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New species and taxonomic notes of *Aspidistra* (Asparagaceae) for the flora of China and Laos

Hong-Bo DING[1,2], Kai-Chun XIONG[3], Bin YANG[1,2], Jian-Tao YIN[2], Somsanith BOUAMANIVONG[4], Yun-Hong TAN[1,2,*]

1. Southeast Asia Biodiversity Research Institute, Chinese Academy of Sciences & Center for Integrative Conservation, Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences, Menglun, Mengla, Yunnan 666303, P.R. China.
2. Center of Conservation Biology, Core Botanical Gardens, Chinese Academy of Sciences, Menglun, Mengla,Yunnan 666303, P.R. China.
3. Yubaiding Nature Reserve, Yuxi, Yunnan 653100, P.R. China.
4. Ecology Division, Biotechnology and Ecology Institute, Ministry of Science and Technology, P.O. Box: 2279, Vientiane Capital, Lao PDR.
[*]Corresponding author's email: tyh@xtbg.org.cn

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ABSTRACT: Two new species (*Aspidistra depingiana* Y.H.Tan & H.B.Ding, *A. partita* Y.H.Tan & H.B.Ding) and two newly recorded species (*A. sutepensis* K.Larsen, *A. larutensis* W.J.de Wilde & A.Vogel) of *Aspidistra* (Asparagaceae) from China and Laos are described. *Aspidistra depingiana* and *A. sutepensis* are new to the flora of China, while *A. partita* and *A. larutensis* are new to the flora of Laos. The photographies, the distribution, phenology and voucher specimens for all the mentioned taxa are provided.

KEY WORDS: *Aspidistra*, Plant Diversity, Taxonomy, Transboundary Conservation, Yunnan.

INTRODUCTION

Aspidistra Ker Gawler (Asparagaceae) is herbaceous plants that inhabit in Asian tropical and subtropical forests (Vislobokov *et al.*, 2019). While only about 55 species of *Aspidistra* were known in 2000 (Liang and Tamura, 2000), the genus is currently considered to comprise more than 200 species, among which more than 120 species recorded for the flora of China (e.g. Fang and Yu, 2002; Li and Wei, 2003; Tillich, 2006; Hou *et al.*, 2009; Lin *et al.*, 2009, 2010, 2011, 2012, 2013a, 2013b, 2014a, 2014b, 2015a, 2015b, 2019; Liu *et al.*, 2011; Lin and Liu, 2011a,b; Averyanov and Tillich, 2016; Cai *et al.*, 2018, 2019, 2020; Lu *et al.*, 2020; Yi *et al.*, 2020) and among which about 10 recorded for the flora of Laos (Newman *et al.*, 2007; Averyanov and Tillich, 2016, 2017; Averyanov *et al.*, 2018, 2019; Huang *et al.*, 2018; Xi *et al.*, 2020). Meanwhile, the diversity of the genus is still far from well-known and understood.

The study conducted during 2012–2020 aims to promote capacity building for botanical research and conservation in south Yunnan, China and China-Laos transboundary areas. More than ten new species were found and described for publications (Tan *et al.*, 2012, 2013; Xue *et al.*, 2017; Zhang *et al.*, 2019; Yang *et al.*, 2018, 2019, 2020; Ding *et al.*, 2019, 2020a,b,c). In this study, we described and illustrated two new species and two newly record of *Aspidistra* for the flora of China and Laos.

MATERIALS AND METHODS

The field surveys were carried out from 2012 to 2020 in South Yunnan, China and north of Laos. *Aspidistra* flowers are always fleshy, and their structures are generally distorted in the process of making specimens. Therefore, observations of flowers were mostly made on living plants in their habitats and/or in cultivation. Flowers were also preserved in 70% ethanol for subsequent studies. Measurements of floral parts for description were made on both living and liquid-preserved material, because the floral parts shrink up to 20%–30% in size in the drying process of preparing herbarium specimens (Averyanov and Tillich, 2017). Relevant literature, including protologues of concerned taxa, was consulted. The morphological characteristics described in this article are based on the general terminology by Beentje (2012) and the publications of Tillich (2005, 2008).

TAXONOMIC TREATMENT

Aspidistra depingiana Y.H.Tan & H.B.Ding, ***sp. nov.***
Fig. 1

***Type*:** CHINA. Yunnan: Jinghong, Damenglong, Mengsong Village, 24°10′19″ N, 102°05′35″ E, elevation ca. 1670 m, 3 October 2012, *Yun-Hong Tan 5369* (HITBC).

***Diagnosis*:** *Aspidistra depingiana* is morphologically similar to *A. omeiensis* Z.Y.Zhu & J.L.Zhang (1981: 386) in linear tufted leaves, but can be distinguished by its corolla lobes distinctly reflex and inner perigone with 2 conspicuous keels (*vs.* with 4 conspicuous keels) (Fig. 4 A and B), longer peduncle (2–13 cm long *vs.* 0.5–1.2 cm long), colour of abaxially perigone (creamy white with

