions of China (Wei & Wen 2009, Qiu *et al.* 2011, Wu *et al.* 2012, Wu *et al.* 2012) and it is likely that the new gathering also represents a new species.

Chromosome numbers of several *Petrocosmea* species have been reported (Lu *et al.* 2002, Ji *et al.* 2008). To test the chromosome number of the newly discovered population, both the chromosomes in the somatic cells and the pollen mother cells were counted. A molecular phylogenetic tree has also been compiled based on the chloroplast regions *trnL-F*, *matK* and *trnT-L* to disclose the phylogenetic position of these newly discovered plants.

Material and methods

The collected plants were cultivated in the nursery of FairyLake Botanical Garden. Chromosome preparation of root tips followed the squash method of Zhu (1982). Flower buds were taken during the flowering period when the pollen mother cells (PMCs) were in meiotic phase and were fixed in Carnoy I (3:1 ethanol : acetic acid) with the bracts removed. After enzyme digestion of cell walls, the chromosome preparations of the PMCs of the new species followed the flame-drying protocol of Zhu (1982) and Zhang *et al.* (2011). Then the resulting microslides were studied and photographed after staining using the Giemsa method.