

***Aspidistra nitens* (Asparagaceae, Convallariaceae s. str.), a new species from central Laos**

***Aspidistra nitens* (Asparagaceae, Convallariaceae s. str.) — новый вид из центрального Лаоса**

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Abstract. The paper describes a new species of *Aspidistra* discovered in Laos, namely *A. nitens* Aver., K. S. Nguyen et Tillich in addition to ten species (*A. elegans*, *A. glandulosa*, *A. khangii*, *A. laongamensis*, *A. laotica*, *A. lurida*, *A. medusa*, *A. purpureomaculata*, *A. globulifera*, *A. subrotata*) earlier reported in this country. The new species is most similar to *A. maguanensis* originated from Yunnan (China) but differs by short peduncle 5–9 mm long completely covered by 3–4 imbricate bracts, urceolate perigone tube with 8–10 free, unequal, white, narrowly ovate lobes, 8–10 stamens, and sessile, oblate, purple, indistinctly 4–5-lobed stigma obscurely wavy along the margin. Short diagnosis, standard taxonomical description, type citation, epithet etymology, data on ecology, phenology, estimated conservation status, color illustrations, notes on the taxonomy of related species are provided for the described species. New nomenclatural combination, *A. globulifera* (Aver., K. S. Nguyen et Tillich) Aver., based on *A. semiaperta* var. *globulifera* Aver., K. S. Nguyen et Tillich is published.

Keywords: *Asparagaceae*, *Convallariaceae*, *Aspidistra*, Laos, flora, plant diversity, new species, new combination.

Аннотация. Описан новый для науки вид *Aspidistra nitens* Aver., K. S. Nguyen et Tillich в дополнение к ранее известным во флоре Лаоса *A. elegans*, *A. glandulosa*, *A. khangii*, *A. laongamensis*, *A. laotica*, *A. lurida*, *A. medusa*, *A. purpureomaculata*, *A. globulifera*, *A. subrotata*. Новый вид наиболее сходен с *A. maguanensis*, описанным из Юньнани (Китай), отличаясь от последнего коротким цветоносом 5–9 мм дл., полностью скрытым 3–4 черепитчато расположенными прицветниками, кувшинчатой трубкой околоцветника с 8–10 свободными неравными белыми узкояйцевидными долями, 8–10 тычинками и почти сидячим, силоснутым, пурпурным, неясно 4–5-лопастным рыльцем с неясно волнистым краем. Приведен краткий диагноз нового вида, описание, цитата типа, этимология эпитета, сведения об экологии, фенологии, предположительный охранный статус, цветные иллюстрации, комментарии по таксономии близкородственных видов. Обнародована новая номенклатурная комбинация *A. globulifera* (Aver., K. S. Nguyen et Tillich) Aver., основанная на *A. semiaperta* var. *globulifera* Aver., K. S. Nguyen et Tillich.

Ключевые слова: *Asparagaceae*, *Convallariaceae*, *Aspidistra*, Лаос, флора, фиторазнообразие, новый вид, новая комбинация.

The genus *Aspidistra* Ker Gawl. comprises about 200 species, subspecies and varieties distributed almost exclusively in tropical and subtropical continental Southeast Asia with the highest documented diversity in southern China and Vietnam (Li, 1988, 2004; Tillich, 2005, 2008, 2014; Tillich et al., 2007, 2017; Tillich, Averyanov, 2008, 2012, 2018; Phonsena, de Wilde, 2010; He, 2011; Liu, 2011; Averyanov, Tillich, 2012, 2013, 2014, 2015, 2016a, b; Lin, 2012, 2014, 2015; Leong-Škorničková et al., 2014; Vislobokov et al., 2014, 2019; Colin, 2015; Vislobokov, 2015; Xu et al., 2015a, b, 2017; Averyanov et al., 2016, 2017, 2018a, b, 2019a, b, c, 2020a, b; Ly, Tillich, 2016, 2017; Ly et al., 2017; Nguyen et al., 2017, 2020; Nuraliev et al., 2017; Huang et al., 2018). According to presently available data, more than 110 *Aspidistra* species are recorded currently in southern China (mainly Yunnan and Guangxi provinces) and over 70 species in Vietnam (IPNI, 2021). Meanwhile, the territory of Laos, adjacent to both of these countries remains botanically poorly studied. This area has similar natural conditions and still retains wide fields of primary forests with extremely rich species composition comparable to (or even higher) than the floras of adjacent regions of China and Vietnam. Nevertheless, only 10 species of *Aspidistra* have been hitherto recorded in Laos flora, namely *A. elegans* Aver. et Tillich, *A. glandulosa* (Gagnep.) Tillich, *A. globulifera* (Aver., K. S. Nguyen et Tillich) Aver., *A. khangii* Aver. et Tillich, *A. laongamensis* C. R. Lin et X. Y. Huang, *A. laotica* Aver. et Tillich, *A. lurida* Ker Gawl., *A. medusa* Aver., K. S. Nguyen et Tillich, *A. purpureomaculata* H. C. Xi, J. T. Yin et W. G. Wang, and *A. subrotata* Y. Wan et C. C. Huang (Tillich, 2005; Newman et al., 2007; Averyanov, Tillich, 2014, 2015, 2016a, b; Jin et al., 2016; Huang et al., 2018; Averyanov et al., 2019b, c, 2020a, b; Xi et al., 2020). This article provides a standard taxonomical description of one more species discovered in Laos as a successive step in a long way of understanding real *Aspidistra* diversity in this country. Surely, the number of *Aspidistra* species here is expected to increase dramatically in the future with the description of many new, mostly endemic taxa.

