Ann. Bot. Fennici 52: 396–400 ISSN 0003-3847 (print) ISSN 1797-2442 (online)
Helsinki 12 October 2015

Aristolochia gongchengensis (Aristolochiaceae), a new species from the limestone areas in Guangxi, China

Yu-Song Huang[1], Yu-De Peng[2], Bao-You Huang[2], Hui-Zhen Lv[2] & Chun-Rui Lin[1,*]

[1)] *Guangxi Institute of Botany, Guangxi Zhuang Autonomous Region, Guilin 541006, Guangxi, China (*corresponding author's e-mail: chunruilin@tom.com)*
[2)] *Guangxi Botanical Garden of Medicinal Plants, Nanning 530023, Guangxi, China*

Received 27 May 2015, final version received 30 Sep. 2015, accepted 30 Sep. 2015

Huang Y.S., Peng Y.D., Huang B.Y., Lv H.Z. & Lin C.R. 2015: *Aristolochia gongchengensis* (Aristolochiaceae), a new species from the limestone areas in Guangxi, China. — *Ann. Bot. Fennici* 52: 396–400.

Aristolochia gongchengensis Y.S. Huang, Y.D. Peng & C.R. Lin, a new species of Aristolochiaceae is described and illustrated from the limestone areas in Guangxi, China. It is similar to *A. kwangsiensis*, *A. mulunensis* and *A. scytophylla*, but differs from the three by its conspicuously concave adaxial leaf veins; ca. 1.5 mm long, triangular-ovate bracteoles; ca. 1.5 cm long basal portion of perianth tube; deeply 3-lobed calyx limb; lobes being triangular-oblong, ca. 2 cm long, ca. 1.5 cm wide, adaxially densely dark purple and with verrucose protuberances; throat which is obscured by connate bases of lobes; ca. 0.6 cm long ovary; and 3-lobed gynostemium with round lobe apices and glabrous margins.

Aristolochia has about 400 species widely distributed in tropical, subtropical and temperate regions (Huang *et al*. 2003). According to Huang *et al*. (2003), 45 species of *Aristolochia* are known from China, including 33 endemics. In more recent papers, however, many new taxa have been described, including *A. wuana* (Liu & Deng 2009), *A. ledongensis* and *A. jianfenglingensis* (Xu *et al*. 2011), *A. huanjiangensis* (Wu *et al*. 2013), *A. mulunensis* (Huang *et al*. 2013) and *A. longlinensis* (Wu *et al*. 2014). So far, 51 species (39 endemic) of *Aristolochia* are known from China. Twenty-three of them are found in the Guangxi Zhuang Autonomous Region, *A. bambusifolia*, *A. impressinervia*, *A. huanjiangensis*, *A. mulunensis* and *A. longlinensis* being endemic in the region (Qin & Liu 2010, Huang *et al*. 2013, Wu *et al*. 2013, 2014). Many new taxa have recently been described from Vietnam (Huong *et al*. 2014, Do *et al*. 2014, 2015). Clearly, the actual species number in *Aristolochia* is still not known.

During a visit to the traditional medicinal market of the Dragon-boat Festival in Gongcheng County (northeastern Guangxi, China) in 2009, we came across an intriguing species of *Aristolochia* with elliptical tubers. It resembled *A. kwangsiensis* and *A. mulunensis* by the leaf shape and size, but it lacked flowers and fruits. The plants were brought for cultivation and further studies to the Guilin Botany Garden and Guangxi Medicinal Garden. Three of the cultivated plants flowered in April 2012, and its floral characters differed from those of *A. kwang-*

