



Trichosanthes napoensis (Cucurbitaceae), a new species from Guangxi, China

DONG-XIN NONG¹, BAO-YOU HUANG¹, ZU-ZAI LAN¹, DONG-MEI XIE², LI-YING YU^{1*} & LU-QI HUANG^{2*}

¹Guangxi Botanical Garden of Medicinal Plants, Nanning 530023, China;

²State Key Laboratory of Dao-di Herbs, China Academy of Chinese Medical Sciences, Beijing 100700, China;

* Authors for correspondence (yuliyang@vip.sina.com, huangluqi01@126.com)

Abstract

A new species of the genus *Trichosanthes* (Cucurbitaceae), *T. napoensis*, is described and illustrated from Guangxi Province, western China. It is closely related to *T. pedata* Merr. & Chun, but it can be distinguished from the latter by having 3-fid tendrils, a fruit apex with a prominent protrusion, and oblong-elliptical seeds with a ridge at the margin.

Keywords: China, Cucurbitaceae, new species, *Trichosanthes*

Introduction

The genus *Trichosanthes* L. (1753:1008) is one of the largest genera of family Cucurbitaceae, consists of 90–100 species and is distributed from India through China to Japan and Australia and Fiji (Huang & Jeffrey 2011; Cooper & de Boer 2011; de Boer & Thulin 2012; Yueh & Cheng 1974, 1980). Most species have large white or pale yellow petals with conspicuously fringed margins, with the fringes sometimes several cm long. Recent results of molecular systematics and biogeography have indicated that *Trichosanthes* was not monophyletic, and as a result the fringeless genus *Gymnopetalum* Arn. (1840:52) was merged with it to retain monophyly (de Boer *et al.* 2012). A prior study showed that a single species of *Trichosanthes* described from the Caribbean did not belong in the genus, and this was transferred to a new genus, *Linnaeosicyos* H. Schaefer & Kocyan (Schaefer *et al.* 2008).

There are approximately 40 species of *Trichosanthes* in China (14 endemic), most of which have fruit that are globose, ovoid, or fusiform, fleshy, berries usually glabrous, with seeds suspended in pulp (Huang *et al.* 2009; Huang & Jeffrey 2011; Yueh & Cheng 1974, 1980). Morphologically, *Trichosanthes* is characterized by the morphology of leaves and flowers and the size and form of bracts, and the morphology of fruits and seeds can be especially helpful to identify the different species (Huang & Jeffrey 2011; de Boer & Thulin 2012; Yueh & Cheng 1974, 1980).

During our field work in the Fourth National Survey on Chinese Material Medical Resources, unusual endemic species of *Trichosanthes* was collected in Napo County, Guangxi Province. Based on comparisons with relevant specimens in IBK, GNU, GXMG, NAS and PE, we concluded that these specimens represent a new species as described below.

Taxonomy

Trichosanthes napoensis D. X. Nong & L. Q. Huang, *sp. nov.* (Figs. 1–2)

Type:—CHINA. Guangxi Zhuangzu Autonomous Region, Baise City, Napo County, Pingmeng Town, Nianjing Village, Xima Tun, Roadside and shrub of Limestone foothills, alt. 978 m, 12 October 2014, D. X. Nong 451026141012021LY (Holotype: GXMG! (specimen with fruit); isotypes: GXMG!, CMMI!).