The combination *A. globulifera* used above is validly published below as following:

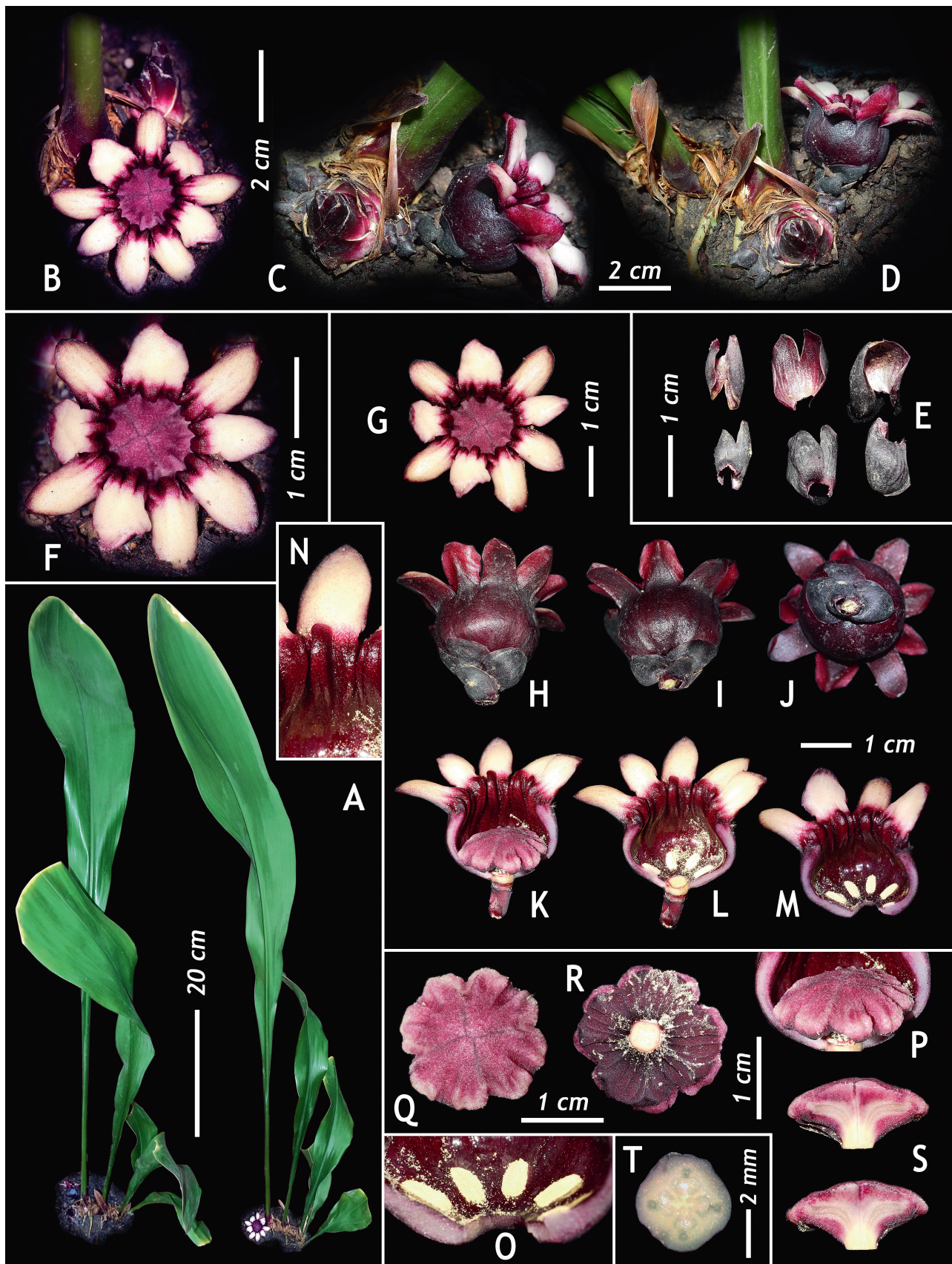
Aspidistra globulifera (Aver., K. S. Nguyen et Tillich) Aver., comb. et stat. nov. $\equiv$ *A. semiaperta* Aver. et Tillich var. *globulifera* Aver., K. S. Nguyen et Tillich, 2020, Nordic J. Bot. 38 (9), -e02877: 11. — *H o - l o t y p e*: Laos, type herbarium specimen prepared from cultivated plant, 5 III 2018, L. Averyanov, AL 150.3 (LE: LE 01049993, <http://en.herbariumle.ru/?t=occ&id=3122>).