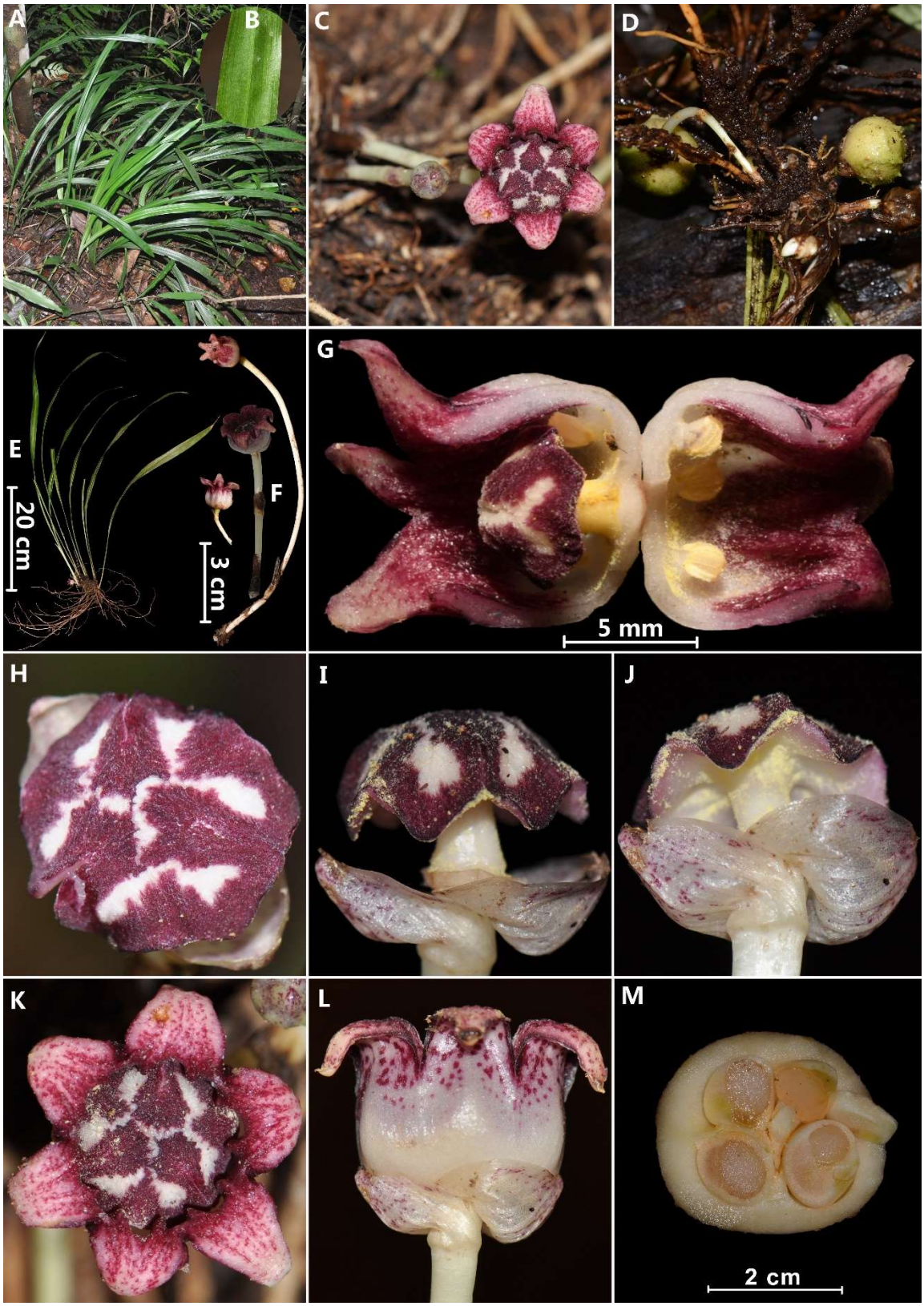

Fig. 1. ***Aspidistra depingiana*** Y.H.Tan & H.B.Ding. **A.** plant in natural habitat, **B.** leaf adaxial surface; **C.** flowers; **D.** fruits; **E.** flowering plant; **F.** flowers with peduncles; **G.** longitudinal section of a flower, inside view; **H.** stigma, apical view; **I.** stigma, lateral view; **J.** stigma, dorsal view; **K.** flower, apical view; **L.** longitudinal section of a flower, outside view; **M.** cross-section of fruit. (Photographed by Y.H. Tan, H.B. Ding and S.S. Zhou)

Table 1. Morphological comparison of ***Aspidistra depingiana***, ***A. omeiensis*** and ***A. triradiata***.

Characters	***A. depingiana***	***A. omeiensis***	***A. triradiata***
Leaves	2–3(4) tufted	3–5-tufted	3–5 tufted
Leaf width	0.8–2 cm wide	2–4 cm wide	1.2–2 cm wide
Peduncle length	2–13 cm long	0.5–1.2 cm long	0.7–3.7 cm long
Perigone shape	campanulate	campanulate	urceolate
Perigone diameter	1–1.2 cm in diameter	1.3–1.5 cm in diameter	1.8–2.8 cm in diameter
Outside perigone	creamy white and with scattered purple-red spots at apex	light purple	white with purple spots to completely purple
Inside perigone	creamy white with purple-red spots gradually turning completely purple-red towards apex with 2 conspicuous keels	purplish red with 4 conspicuous keels	purple with 4 conspicuous keels
Perigone lobes	6, ovate-triangular, 5–8 mm long 3–5 mm broad at base	6 (–8), triangular-ovate 7–8 mm long 4–5 mm broad at base	6, triangular-ovate 7.6–10.5 mm long 3.9–8.3 mm broad at base
Stigma size	7–10 mm in diameter	9–13 mm in diameter	11.7–15 mm in diameter
Stigma adaxially	upper surface distinctly convex with 3 white radial lines dichotomously forking at a half way	upper surface slightly convex with 3 white radial ridges dichotomously forking at a half way	upper surface slightly convex with 3 purple radial lines dichotomously forking at a half way

scattered purple-red spots at apex *vs.* light purple), upper surface of stigma with 3 white straight radial lines and distinctly convex (*vs.* 3 radial ridges and slightly convex).

***Description*:** Herbs perennial, evergreen, rhizomatous, completely glabrous, 40–80 cm tall. **Rhizome** creeping, subterete, 3–5 mm thick, covered by fibrous bract remains, with many grey roots. **Cataphylls** convolute, cuneate, as young white at the base, light green toward apex, later becoming dull light brownish, to 13 cm long, early splitting into irregular fibres, enveloping 1–4 petioles by fibrous-papyraceous remains. **Foliage leaves** 2–3(4) tufted or sometimes solitary, not easy divided into petiole and lamina, leaf gradually narrowing to base, **leaf base** (pseudo-petiole) stiffly erect, dark to light green, adaxially sulcate, 2–25 cm long; **leaf blade** dark to light green, without spots, linear, 25–62 cm long, 0.8–2.0 cm wide, margin entire, midvein protruding abaxially and sunken adaxially, with 2–3 secondary veins at each sides of the midvein, apex attenuate, base cuneate. **Peduncle** (specialized reproductive shoot) decumbent, creamy white, 2–13 cm long, with several widely ovate bracts, **bracts** gradually wider from base to top of peduncle, the 2 uppermost at base of perigone broadly ovate, creamy white with purple-red spots, ca. 1.0 × 0.8 cm, obtuse at apex. **Flower** solitary at top of peduncle. **Perigone** campanulate, fleshy, 12–15 mm long, 10–12 mm in diameter; **perigone tube** 6–8 mm long, ca. 1 mm thick, outside creamy white and with scattered purple-red spots at apex, smooth, inside creamy white with purple-red spots gradually turning completely purple-red towards apex; **perigone lobes** 6, subequal, ovate-triangular, 5–8 mm long, 3–5 mm broad at base, apex tapering into acute and usually recurved, adaxially densely papillose and scabrous, with purple-red spots or completely purple-red, each lobes with 2 conspicuous keels, abaxially smooth and creamy white with scattered purple-red spots. **Stamens** 6, inserted at the bottom of perigone tube, inserted lower than stigma; filaments creamy white, cylindrical, ca. 1 mm long; anthers yellow, ca. 2 mm long, ca. 1 mm wide, introrse. **Pistil** mushroom-shaped, 6–8 mm high; **style** creamy white, cylindrical, 5–6 mm long; **stigma** peltate swelled, 7–10 mm in diameter, central convex, finely papillose, 3-lobed at margin, lobes emarginate at apex, purple-red, upper surface of stigma with 3 white radial dichotomously forking at a half way, sometimes becoming faintly grooves at upper half way. Ovary inconspicuous, superior. Fruits green to greenish yellow or purplish red, globular, or slightly oblate, 2.7–3.8 cm in diam., with irregularly warty or prickly on the surface, 1–4-seeded.

***Phenology*:** Flowering from September to November, fruiting from June to August in the next year.

***Etymology*:** The specific epithet "*depingiana*" is named after Mr. De-Ping Ye, who was the best friend of the corresponding author, he dedicated much to botanical survey in south Yunnan, China.

