Sinalliaria, a new genus of Brassicaceae from eastern China, based on morphological and molecular data

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Abstract

Sinalliaria is described here as a new genus of the family Brassicaceae from eastern China, based on the morphological characters and molecular sequences. Sinalliaria differs from the related genus Orychophragmus in having basal leaves petiolate, simple or rarely with 1–3 lateral lobes (not pinnatisect); cauline leaves petiolate, cordate at base (not sessile, auriculate or amplexicaul at base); petals obovate to narrowly obovate, claw inconspicuous (not broadly obovate, with a claw as along as sepal); siliques truncate (not long-beaked) at apex. The microscopic characters of seed testa also show significant differences between Sinalliaria and Orychophragmus. Phylogenetic evidence from DNA sequences of nuclear ribosomal ITS and plastid region trnL-trnF indicates that Sinalliaria is a distinct group related to Orychophragmus and Raphanus, but these three genera do not form a clade. The new genus Sinalliaria is endemic to eastern China and has only one species and one variety. The new combinations, S. limprichtiana (Pax) X. F. Jin, Y. Y. Zhou & H. W. Zhang and S. limprichtiana var. grandifolia (Z. X. An) X. F. Jin, Y. Y. Zhou & H. W. Zhang are proposed here.

Key words: Cruciferae, microscopic and morphological characters, new combination, nrDNA and cpDNA, taxonomy

Introduction

Brassicaceae (also known as Cruciferae) contains approximately 3660 species which belong to 320 genera (Al-Shehbaz 2012, Koch et al. 2012). The family is distributed worldwide and includes many economically important vegetables in the genus Brassica Linnaeus (1753: 666), such as broccoli, cabbage, cauliflower, kale, rape, rutabaga and turnip. Arabidopsis thaliana (Linnaeus 1753: 665) Heynhold (in Holl & Heynhold 1842: 538) is best known as the model organism of flowering plants (Al-Shehbaz et al. 2006). In China, there are 102 genera with 412 species in total (Zhou et al. 2001).

Cardamine limprichtiana Pax (1911: 27), with the conduplicate cotyledons, is not consistent to the other members in Cardamine Linnaeus (1753: 654), and cotyledons of Cardamine are accumbent. Alliaria grandifolia An (1985: 396) was collected and described from north-western Zhejiang, and it has no garlic smell when crushed. The new species was described only from a fruiting collection, and flower structure was not provided in the protologue (An, 1985). Zhang (1993) firstly gave the description on flower character in Flora of Zhejiang, but it did not agree with another description (Ding & Hong, 1997).

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