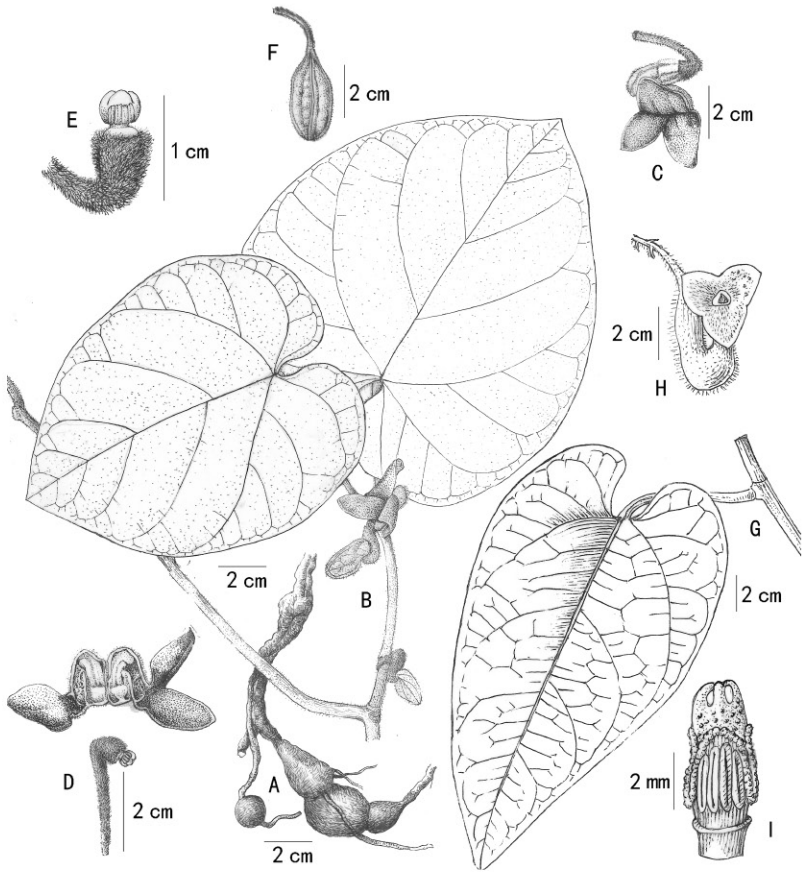

Fig. 1. A–F: *Aristolochia gongchengensis* (from the holotype and paratype, drawn by Wen-Hong Lin). — **A**: Tuberous root. — **B**: Portion of plant. — **C**: Flower. — **D**: Flower, cut-away view. — **E**: Ovary and gynostemium. — **F**: Fruit. — **G–B**: *A. scytophylla* (from Cheng *et al.* 1998, redrawn by Wen-Hong Lin). — **G**: Leaf. — **H**: Flower. — **B**: Anthers and gynostemium.

siensis and *A. mulunensis*. In 2013, we returned to Gongcheng County under the guidance of an herbalist and discovered flowering plants in the field. After consulting *Flora of China* and other relevant literature (Liang 1975, Chow & Huang 1975, Huang 1981, Tao 1983, Cheng *et al.* 1988, Ma 1989a, 1989b, Ma & Cheng 1989, Wen 1992, Gonzalez 1999, Zheng 1999, Kelly & Gonzalez 2003, Huang *et al.* 2003, Liu & Deng 2009, Qin & Liu 2010, Xu *et al.* 2011, Huang *et al.* 2013, Wu *et al.* 2013, 2014, Huong *et al.* 2014, Do *et al.* 2014, 2015) as well as herbarium specimens, it became clear that we had an undescribed species at hand.

Aristolochia gongchengensis Y.S. Huang, Y.D. Peng & C.R. Lin, *sp. nova* (Figs. 1 and 2A–F)

TYPE: China. Guangxi, Guilin City, Gongcheng County, Lianhua Town, in thick forest of limestone area, rare, alt. 220 m a.s.l., 23 April 2013 *Yu-Song Huang & Chun-Rui Lin IBK00343749* (holotype IBK00343749). — PARATYPE: China. Guangxi, Guangxi Medicinal Garden, taken to cultivation from the type locality in Gongcheng County, 22 April 2015 *Bao-You Huang & Yu-De Peng 150422001* (GXMG, IBK).

ETYMOLOGY: The specific epithet is derived from the provenance of the type material in Gongcheng County.

Climbers with, striate, dusty yellow to brownish pubescent shoots; old branches glabrous. Leaf blade thickish papery, cordate to orbicular, 10–25 × 8–20 cm; apex obtuse or acute; base cordate or auriculate; sinus 1.5–3.5 cm deep; margin entire, slightly revolute; adaxially strigose when young, glabrous when old except midrib; lateral veins densely strigose; abaxially dusty yellow to brownish pubescent; basinerves 5; lateral veins 3–5 on each side, adaxially conspicuously concave, and abaxially conspicuously salient; petiole 2–6 cm long, ca. 4 mm in diam., dusty yellow to brownish pubescent. Racemes in axils of leafy shoots or stems, 2–4-flowered; pedicel pendulous, 2–3.5 cm long,