***Vernacular*: 景洪蜘蛛抱蛋**

***Habitat and distribution*:** *Aspidistra depingiana* is currently known from Jinghong, Zhenyuan and Jingdong in South Yunnan, 1600–1900 m elevation, mainly growing in tropical montane rain forest.

***Notes*:** The new species is also similar to *A. triradiata* Vislobokov (2015: 269) with linear leaves, however, it can be clearly distinguished by flowers smaller (1.2–1.5 cm long, 1–1.2 cm in diameter *vs.* 1.8–2.4 cm long, 1.8–2.8 cm in diameter), perigone campanulate (*vs.* urceolate), lobes with 2 conspicuous keels (*vs.* with 4 conspicuous keels) (Fig. 4 A and G). A detailed comparison to distinguish the three species is presented in Table 1.

***Additional specimen examined* (paratype):** CHINA. Yunnan Province: Puer, Zhenyuan, Enle, Dapingzhang Village, Near Diema River, 23°55′45″N, 100°58′59″E, elevation ca. 1639 m, 8 October 2019, *D.P. Ye T0404* (HITBC0030038, HITBC0030039); Puer, Jingdong, Huashan, Podou Village, Hudong, 24°10′19″N, 101°07′37″E, elevation ca. 1603 m, 17 September 2018, *D.P. Ye T0462* (HITBC0030044, TAI).

Aspidistra partita Y.H.Tan & H.B.Ding, ***sp. nov.***

Fig. 2

***Type*:** LAOS. Vientiane Province: Vang Vieng, elevation ca. 300 m. Voucher from a cultivated plant at Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences, 26 April 2020, *H.B. Ding XTBG0096* (holotype: HITBC0031091, isotype: HITBC0031092).

***Diagnosis*:** *Aspidistra partita* is clearly distinguished from the previous known species by non-tubular perigone (lobes split to base) and long filaments (3–5 mm).

***Description*:** Herbs perennial, evergreen, rhizomatous, completely glabrous, 15–25 cm tall. **Rhizome** suberect, subterete, 4–12 mm thick, covered by fibrous bract remains, with many grey roots. **Cataphylls** 3–4, convolute, as young light green at the base, purple black toward apex, 3.4–6.5 cm long, early splitting into irregular fibres, turning brown when dry. **Foliage leaves** solitary, on each node of rhizome, very close to each other; **petiole** stiffly erect, green, 2.3–6.2 cm long; **leaf blade** dark green, sometimes with small yellow spots, ovate to elliptic, 10–14.2 cm long, 4.0–6.8 cm wide, margin entire, midvein protruding abaxially and sunken adaxially, with 3–4 secondary veins at each sides of the midvein, apex attenuate, base obtuse. **Peduncle** (specialized reproductive shoot) erect, green with purple-spotted or purple, 3.5–6.4 cm long, with 3–4 ovate bracts, light green with purple-spotted, **bracts** gradually wider from base to top of peduncle, triangular to ovate, 9–12 × 4–8 mm, acute at apex. **Flower** solitary at top of peduncle. **Perigone** non-tubular, **perigone lobes** 6–7, lobed to base, ovate to elliptic, 8–11 × 4–6 mm, glabrous, adaxially white at lower 1/3 part of lobes, purple at upper 2/3 part of lobes; abaxially white, purple at margin. **Stamens** 6–7, opposite to lobes, filaments creamy white, cylindrical, 3–5 mm long; anthers yellow, 3–4 × 2–2.5 mm. **Pistil** 3.5–4.8 mm high, shorter than stamens, creamy white, **style** cylindrical, **stigma** enlarged, 1.7–3.1 mm in diameter, sometimes with 4 inconspicuous radial lines, subcircular or irregularly undulate-lobes at margin. Fruits are unknown.

***Phenology*:** Flowering from April to May.

***Etymology*:** The specific epithet refers to corolla lobes lobe to the base.

Vernacular*:** ***ອາດສະຫນາຮ້ຽບ

***Habitat and distribution*:** Currently known only from the type locality at an elevation of ca. 300 m and growing limestone forest.

Additional specimen examined **(paratype):** LAOS. Vientiane Province: Vang Vieng, elevation ca. 300 m. Voucher from a cultivated plant at Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences, 22 April 2021, *H.B. Ding XTBG0224* (HITBC, TAI).

Aspidistra larutensis W.J.de Wilde & A.Vogel in Folia Malaysiana 6(3–4): 126. 2005. ***Type*:** Leiden cult., collected: Peninsular Malaysia, Perak, Bukit Larut, 4°43′N, 100°48′E, elevation ca. 1150 m, *A. Vogel 96183* (Holotype: KEP, isotypes: K000499529!).

Fig. 3

***Updated Description*:** Herbs perennial, evergreen, rhizomatous, completely glabrous, 50–100 cm tall. **Rhizome** creeping, subterete, 9–15 mm thick, covered with scales, nodes dense, with many grey roots. **Cataphylls** dull light brownish, to 11 cm long, splitting into irregular fibres, enveloping base of petiole. **Foliage leaves** 2–6 tufted, not easy divided into petiole and lamina, leaf gradually narrowing to base, **leaf base** (pseudo-petiole) stiffly erect, dark to light green, adaxially sulcate, 2–20 cm long; **leaf blade** dark to light green, without spots, linear, 32–80 cm long, 1.2–3.2 cm wide, margin finely serrate, midvein protruding abaxially and sunken adaxially, with 3–5 secondary veins at each sides of the midvein, apex attenuate, base cuneate. **Peduncle** (specialized reproductive shoot) decumbent, creamy white or light green with sparse purple spots, 1.2–2.8 cm long, with several widely ovate bracts, **bracts** gradually wider from base to top of peduncle, the 3 uppermost at base of perigone broadly ovate, light green with purple-red spots, 4–8 × 5–13 mm, obtuse at apex. **Flower** solitary at top of peduncle. **Perigone** campanulate, fleshy, 15–18 mm long, 15–20 mm in diameter; **perigone tube** 7–10 mm long, 1.5–2 mm thick, outside with 12 conspicuous keels, finely verruculose, blackish purple or purplish red to almost black on both surface; **perigone lobes** 6, subequal, triangular, 7–9 mm long, 7–11 mm broad at base, apex tapering into acute and usually recurved, blackish purple or purplish red to almost black on both surface, adaxially densely papillose and scabrous, each lobes with 4 conspicuous keels, abaxially finely verruculose. **Stamens** 6, anthers sessile, inserted at base of perigone tube, posited lower than stigma; anthers yellow, 2.5–3 mm long, 2–2.5 mm wide. **Pistil** mushroom-shaped, **style** creamy white, cylindrical, broadening to the apex and the base; **stigma** creamy white or brownish yellow on both surface, with purple spots or blackish purple along margin below, peltate, swelled, 10–15 mm in diameter, central convex, finely papillose, 3-lobed at margin, lobes emarginate at apex, upper surface of stigma with 3 white straight radial grooves and 3 bifurcated radial grooves from center to margin. Ovary inconspicuous, superior. Fruits are unknown.