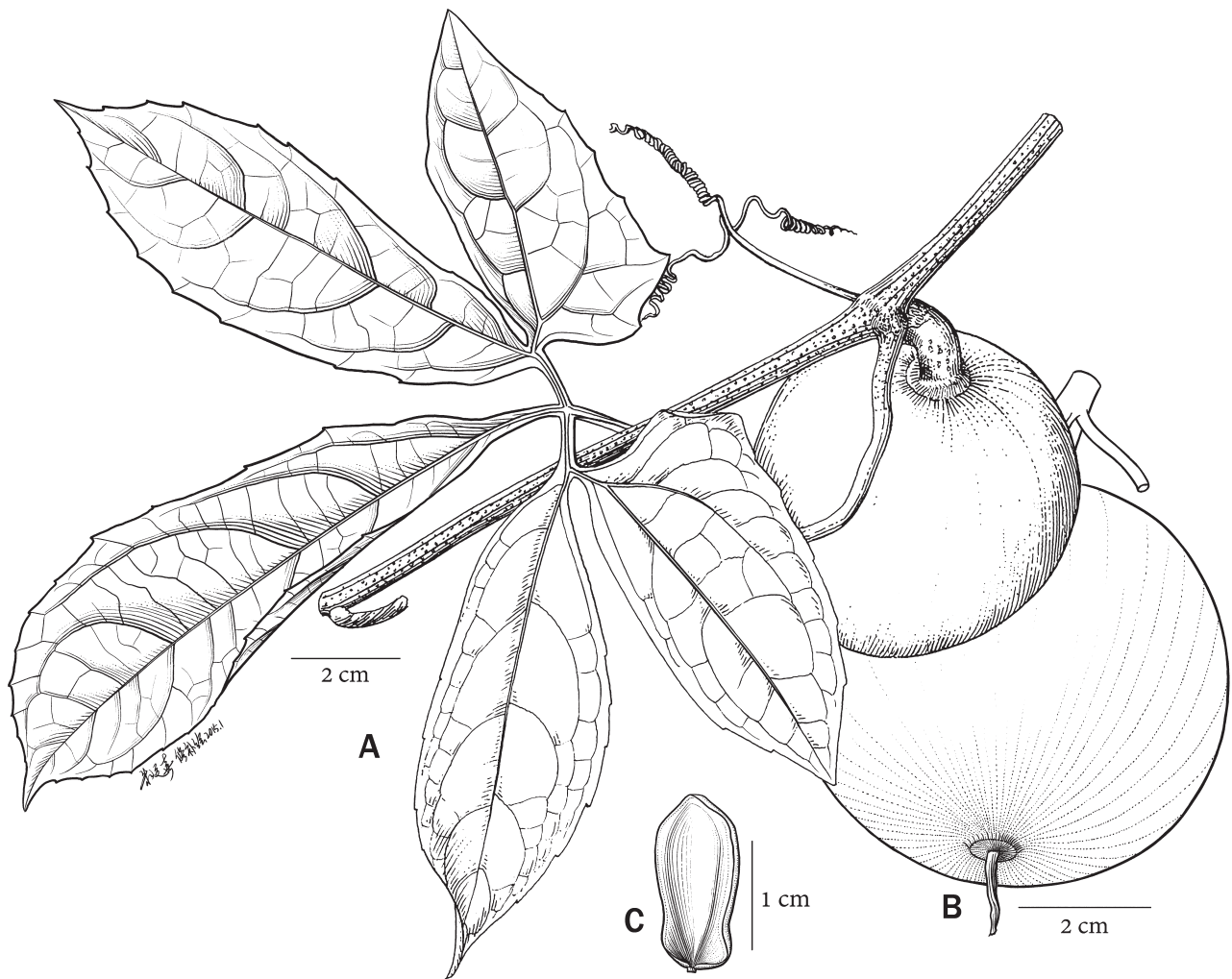


FIGURE 1. *Trichosanthes napoensis* A. Habit B. Fruit C. Seed.

Lianas, woody. Stems robust, striate, glabrous, lenticels densely covered. Tendrils usually 3-fid. Leaves pedately 5-foliolate, thinly leathery; adaxially deep green, abaxially pale green, leaf blade rough, white punctate dense on both surface, remotely sinuate-dentate; petiole 7–9 cm, glabrous; central leaflets oblong-obovate, base nearly truncate, 7–10 × 3.5–4 cm, petiolules 0.5–0.8 cm; lateral leaflets broadly sickled, 4–5 × 2.5–3 cm, base nearly sunken, petiolules of lateral leaflets combined 0.8–1 cm, lateral truncated; secondary veins raised, veins 3–5 pairs. Fruiting peduncle robust, *ca.* 1.5 cm; fruit red, globose, 6–7 cm in diameter, glabrous, with a protrusion at apex, *ca.* 0.2 cm. Seeds numerous, yellow-brown, compressed, oblong-elliptic, with ridge at margin, 1.4–1.6 × 0.7–0.9 cm, base nearly sunken, apex truncated and quadrilateral. Flowering not observed, fruiting September–December.

Distribution & Habitat:—*Trichosanthes napoensis* is endemic to Napo County, Guangxi, China. It grows on roadside and in thickets on limestone foothills, at elevations of 900–1000 m.

Etymology:—The specific epithet ‘*napoensis*’ refers to the locality where the new species occurs, the Napo County, Baise City, Guangxi Province.

Paratypes:—The same locality roadside, 12 October 2014, *D. X. Nong & L. Q. Huang* 451026141012024LY (paratype, CMMI!).

Relationships:—*Trichosanthes napoensis* belongs to *Trichosanthes* sect. *Involucraria* Wight (1840:52) and is close to *T. pedata* Merr. & Chun (1934:20) in having pedately 5-foliolate leaves and globose fruit but differs by its 3-fid tendrils on the stem, oblong-obovate central leaflet and nearly jointed base lateral leaflets. In addition, *T. napoensis* is characterized by its robust stem, fruit with a prominent protrusion at the apex, seed oblong-elliptic, ridge at the margin, base nearly sunken, truncated and quadrilateral apex (Table 1).