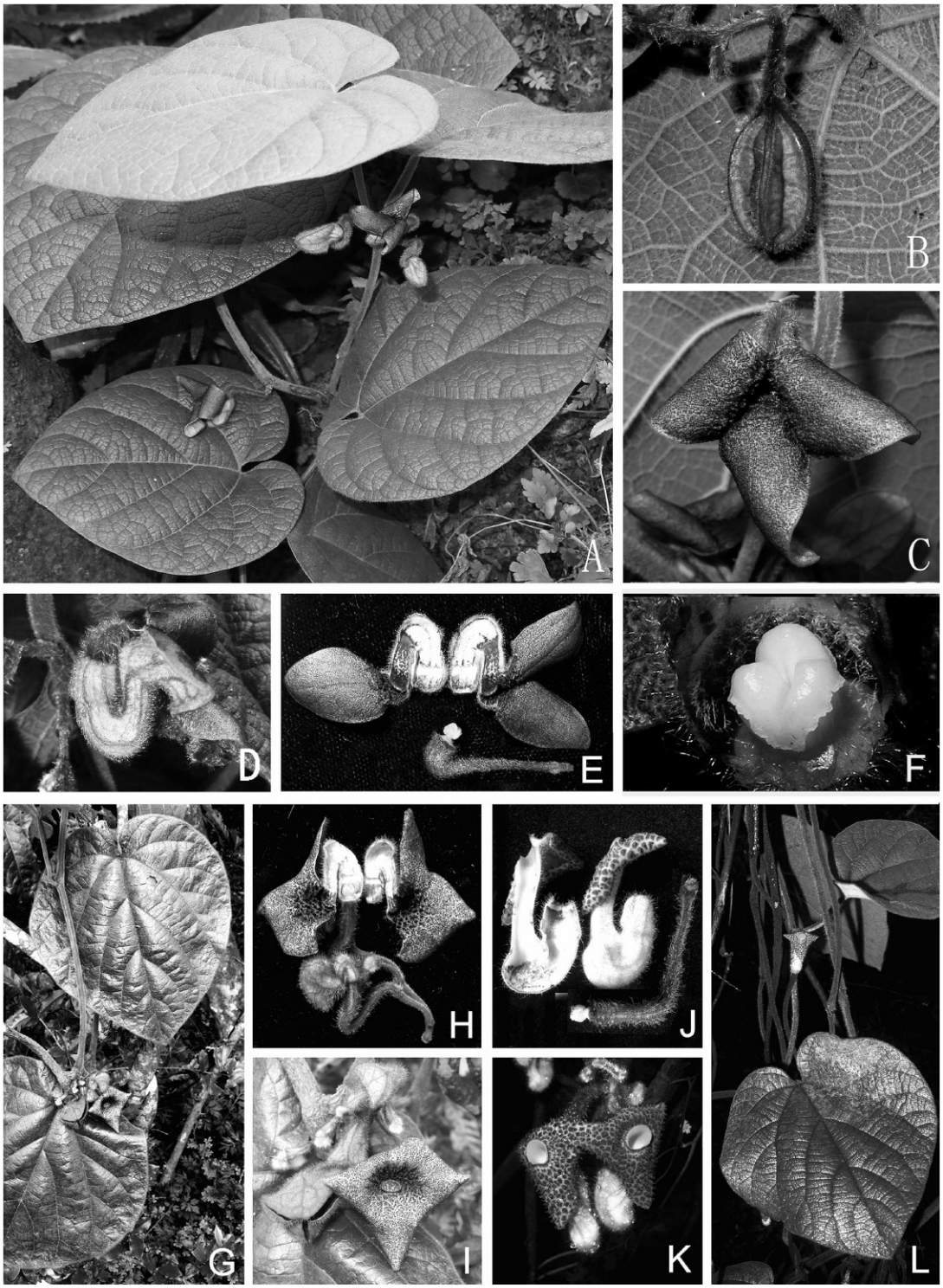

Fig. 2. A–F: *Aristolochia gongchengensis*. — **A**: Habit. — **B**: Fruit. — **C**: Flower, face view. — **D**: Flower, side view. — **E**: Flower, cutaway view. — **F**: Stigma. — **G–I**: *A. mulunensis*. — **G**: Habit. — **H**: Flower, cutaway view. — **I**: Flowers. — **J–L**: *A. kwangsiensis*. — **J**: Flower, cutaway view. — **K**: Flowers. — **L**: Habit.