***Phenology*:** Flowering from November to December.

***Distribution*:** Malaysia, Laos (new recorded).

***Notes*:** *Aspidistra larutensis* was first described by W.J.J.O. de Wilde & A. Vogel (2005) collected from Bukit Larut, Perak, Peninsular Malaysia. In our collection from Laos, L0192 and XTBG0202 match well with the description and photos of this species, with blackish purple perigone and creamy white pistil. In Southeast Asia, there is a group of *Aspidistra* species is characterized by tufted, linear leaves and mushroom-shaped pistils: such as, *Aspidistra larutensis*, *A. longifolia* Hook.f. (1892: 326), *A. hainanensis* W.Y.Chun & F.C.How (1977: 533), *A. yingjiangensis* L.J.Peng (1989: 173), *A. omeiensis*, *A. triradiata*, *A. minutiflora* Stapf (1903: 113), *A. linearifolia*

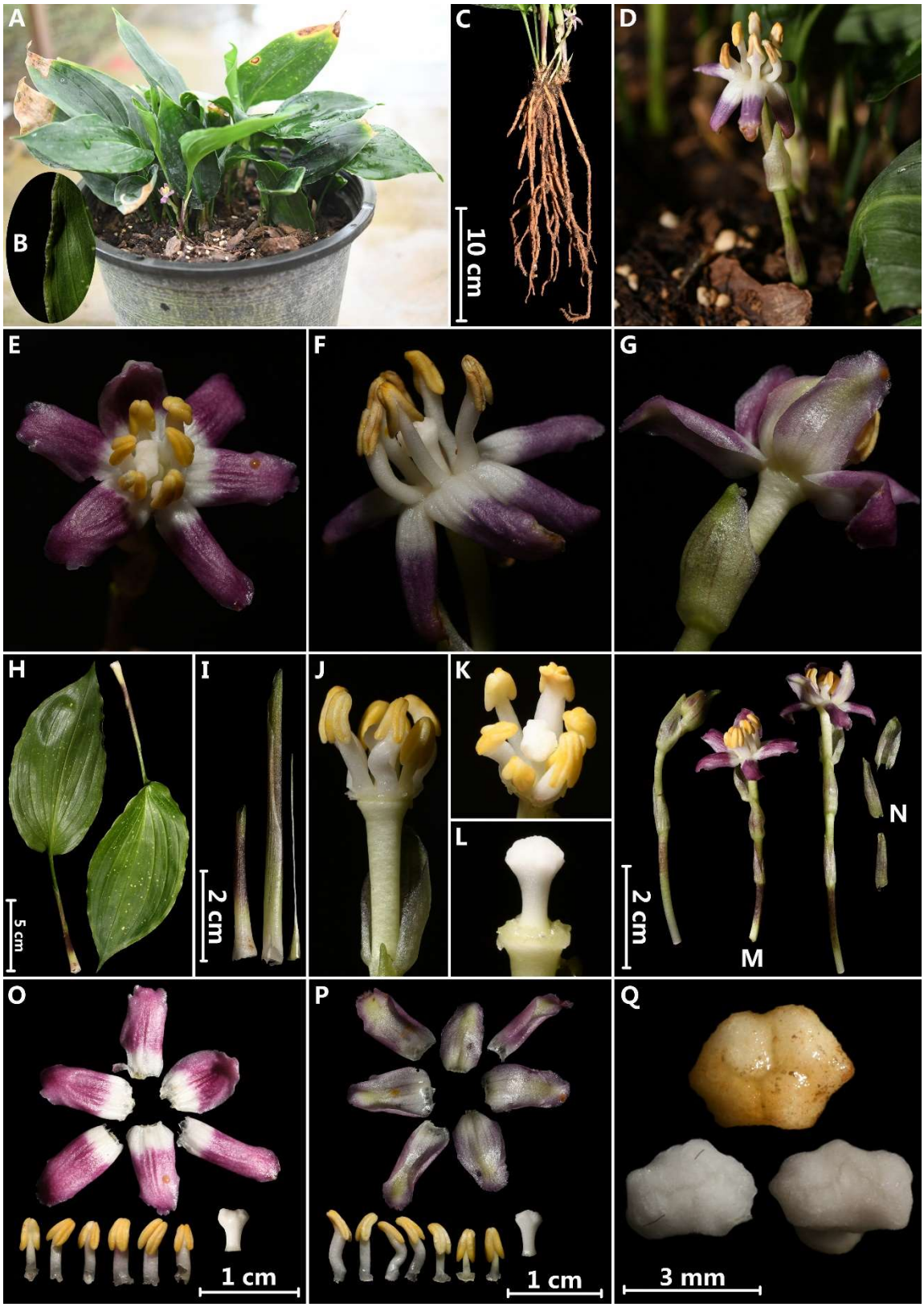

Fig. 2. ***Aspidistra partita*** Y.H.Tan & H.B.Ding. **A.** habit; **B.** leaf margin; **C.** basal part of plant showing roots; **D.** opening flower; **E.** flower, apical view; **F.** flower, lateral view; **G.** flower, dorsal view; **H.** single leaf; **I.** cataphylls; **J.** stamens and pistil, lateral view; **K.** stamens and pistil, apical view; **L.** pistil, lateral view; **M.** flowers with peduncles; **N.** bracts; **O.** stamens, pistil and perigone lobes showing 6 lobes; **P.** stamens, pistil and perigone lobes showing 7 lobes; **Q.** stigma, apical view. (Photographed by H.B. Ding)

