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Updated Taxonomy of Chinese *Phlomoides*: description of three newly recorded species and their systematic placement

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Abstract

Phlomoides iliensis, *P. dshungarica* and *P. rotala*, previously known only from Kazakhstan, are newly recorded in Xinjiang Uygur Autonomous Region, China. Molecular phylogenetic analyses using eight plastid DNA markers (*atpB-rbcL*, *psbA-trnH*, *rpl16*, *rpl32-trnL*, *rps16*, *trnK*, *trnL-trnF*, *trnT-trnL*) revealed that these three species are nested within Clade VI, with their relationships to similar or allied species discussed. This study increases the total number of *Phlomoides* species in China to 64. In addition, diagnostic characters, updated morphological descriptions, detailed illustrations, and a key that encompasses all 16 *Phlomoides* species found in the Xinjiang Uygur Autonomous Region are provided.

Key words: molecular phylogeny, *Eremostachys*, *Phlomis*, Phlomideae

Introduction

Phlomoides Moench (1794: 403) is the second largest genus within Lamioideae of Lamiaceae. In its current recircumscription, the genus now includes what were previously classified as seven distinct genera: *Eremostachys* Bunge (1830: 414), *Lamiophlomis* Kudô (1929: 210), *Metastachydium* Airy Shaw ex C.Y.Wu & Li in Li (1975: 73), *Notochaete* Bentham (1829: 1289), *Paraeremostachys* Adylov *et al.* (1986: 112), *Pseuderemostachys* Popov (1940a: 75), and *Pseudomarrubium* Popov (1940a: 75), along with species formerly classified under *Phlomis* sect. *Phlomoides* Briquet (1895: 248). The redefined *Phlomoides* is a morphologically diverse and taxonomically challenging group composing ca. 180 species (Scheen *et al.* 2010, Bendiksby *et al.* 2011, Mathiesen *et al.* 2011, Salmaki *et al.* 2012a, Zhao *et al.* 2021a, b, 2022, 2023a, b, 2024a, b, c, d).

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