dusty yellow to brownish pubescent; bracteoles triangular-ovate, ca. 1.5 mm long, yellow to brownish pubescent. Perianth tube horseshoe-shaped, abaxially slight green, with brown longitudinal veins and ridge, yellow to brownish pubescent; basal portion of tube ca. 1.5 cm long, ca. 0.5 cm in diam., densely pubescent inside. Calyx limb mauve, 2.5–3.5 cm in diam., deeply 3-lobed; adaxially dark purple with verrucose protuberances and slightly yellow to brownish pubescent; abaxially conspicuously retinerved, yellow to brownish pubescent; lobes oblong, ca. 2 cm long, ca. 1.5 cm wide; apex obtuse or acute; margin entire, usually reflexed; bases of lobes connate and narrowed. Throat suborbicular, purple, ca. 3 mm in diam, obscured by connate bases of lobes. Anthers oblong, ca. 2 mm long, adnate to gynostemium base, opposite to lobe; ovary terete, ca. 0.6 cm long, ca. 0.5 cm wide. Gynostemium 3-lobed, apex of lobes round, margin glabrous. Capsule ovoid or cylindric, 2.5–4 cm long, ca. 1.8 cm in diam., dehiscing basipetally. Seed ovoid-deltoid, ca. 6 mm long, ca. 4 mm wide, plano-convex abaxially, concave adaxially. Flowering in April–May, fruiting in June–August.

Aristolochia gongchengensis resembles *A. mulunensis* (Fig. 2G–I), *A. kwangsiensis* (Fig. 2J–L) and *A. scytophylla*, but differs from them in many characters (Table 1).

DISTRIBUTION AND HABITAT: At present, *A. gongchengensis* is known only from Gongcheng County, northeastern Guangxi, China. It grows on karst limestone hillside in forests at an elevation of 220 m a.s.l. This site is not within any protected area, and the species is used by local people for medicinal purposes.

Acknowledgements

We are grateful to Mr. Wen-Hong Lin (IBK) for preparing the illustration. This study was supported by the National Natural Science Foundation of China (grants 41161011 and 31560088); Traditional Chinese medicine public health spe-

Table 1. Morphological comparison of *Aristolochia gongchengensis*, *A. mulunensis*, *A. kwangsiensis* and *A. scytophylla*.

Character	*A. gongchengensis*	*A. mulunensis*	*A. kwangsiensis*	*A. scytophylla*
Adaxial leaf veins	conspicuously concave	planar or slightly salient	planar or slightly salient	conspicuously salient
Bracteole	triangular-ovate, ca. 1.5 mm long	subulate, 2–4 mm long	subulate, ca. 3 mm long	subulate or lanceolate-ovate, 2–3 mm long
Basal portion of perianth tube	ca. 1.5 cm long, ca. 0.5 cm in diam.	ca. 0.9 cm long, ca. 0.6 cm in diam.	2–3.5 cm long, 0.5–1 cm in diam.	ca. 2 cm long, ca. 0.8 cm in diam.
Calyx limb	deeply 3-lobed, lobes oblong; base adnate closely into mouth shape; protuberance adaxially densely verrucose; abaxially pale green	discoid-orbicular, nearly quadrilateral, margin entire; protuberance adaxially densely verrucose; abaxially purple	discoid-suborbicular, broadly deltoid, margin distinctly 3-lobed, lobes broadly deltoid; protuberance adaxially acanthoid; abaxially pale green	shallowly 3-lobed, lobes broadly deltoid; protuberance adaxially papillate near base; abaxially purple-red
Calyx throat	purple, suborbicular obscured by connate bases of lobes	purple, suborbicular, visible	yellow, suborbicular, visible	yellow, subtriangular, visible
Ovary	ca. 0.6 cm long	ca. 1 cm long	ca. 1.4 cm long	ca. 1 cm long
Gynostemium	deeply 3-lobed, lobe apices round; margin glabrous, not volute	deeply 3-lobed, lobe apices mammillate; margin glabrous, not volute	3-lobed, lobe apices obtuse; margin decurrent and volute, mammillate	3-lobed, lobe apices slightly recurved; margin decurrent and volute, mammillate
Capsule	ovoid or cylindric, 2.5–4 cm long, ca.1.8 cm in diam.	not seen	cylindric, 8–10 cm long, ca. 2 cm in diam.	ovate, 3.4–3.6 cm long, 1.4–1.6 cm in diam.

cial project to investigate and monitor the Chinese *Materia Medica* raw material resources for national essential drugs ([2011]76) and Traditional Chinese Medicine industry research special project of characteristic Chinese *Materia Medica* resources protection and utilization in representative regions of China (201207002); and the Fund of Guangxi Key Laboratory of Functional Phytochemicals Research and Utiliation (ZRJJ2015-6).