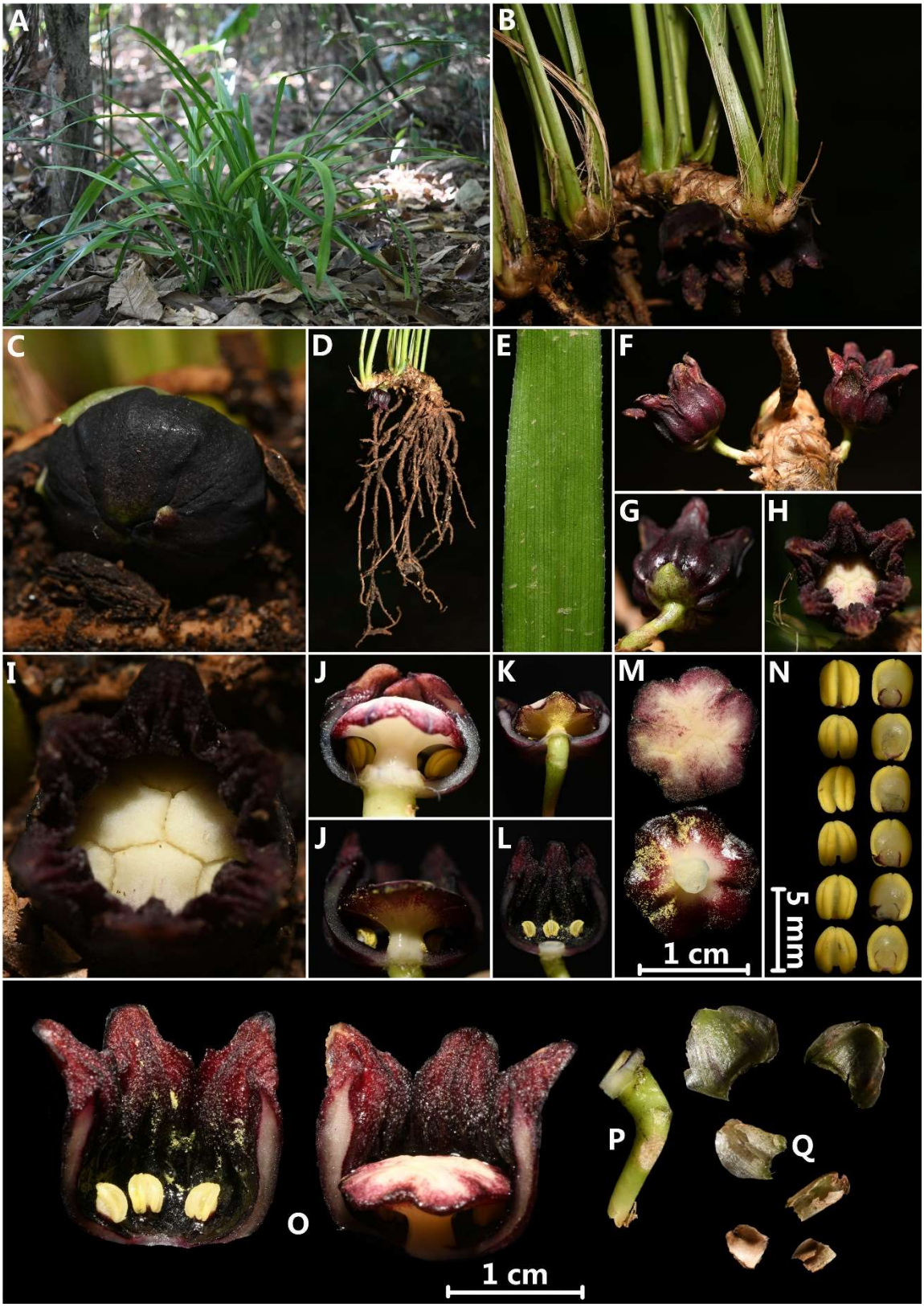

Fig. 3. ***Aspidistra larutensis*** W.J.de Wilde & A.Vogel. **A.** plant in natural habitat; **B.** basal part of plant showing rhizomatous; **C.** flower in bloom; **D.** basal part of plant showing roots; **E.** leaf margin, showing finely serrate; **F.** flowers, lateral view; **G.** flower, dorsal view; **H-I.** flower, apical view; **J-L.** longitudinal section of a flower, inside view; **M.** pistil; **N.** stamens; **O.** longitudinal section of a flower, showing 6 lobes, stamens and pistil; **P.** peduncle; **Q.** bracts. (Photographed by H.B. Ding)

Y.Wan & C.C.Huang (1987: 220) and *A. depingiana* (Fig. 4). However, they are distinguishable by some characters, such as the number of the adaxial perigone keels, details of the stigma surface and in colour patterns (Tillich and Averyanov 2012). Phonsena & W.J.J.O. de Wilde (2010) eagerly taxonomic treated several of them (*A. larutensis*, *A. hainanensis* and *A. yingjiangensis*) as synonyms of *A. longifolia.* Tillich & Averyanov's (2012) proposal that the SE Asian *Aspidistra* specimens with lineate, tufted leaves as part of the *A. hainanensis* complex, until more comprehensive cultivation experiments can provide clarity regarding their variability and taxonomic status. Therefore, we still maintain the taxonomic status of *A. larutensis* and provide a detailed description as a newly record of *Aspidistra* in Laos for further study.

***Specimen examined*:** LAOS. Oudomxay, Maung Xai, Phou Hin Phee National Bio-Diversity Park, near Puhephe Village, 20°39′43.04″ N, 102°00′19.05″ E, elevation ca. 829 m, 29 March 2018, *Y.H. Tan, B. Yang, H.B. Ding & X.D. Zeng L0192* (HITBC); Ibid., Voucher from a cultivated plant at Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences, 11 December 2020, *H.B. Ding XTBG0202* (HITBC).

Aspidistra sutepensis K.Larsen in Dansk Botanisk Arkiv Bind 20 Nr. 1: 41. fig. 1. 1961; Li, G.Z., The genus *Aspidistra*. 83. 2004; Phonsena, P. & De Wilde, W.J.J.O., Thai. For. Bull. 38: 53. 2010. ***Type*:** Thailand, Chiang Mai, Doi Suthep, 11 September 1958, *K. Larsen 4929* (holotype: C10013947!).

Fig. 5

***Updated Description*:** Plant perennial, evergreen, herbaceous, rhizomatous, completely glabrous. **Rhizome** creeping, subterete, epigeous to hypogeous, much branched, 3–10 mm in diameter, densely nodal, covered by dissected papyraceous remnants of the cataphylls, with many grey roots. **Cataphylls** oblong, as young creamy white at the base, creamy white with purple-red spots toward apex, papyraceous, becoming dull grey when dry, to 20 cm long, withered and partially disintegrated before anthesis. **Foliage leaves** solitary, divided into petiole and lamina. **Petiole** adaxially sulcate, 23–41 cm long. **Leaf blade** dark green with light green mottling (sometimes without mottling), oblong-lanceolate, basally cuneate and distally attenuate, margin finely serrate, 23–45 cm long, 4.8–12 cm wide, with midvein prominent abaxially. **Peduncles** (specialized reproductive shoots) decumbent or ascending, creamy white or pale green toward apex, 5–10 cm long, with 4–6 bracts, bracts gradually wider from base to top of peduncle, the most basal one of perianth broadly ovate, creamy white or creamy white with purple-red spots toward apex, pale white when dry. **Flower** solitary at top of peduncle. **Perigone** subcampanulate (to slightly urceolate), fleshy, 1.5–2.5 cm long, 1.3–2.0 cm in diameter, smooth outside, papillose inside especially on lobes; **perigone tube** 8–14 mm long, ca. 2 mm thick, outside creamy white with scattered purple-red spots at apex, inside creamy white at base and gradually turning completely purple-red towards apex; **perigone lobes** 8, subequal, ovate-triangular to elliptic, 5–8 mm long, 2–4 mm broad at base, apex tapering into acute and usually recurved, completely purple-red, each lobe with 2–4 ridges. **Stamens** 8, inserted at lower 1/3 part of perigone tube, posited lower than stigma; filaments creamy white, cylindrical, ca. 1 mm long; anthers yellow, ca. 2 mm long, ca. 1 mm wide, introrse. **Pistil** mushroom-shaped, 4–5 mm high; **style** creamy white, cylindrical; **stigma** peltate swelled, 12–15 mm in diameter, purple-red or creamy white, with slightly convex on the surface, 8 ridges from the edge to the central convergence, with 8 deep white groove nest, 4-lobed at margin and lobes emarginate at apex. Ovary inconspicuous, superior. Fruit creamy or purple-red, depressed globose, ca. 2.3 × 2.5–3 cm, smooth or slightly tuberculate.

