



Monsanima tinguagensis (Apocynaceae), an enigmatic new species from Atlantic rainforest

UIARA CATHARINA SOARES E SILVA¹, RENATA GABRIELLE PINHEIRO SANTOS², ALESSANDRO RAPINI¹, JORGE FONTELLA-PEREIRA² & SIGRID LIEDE-SCHUMANN³

¹ Departamento de Ciências Biológicas, Universidade Estadual de Feira de Santana, CEP 44036-900, Feira de Santana, Bahia, Brazil.

² Programa de Pós-graduação do Departamento de Botânica do Museu Nacional – Universidade Federal do Rio de Janeiro, CEP 20940-040, Rio de Janeiro, RJ, Brazil.

³ Department of Plant Systematics, University of Bayreuth, 95440 Bayreuth, Germany.

E-mails: uiara_catharina@yahoo.com.br; natagabrielle@ufrj.br; rapinibot@yahoo.com.br; jofope@mn.ufrj.br; sigrid.liede@uni-bayreuth.de

Abstract

A new species of Asclepiadoideae (Apocynaceae) with enigmatic taxonomic position was found in the Atlantic rainforest of Rio de Janeiro State, southeastern Brazil. To ascertain its affinities within the Asclepiadeae, we performed phylogenetic analyses using the plastid regions *trnT-L* and *rps16*. Our results strongly support the new species close to the Orthosiinae, but do not support any generic relationship for this species. Based on the floral morphology, especially the corona lobes, which are highly fused, and curved inward at the top, covering the gynostegium, the new species is assigned to *Monsanima*. This genus is sister to the other Orthosiinae and included so far only one species narrowly endemic to the *campos rupestres* of Bahia, in northeastern Brazil. The new species, *Monsanima tinguagensis*, occurs in a protected area, Tinguá Biological Reserve. However, it is known only by the type specimen and is probably vulnerable to extinction.

Introduction

The Asclepiadoideae (Apocynaceae) are widely known because of their complex floral morphology, characterized by a remarkable synorganization (e.g., Endress 1996). The traditional taxonomy of the subfamily until the 1990s, based on few floral characters, was pragmatic but essentially artificial (e.g., Rapini 2002). Morphological convergences are common in the subfamily and relationships are often difficult to derive based exclusively on morphology. Therefore, the use of phylogenetic analyses—especially based on molecular data (e.g., Liede & Täuber 2000, 2002, Rapini *et al.* 2003, 2006, Liede-Schumann *et al.* 2005, 2014, Silva *et al.* 2012, Liede-Schumann & Meve 2013)—has profoundly changed the systematics of neotropical asclepiads.

The use of molecular phylogenetics, mainly based on plastid regions, clarified several relationships among neotropical Asclepiadoideae which had been missed based on morphology (Rapini 2012). This is clear when current subtribal classification of the subfamily (Endress *et al.* 2014) is taken into account. For instance, the American genera *Funastrum* Fournier (1882: 388), *Pentacyphus* Schlechter (1906: 605) and *Philibertia* Kunth in Humboldt *et al.* (1819: 195), once considered synonyms of *Sarcostemma* Brown (1810) (Holm 1950), were shown to belong to different subtribes: *Funastrum* and *Philibertia* to Oxypetalinae, and *Pentacyphus* to Pentacyphinae; while the palaeotropical *Sarcostemma* belongs to Cynanchinae (Liede & Täuber 2000, Endress *et al.* 2014). Another example is the segregation of the genera of Malme's (1927) Orthosieae: *Peplonia* Descaine (1844: 545), *Gonioanthea* Malme (1927: 6) and *Macroditassa* Malme (1927: 9)—three genera currently treated under *Peplonia*—were shown to belong to Metastelmatinae (Rapini *et al.* 2004, Silva *et al.* 2012), while the other two genera of the former 'Orthosieae', *Orthosia* Decaisne (1844: 526) and *Jobinia* Fournier (1885: 327), are closer to *Scyphostelma* Baillon (1890: 252), recently reinstated by Liede-Schumann & Meve (2013), and the recently proposed monotypic *Monsanima* Liede-Schumann & Meve (2013: 66) in Orthosiinae (Liede-Schumann *et al.* 2005, Liede-Schumann & Meve 2013). Furthermore, most of the neotropical species of *Cynanchum* Linnaeus (1753: 212) were shown to belong to Orthosiinae rather than to Cynanchinae (Liede-Schumann *et al.* 2005) and were recently transferred to *Jobinia*, *Scyphostelma* or *Monsanima* (Liede-Schumann & Meve 2013).

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