



## *Impatiens tianlinensis* (Balsaminaceae), a new species from Guangxi, China

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### Abstract

*Impatiens tianlinensis* S. X. Yu & L. J. Zhang, a new species of the Balsaminaceae from Cenwang Laoshan Mountain, Tianlin County, Guangxi Region, is described and illustrated. This species closely resembles *I. apalophylla* and *I. clavigera* var. *auriculata* in having racemose inflorescences, 4 lateral sepals, hammer-shaped capsules and ellipsoid seeds, but differs in having sessile glanduliferous petioles, few-flowered inflorescences, incurved spur, yellow lower sepal without reddish patches, yellowish petals and lower sepal, and acuminate dorsal petal apex. The molecular data, from nuclear ribosomal and plastid genes, as well as pollen characters also support that the species is new to science.

**Key words:** Balsaminaceae, molecular data, new species, phylogeny, pollen character

### Introduction

The family Balsaminaceae contains two genera currently recognized, the small *Hydrocera* Wight & Arnott (1834: 140) and *Impatiens* Linnaeus (1753: 937) with over 1000 species (Grey-Wilson 1980, Fischer 2004). *Impatiens* is distributed throughout tropical Africa, India, South-west Asia, South China and Japan, with a few species spreading into the north temperate zone of Europe, Russia, China and North America (Grey-Wilson 1980).

There are about 270 species known in China (Chen 2001, Chen *et al.* 2007, Yu 2012), and their majority are restricted to southwest China: Yunnan, Sichuan, Guizhou, Xizang (Tibet) and Guangxi. As in many other genera, several new species are discovered within these regions each year, such as *Begonia* of Begoniaceae (Ku *et al.* 2008, Peng *et al.* 2012, 2013), *Lagarosolen* of Gesneriaceae (Xu *et al.* 2008), *Pararuellia* of Acanthaceae (Chen *et al.* 2009), *Aspidistra* of Asparagaceae (Lin *et al.* 2013) and *Codonopsis* of Campanulaceae (Wang & Hong, 2014).

During a taxonomic revision of *Impatiens* in Guangxi Region, the first author encountered several specimens of a species thought to be new to science. Further studies confirmed that it can be readily distinguished from related taxa, based on morphological (including palynological) and molecular characters.

### Materials and Methods

**Molecular methods:**—In total, 152 species of *Impatiens* were sampled to represent different evolutionary patterns of the genus. Three species: *Hydrocera triflora* (L.) Wight & Arnott (1834: 140) (Balsaminaceae), and *Marcgravia umbellata* Linnaeus (1753: 503) (Marcgraviaceae) and *Norantea guianensis* Aublet (1775: 554) (Marcgraviaceae) were included as outgroups based on the results of Yuan *et al.* (2004), Janssen *et al.* (2006) and Yu *et al.* (2015). All sequences were downloaded from GenBank except *I. clavigera* Hook. f. (1908: 2863) var. *auriculata* Huang S.H. (2003: 277) and *I. tianlinensis*, which were newly generated for this study with accession numbers KT321312 for ITS, KT321311 for *atpB-rbcL* and KT321313 for *trnL-F*, respectively. Vouchers and GenBank accession numbers are listed in Table S1.

Three molecular markers were used: ITS (ITS-1, 5.8S, and ITS-2), *atpB-rbcL* and *trnL-F* region (*trnL* intron, and