***Phenology*:** Flowering and fruiting from October to December.

***Distribution*:** Thailand, China (Yunnan new recorded).

***Specimens examined*:** CHINA. Yunnan: Puer, Menglian, Mengma, Lafu, elevation ca. 1800 m, 21 October 2013, *Y.H.Tan T0460* (HITBC0030043).

***Notes*:** Species with broad leaf and deep groove nest occur in the upper stigmatic surface, and similar to *A. sutepensis* K. Larsen are: *A. elatior* Blume, *A. mushaensis* Hayata and *A. sichuanensis* K.Y.Lang & Z.Y.Zhu. *Aspidistra sutepensis* can be clearly differentiated from *A. elatior*, e.g. distinctly serrations along margin of leaf (*vs.* entire), longer peduncle (5–10 cm long *vs.* 0.5–2 cm long). *Aspidistra sutepensis* can be clearly differentiated from *A. mushaensis* (Lu *et al.*, 2020), e.g. distinctly serrations along margin of leaf (*vs.* entire), longer peduncle (5–10 cm long *vs.* 1–2 cm long) and smaller perigone (1.3–2.0 cm in diameter *vs.* 2.5–2.9 cm in diameter). It is also similar to *A. sichuanensis*, described in 1984 (Lang and Zhu 1984), but there are still some differences, e.g. longer peduncle (5–10 cm long *vs.* 1–5 cm long) and slightly larger stigma (12–15 mm in diameter *vs.* 8–12 mm in diameter). Considering the wide geographical distribution of *A. sichuanensis* (Sichuan, Guangxi, Guizhou, Hunan and Yunnan), we even suspect that *A. sichuanensis* maybe is a synonym of *A. sutepensis*, but the precise relationships between the two taxa need further botanical survey and systematic analysis.

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Fig. 4. Floral morphological comparison of eight linear leaf species of the genus ***Aspidistra***. **A1-A3.** ***A. depingiana*** Y.H.Tan & H.B.Ding; **B1-B3.** ***A. omeiensis*** Z.Y.Zhu & J.L.Zhang (photographed by CeHong Li from Mount Emei); **C1-C3.** ***A. hainanensis*** Chun & F.C.How (photographed by ChunRui Lin and BingMou Wang); **D1-D3.** ***A. larutensis*** W.J.de Wilde & A.Vogel; **E1-E2.** ***A. linearifolia*** Y.Wan & C.C.Huang (photographed by HaiLei Zheng); **F1-F2.** ***A. yingjiangensis*** L.J.Peng (photographed by Lei Cai); **G1-G2.** ***A. triradiata*** Vislobokov (photographed by Nikolay A. Vislobokov); **H1-H2.** ***A. minutiflora*** Stapf.

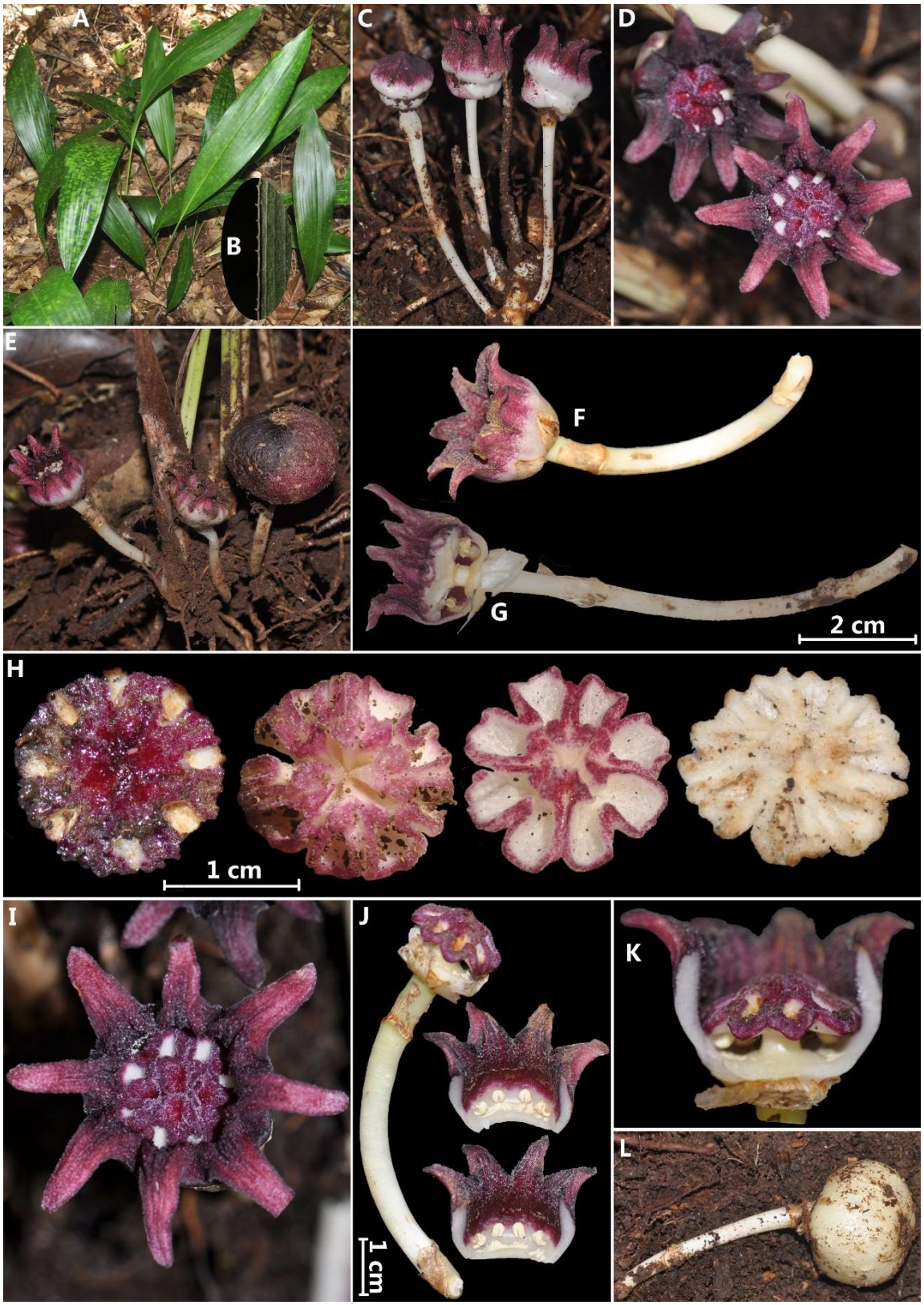

Fig. 5. ***Aspidistra sutepensis*** K.Larsen, **A.** plant in natural habitat, **B.** leaf margin showing finely serrate; **C.** flowers, lateral view; **D.** flowers, apical view; **E.** base of flowering plant with open flower and fruit; **F.** flower with peduncle; **G.** longitudinal section of flower with size; **H.** series of stigma, apical view; **I.** flower, apical view; **J.** perigone, dissected to show stamens and pistil; **K.** stigma, lateral view; **L.** fruit, lateral view. (Photographed by Y.H. Tan)

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LITERATURE CITED

Averyanov, L.V. and H.J. Tillich. 2016. *Aspidistra anomala*, *A. elegans* and *A. sinensis* spp. nov. (Asparagaceae, Convallariaceae s.s.) from China, Laos and Vietnam. Nord. J. Bot. **34(2)**: 141–147.