References

Cheng C.Y., Yang C.S. & Hwang S.M. 1988: Aristolochiaceae. — In: Kiu H.S. & Ling Y.R. (ed.), *Flora Reipublicae Popularis Sinicae*, vol. 24: 199–245 Science Press, Beijing.

Chow L.D. & Huang S.M. 1975: *Aristolochia fangchi*, a new species of Aristolochia (Aristolochiaceae). — *Acta Phytotaxonomica Sinica* 13: 108–110.

Do T.V., Neinhuis C. & Wanke S. 2015: A new species of *Aristolochia* subgenus *Siphisia* (Aristolochiaceae) from central Vietnam. — *Phytotaxa* 220: 69–76.

Do T.V., Nghiem T.D., Wanke S. & Neinhuis C. 2014: *Aristolochia quangbinhensis* (Aristolochiaceae), a new species from Central Vietnam. — *PhytoKeys* 33: 51–59.

Do T.V., Nguyen D.Q., Nguyen T.Q.T., Wanke S. & Neinhuis C. 2015: *Aristolochia cochinchinensis* (Aristolochiaceae), a new species from southern Vietnam. — *Annales Botanici Fennici* 52: 268–273.

Gonzalez F. 1999: Inflorescence morphology and the systematics of Aristolochiaceae. — *Systematics and Geography of Plants* 68: 159–172.

Huang S.M. 1981: Materials for Chinese *Aristolochia*. — *Acta Phytotaxonomica Sinica* 19: 222–231.

Huang S.M., Kelly L.M. & Gilbert M.G. 2003: Aristolochiaceae. — In: Wu Z.H. & Raven P.H. (ed.), *Flora of China*, vol. 5: 246–269. Science Press, Beijing & Missouri Botanical Garden Press, St. Louis.

Huang Y.S., Peng R.C., Tan W.N., Wei G.F. & Liu Y. 2013: *Aristolochia mulunensis* (Aristolochiaceae), a new species from limestone areas in Guangxi, China. — *Annales Botanici Fennici* 50: 175–178.

Huong N.T.T., Hai D.V., Quang B.H., Cuong N.T., Kuang N.S., Vu D.Q. & Ma J.S. 2014: *Aristolochia xuanlienensis*, a new species of Aristolochiaceae from Vietnam. — *Phytotaxa* 188: 176–180.

Kelly L.M. & Gonzalez F. 2003: Phylogenetic relationships in Aristolochiaceae. — *Systematic Botany* 28: 236–249.

Liang C.F. 1975: The Aristolochiaceae of Kwangsi flora. — *Acta Phytotaxonomica Sinica* 13: 10–28.

Liu Z.W. & Deng Y.F. 2009: *Aristolochia wuana*, a new name in Chinese *Aristolochia* (Aristolochiaceae). — *Novon* 19: 370–371.

Ma J.S. 1989a: A revision of *Aristolochia* from Yunnan. — *Acta Botanica Yunnanica* 11: 321–323.

Ma J.S. 1989b: A revision of *Aristolochia* Linn. from E. & S. Asia. — *Acta Phytotaxonomica Sinica* 27: 321–364.

Ma J.S. & Cheng J.R. 1989: New taxa of Chinese *Aristolochia* L. — *Acta Phytotaxonomica Sinica* 27: 293–297.

Qing H.N. & Liu Y. 2010: A checklist of vascular plants of Guangxi. — Science Press, Beijing.

Tao D.D. 1983: Aristolochiaceae. — In: Wu C.Y. (ed.), *Flora Xizangica*, vol. 1: 584–587. Science Press, Beijing.

Wen H.Q. 1992: Species of *Aristolochia* of Guangxi. — *Guihaia* 12: 217–218.

Wu L., Xu W.B., Wei G.F. & Liu Y. 2013: *Aristolochia huanjiangensis* (Aristolochiaceae), a new species from Guangxi, China. — *Annales Botanici Fennici* 50: 413–416.

Wu L., Xu W.B., Huang Y.S. & Liu Y. 2014: *Aristolochia longlinensis* (Aristolochiaceae), a new species from western Guangxi, China. — *Novon* 23: 490–493.

Xu H., Li Y.D., Yang H.J. & Chen H.Q. 2011: Two new species of *Aristolochia* (Aristolochiaceae) from Hainan Island, China. — *Novon* 21: 285–289.

Zheng Y.W. 1999: *Introduction to Mulun karst forest region*. — Science Press, Beijing.