TABLE 1. Comparison of characters of *Trichosanthes napoensis* and *T. pedata*

Characters	Species	
	<i>T. napoensis</i>	<i>T. pedata</i>
Stem	Robust, striate, glabrous, lenticels densely covered	Slender, striate, grooved, glabrous or pubescent at nodes
Tendrils	3-fid	2-fid
Leaves	5-foliolate, thinly leathery; adaxially deep green, abaxially pale green, densely with white punctate on both surface, remotely sinuate-dentate	3–5-foliolate, membranous; adaxially green, hispidulous or white punctate; abaxially pale green, glabrous, remotely denticulate, acuminate
Petiole	Glabrous, 7–9 cm long	Glabrous, 2.5–6 cm long
Central leaflets	Oblong-obovate, base nearly truncated, 7–10 × 3.5–4 cm, petiolule 0.5–0.8 cm	Lanceolate or oblong-oblancoate, base truncate, petiolule 0.2–0.5 cm
Lateral leaflets	Petiolules of lateral leaflets combined, 0.8–1 cm long	Petiolules 0.2–0.5 cm long, subequal
Fruit	Peduncle robust, fruit red, 6–7 cm in diameter, apical prominent protrusion, <i>ca.</i> 0.2 cm	Peduncle slender, fruit orange-yellow, 5–6 cm in diameter
Seed	Yellow-brown, compressed, oblong-elliptic, ridge at margin, 1.4–1.6 × 0.7–0.9 cm, base nearly sunken	Brown, tumid, ovoid, 1.0–1.2 × 0.8 cm, base triangular, apex rounded
Fruiting	September–December	July–December



FIGURE 2. *Trichosanthes napoensis* sp. nov. A. Habit. B. Seeds; *Trichosanthes pedata* C. Habit. D. Seeds.

Acknowledgements

This work was supported by the special fund of the Fourth National Survey on Chinese Material Medical Resources, the foundation of Special Protection of Biological Diversity of Department Environmental Protection of China (2013) and National Funds for Distinguished Young Scientists (81325023). The authors are grateful to Dr. Xiao-Hua Jin for critical review of manuscript, and Yun-Xi Zhu and Yin-bao Sun for the linear drawings.

References

- Arnott, G.A.W. (1840) Remarks on the fruit of the natural order Cucurbitaceae. *Madras Journal of Literature and Science* 12: 48–54.
- Cooper, W.E. & de Boer H.J. (2011) A taxonomic revision of *Trichosanthes* L. (Cucurbitaceae) in Australia, including one new species from the Northern Territory. *Austrobaileya* 8: 364–386
- Huang, L.Q. & Jeffrey, C. (2011) *Trichosanthes*. In: Wu, C.Y., Raven, P. & Hong, D.Y. (Eds.) *Flora of China*. Vol. 19. Science Press, Beijing & Missouri Botanical Garden Press, St Louis, pp. 1–37.
- Huang, L.Q., Yang, B. & Yue, C.H. (1997) Pollen morphology of *Trichosanthes* and its taxonomic significance. *Acta Phytotaxonomica Sinica* 35: 125–135
- de Boer, H.J., Schaefer, H., Thulin, M. & Renner, S.S. (2012) Evolution and loss of long-fringed petals: A case study using a dated phylogeny of the snake gourds, *Trichosanthes* (Cucurbitaceae). *BMC Evolutionary Biology* 3: 223.
- de Boer, H.J. & Thulin, M. (2012) Synopsis of *Trichosanthes* (Cucurbitaceae) based on recent molecular phylogenetic data. *PhytoKeys* 12: 23–33.
<http://dx.doi.org/10.3897/phytokeys.12.2952>
- Linnaeus, C. (1753) *Species Plantarum* 1. Impensis Laurentii Salvii, Stockholm, 1008 pp.
- Merrill, E.D. & Chun W.Y. (1934) Contributions to our knowledge of the Kwangtung flora (2). *Sunyatsenia* 2 (1): 3–23.
- Schaefer, H., Kocyan, A. & Renner, S.S. (2008) *Linnaeosicyos* (Cucurbitaceae): a new genus for *Trichosanthes amara*, the Caribbean sister species of all Sicyeae. *Systematic Botany* 33: 349–355.
<http://dx.doi.org/10.1600/036364408784571707>
- Yue, C.H. & Cheng, C.Y. (1974) A preliminary study of the Chinese medicinal species of genus *Trichosanthes* L. *Acta Phytotaxonomica Sinica* 12: 415–458.
- Yue, C.H. & Cheng, C.Y. (1980) The Chinese medicinal plants of the genus *Trichosanthes* L. *Acta Phytotaxonomica Sinica* 18: 333–352.