Averyanov, L.V. and H.J. Tillich. 2017. Notes on taxonomy and new taxa of *Aspidistra* (Ruscaceae) in the flora of Laos and Vietnam. Nord. J. Bot. **35(1)**: 48–57.

Averyanov, L.V., H.J. Tillich, V.T. Pham, S.K. Nguyen, T.A. Le, H.T. Nguyen, T.V. Maisak, A.H.L. Tuan, D.D. Nguyen, Q.C. Truong, T.L.T. Nguyen and T.C. Vu. 2018. New taxa and taxonomic notes in *Aspidistra* (Convallariaceae s.s.) in China, Laos and Vietnam. Nord. J. Bot. **36(7)**: 1–19.

Averyanov, L.V., K.S. Nguyen, H.T. Son, H.J. Tillich and T.V. Maisak. 2019. New taxa and taxonomic notes in *Aspidistra* (Convallariaceae s.s.) of Laos and Vietnam. Nord. J. Bot. **37(7)**: e02352.

Beentje, H. 2012. The Kew Plant Glossary, an illustrated dictionary of plant terms (revised edition). Royal Botanic Gardens, Kew: Kew Publishing, 160 pp.

Cai, L., S. Peng, J. Tian, Z.L. Dao, N. Wei, G.W. Hu and Q.F. Wang. 2018. *Aspidistra austroyunnanensis* (Asparagaceae), a new species from southern Yunnan, China. Phytotaxa **356(3)**: 233–237.

Cai, L., G.L. Zhang, G.W. Hu and Z.L. Dao. 2019. *Aspidistra bogneri* H.-J. Tillich, a newly recorded species of *Aspidistra* (Asparagaceae) from China. Plant Sci. J. **37(5)**: 572–575.

Cai, L., B. Pan, C.R. Lin, Z.L. Dao and G.W. Hu. 2020. *Aspidistra xichouensis* (Asparagaceae), a new species from the karst region in southeastern Yunnan, China. Phytotaxa **439(2)**: 143–149.

Chun, W.Y. and F.C. How. 1977. Flora Hainanica **4**: 533, f. 1021. Peking.

de Wilde, W.J.J.O. and A. Vogel. 2005. A new species of *Aspidistra* (Convallariaceae) from Perak, Peninsular Malaysia. Folia Malaysiana **6(3&4)**: 125–130.

Ding, H.B., B. Yang, X.D. Zeng and Y.H. Tan. 2019. *Jasminanthes laotica* (Apocynaceae, Asclepiadoideae), the first new species of *Jasminanthes* described from Laos. Phytotaxa **393(3)**: 297–300.

Ding, H.B., Y.X. Gong, R. Pan, X.Q. Lu and Y.H. Tan. 2020a. A new tuberous species of *Begonia* L. (Begoniaceae) from southern Yunnan, China. Phytotaxa **474(1)**: 81–86.

Ding, H.B., M.B. Maw, B. Yang, S. Bouamanivong and Y.H. Tan. 2020b. An updated checklist of *Begonia* (Begoniaceae) in Laos, with two new species and five new records. PhytoKeys **138**: 187–201.

Ding, H.B., B. Yang, P.Y. Wang, Z.L. Gan, G. Yan, X.Q. Lu and Y.H. Tan. 2020c. *Alangium confertiflorum*, a new species of *Alangium* sect. *Alangium* (Cornaceae) from China-Laos transboundary region. Taiwania **65(4)**: 517–520.

Fang, D. and L.Y. Yu. 2002. Three new species of *Aspidistra* Ker-Gawl. (Liliaceae) from Guangxi, China. Acta Phytotax. Sin. **40(2)**: 159–163.

Hooker, J.D. 1892. *Aspidistra*. In: Hooker JD (Ed.) Flora of British India, vol. 6. L. Reeve & Co., London, pp. 326.

Hou, M.F., Y. Liu, Y. Kono and C-I Peng. 2009. *Aspidistra daxinensis* (Ruscaceae), a new species from limestone areas in Guangxi, China. Bot. Stud. **50**: 371–378.

Huang, X.Y., K. Sosoulithanee, F. Ke, W.B. Xu, K. Sydara, K. Thepkaysone, R.C. Hu and C.R. Lin. 2018. *Aspidistra laongamensis* (Asparagaceae), a new species from Laos. Taiwania **63(4)**: 393–396.

Lang, K.Y. and Z.Y. Zhu. 1984. New taxa of the genus *Aspidistra* (Liliaceae) from Sichuan. Acta Botanica Yunanica **6(4)**: 385–388.

Li, G.Z. and Y.G. Wei. 2003. Two new species of the *Aspidistra* Ker-Gawl. (Liliaceae). Acta Phytotax. Sin. **41(4)**: 381–386.

Li, G.Z. 2004. The genus *Aspidistra*. Guangxi Sci. & Technol. Publ. House, Nanning, pp. 1–229.

Liang, S.Y. and M.N. Tamura. 2000. *Aspidistra* Ker Gawler. In: Wu ZY, Raven PH (Eds) Flora of China, vol. 24. Science Press, Beijing & Miss. Bot. Gard. Press, pp. 240–250.

Lin, C.R., Y.Y. Liang and Y. Liu. 2009. *Aspidistra bamaensis* (Ruscaceae), a new species from Guangxi, China. Ann. Bot. Fenn. **46(5)**: 416–418.

Lin, C.R., C-I Peng, Y. Kono and Y. Liu. 2010. *Aspidistra obconica*, Asparagaceae (Ruscaceae), a new species from limestone areas in Guangxi, China. Bot. Stud. **51**: 263–268.

Lin, C.R., W.B. Xu and Y. Liu. 2011. *Aspidistra albiflora* sp. nov. (Asparagaceae) from southwestern Guangxi, China. Nord. J. Bot. **29(4)**: 443–446.

Lin, C.R. and Y. Liu. 2011a. *Aspidistra longituba* (Ruscaceae), a new species from Guangxi, China. Ann. Bot. Fenn. **48(6)**: 519–521.

Lin, C.R. and Y. Liu. 2011b. *Aspidistra punctatoides* sp. nov. (Ruscaceae) from limestone areas in Guangxi, China. Nord. J. Bot. **29(2)**: 189–193.

Lin, C.R., W.B. Xu, Y.S. Huang and Y. Liu. 2012. *Aspidistra jingxiensis* (Asparagaceae), a new species from Guangxi, China. Ann. Bot. Fenn. **49(3)**: 193–196.

Lin, C.R., Y. Liu, D.X. Nong, Y. Kono and C-I Peng. 2013a. *Aspidistra crassifila* (Asparagaceae), a new species from Guangxi, China. Bot. Stud. **54(1)**: 43.

Lin, C.R., T. Meng, Q. Gao and Y. Liu. 2013b *Aspidistra nankunshanensis* (Asparagaceae), a new species from Guangdong, China. Ann. Bot. Fenn. **50(1-2)**: 123–126.

Lin, C.R., L.F. Guo and Z.F. Bin. 2014a. *Aspidistra lingyunensis* sp. nov. (Asparagaceae), from limestone areas in Guangxi, China. Nord. J. Bot. **32(1)**: 60–63.

Lin, C.R., Y.S. Huang and Y. Liu. 2014b. *Aspidistra ovatifolia* (Asparagaceae), a new species from Guangxi, China. Novon **23(3)**: 287–290.

Lin, C.R., X.Y. Huang, B. Pan, W.B. Xu and Y. Liu. 2015a. Two new species of *Aspidistra* (Asparagaceae) from Guangxi, China: *A. chunxiuensis* and *A. longshangensis*. Phytotaxa **208(2)**: 163–169.

Lin, C.R., Z.Q. Nong, Y.S. Huang, T. Meng and Y. Liu. 2015b. *Aspidistra longgangensis* sp. nov. (Asparagaceae), from limestone areas in Guangxi, China. Nord. J. Bot. **33(3)**: 377–380.

Lin, C.R., B.M. Wang, J. Liu and Y. Liu. 2019. *Aspidistra synpetala and A. pulchella*, two new species of *Aspidistra* (Asparagaceae) from Guangxi, China. Taiwania **64(1)**: 80–85.

Liu, Y., Y. Kono, C.R. Lin, W.B. Xu and C-I Peng. 2011. *Aspidistra erecta*, (Asparagaceae), a new species from limestone areas in Guangxi, China. Bot. Stud. **52**: 367–373.

Lu, C.T., K.C. Chuang, Y.H. Tseng, C.C. Wang and J.C. Wang. 2020 Taxonomic revision of *Aspidistra* Ker-Gawl. (Asparagaceae) in Taiwan. Taiwania **65(3)**: 277–285.

Newman, M., S. Ketphanh, B. Svengsuksa, P. Thomas, K. Sengdala, V. Lamxay and K. Armstrong. 2007. A checklist of the vascular plants of Lao PDR. Royal Botanic Garden Edinburgh, Edinburgh 1–394.

Peng, LJ. 1989. One new species of the genus *Aspidistra* from Yunnan. Acta Botanica Yunanica **11(2)**: 173–174.

Phonsena, P. and W.J.J.O. de Wilde. 2010. The genus *Aspidistra* Ker Gawl. (Asparagaceae, Ruscaceae) in Thailand. Thai. For. Bull. (Bot.) **38**: 48–58.

Staff, O. 1903. *Aspidistra*. The Journal of the Linnean Society, Botany **36**: 113.

Tan, Y.H., T.C. Hsu, B. Pan, J.W. Li and Q. Liu. 2012. *Gastrodia albidoides* (Orchidaceae: Epidendroideae), a new species from Yunnan, China. Phytotaxa **66(1)**: 38–42.

Tan, Y.H., J.W. Li, B. Pan, B. Wen, J.T. Yin and Q. Liu. 2013. *Oreocharis glandulosa*, a new species of Gesneriaceae from southern Yunnan, China. Phytotaxa **131(1)**: 29–34.

Tillich, H.J. 2005. A key for *Aspidistra* (Ruscaceae), including fifteen new species from Vietnam. Feddes Repert. 1**16(5–6)**: 313–338.

Tillich, H.J. 2006. Four new species in *Aspidistra* Ker-Gawl. (Ruscaceae) from China, Vietnam and Japan. Feddes Repert. **117(1–2)**: 139–145.

Tillich, H.J. 2008. An updated and improved determination key for *Aspidistra* Ker-Gawl. (Ruscaceae, Monocotyledons). Feddes Repert. **119(5–6)**: 449–462.

Tillich, H.J. and L.V. Averyanov. 2012. Four new species of *Aspidistra* Ker Gawl. (Asparagaceae) from China and Vietnam with a comment on *A. longifolia* Hook.f. and *A. hainanensis* W.Y.Chun & F.C.How. Gard. Bull. (Singapore) **64(1)**: 201–209.

Vislobokov, N.A. 2015. Two new species of *Aspidistra* (Asparagaceae, Nolinoideae) from northern Vietnam: *A. clausa* and *A. triradiata*. Phytotaxa **207(3)**: 265–272.

Vislobokov, N.A., A.N. Kuznetsov, S.P. Kuznetsova, M.S. Romanov and M.S. Nuraliev. 2019 *Aspidistra minor* (Asparagaceae, Nolinoideae), a tiny new species from Vietnam. Phytotaxa **402(1)**: 63–67.

Wan, Y. and C.C. Huang. 1987. New species of the genus *Aspidistra* from Guangxi. Guihaia **7(3)**: 217–224.

Xi, H.C., Yin, J.T., Ma, X.D. and Wang, W.G. 2020. *Aspidistra purpureomaculata*, a new species of *Aspidistra* (Asparagaceae) from Laos. Taiwania **65(2)**: 228–231.

Xue, B., Y.Y. Shao, R.M.K. Saunders and Y.H. Tan. 2017. *Alphonsea glandulosa* (Annonaceae), a new species from Yunnan, China. PloS ONE **12(2)**: 1–16.

Yang, B., H.B. Ding, J.W. Li and Y.H. Tan. 2018. Two new species of *Hiptage* (Malpighiaceae) from Yunnan, Southwest of China. PhytoKeys **110**: 81–89.

Yang, B., H.B. Ding, K.C. Fu, Y.K. Yuan, H.Y. Yang, J.W. Li, L.X. Zhang and Y.H. Tan. 2019. Four new species of Gesneriaceae from Yunnan, Southwest China. PhytoKeys **130**: 183–203.

Yang, B., R.B. Zhu, H.B. Ding, S. Bouamanivong and Y.H. Tan. 2020. A new species and two new records of *Goniothalamus* (Annonaceae) from Lao PDR. PhytoKeys **138**: 17–25.

Yi, S.Y., Y. Huang, H.Y. Chen, X.X. Zhou and C.R. Lin. 2020. *Aspidistra jiangjinensis* (Asparagaceae), a new species from Chongqing, China. Phytotaxa **437(3)**: 164–168.

Zhang, L.X., H.B. Ding, H.T. Li, Z.L. Zhang and Y.H. Tan. 2019. *Curcuma tongii*, a new species of *Curcuma* subgen. *Ecomatae* (Zingiberaceae) from southern Yunnan, China. Phytotaxa **395(3)**: 241–247.

Zhu, Z.Y. and J.L. Zhang. 1981. A new species of the genus *Aspidistra* from Emei. Acta Phytotax. Sin. **19(3)**: 386–387.