Living plants were collected in Bolikhamsai Province, Thaphabat District, Nam Bon Village, Phou Khao Khouay National Park, Tad Xai Waterfall, around point 18°27'25.9"N 103°08'17.5"E, 9 XII 2015, L. Averyanov, T. Maisak, AL 150.

This taxon was tentatively attributed to *A. semiaperta* at the rank of variety (Averyanov et al., 2020b) but actually differs very well from the type of *A. semiaperta* by the stem bearing 3–5 leaves (vs. stem with more than 5 leaves), loosely arranged cataphylls (vs. cataphylls densely enveloping the petiole base), short petiole as long as leaf blade or little longer (vs. petiole more than twice as long as leaf blade), subglobular or broadly conoid flowers (vs. oblate flowers), perigone tube 8–11 mm long, hexagonal in cross section (vs. perigone tube 4–7 mm long, circular in cross section), anthers reniform, on prominent fleshy erect filaments (vs. anthers broadly ovoid, sessile), stigma circular or obscurely hexagonal, indistinctly 3-lobed, with fleshy margin, curved upward along all the stigma perimeter (vs. stigma hexagonal, indistinctly 6-lobed, with thin margin slightly incurved upward at sinuses of the stigma lobes). Additionally, *A. globulifera* grows on alluvial sandy soils of flattened river valleys at elevations 300–400 m a. s. l., whereas *A. semiaperta* has only been found on rocky limestone above 500 m a. s. l. These observations surely confirm the status of *A. globulifera* as a separate well-segregated species.

Aspidistra nitens Aver., K. S. Nguyen et Tillich, sp. nova. — Fig.

Terrestrial perennial herb with epigeous or hypogeous simple or weakly branching, creeping stout rhizome (5)6–10(12) cm long bearing many dull greenish-gray wiry rigid roots; rhizome consisting of several 1-leaved sympodial plagiotropic segments, each (1.2)1.5–2(2.5) cm long, (0.6)0.8–1(1.2) cm diam., covered with pale yellowish-brown fibrous remains of cataphylls, terminal segments end with erect, strongly abbreviated ascending elementary shoots 4–6 mm tall, bearing several cataphylls and one erect leaf. Cataphylls rigid to herbaceous, purple-violet to green, triangular scale-like to oblong-lanceolate, enveloping leaf petiole, (1.5)2–2.5(3) cm long, (4.5)5–6(7) mm wide (when flattened), early disintegrating. Leaves uniformly grassy green, petiolate; petiole stiff, rigid, erect, straight, (25)30–35(40) cm long, (2.8)3–3.5(3.8) mm diam., adaxially grooved; leaf blade suberect to arching, leathery to rigid, more or less flat, elliptic, tapering to acute apex and cuneate base, (45)55–70(75) cm long, (8)12–14(16) cm wide, plane or slightly irregularly wavy along margin, with prominent median vein and numerous longitudinal, rather indistinct secondary



veins. Flowers 1–2, arising laterally from leafy part of stem on terminal rhizome segment, shortly pedunculate, horizontally directed, widely opening, (3)3.2(3.4) cm diam. Peduncle rather straight, (5)6–8(9) mm long, (2.7)2.8–3.2(3.3) mm diam., pale purple, with 3(4) imbricate bracts; sterile bracts entirely dark purple to almost black, broadly ovate, splitting in apical half, leathery, concave, imbricate and enveloping peduncle, (0.9)1–1.1(1.2) cm long and wide (when flattened). Perigone fleshy, with 8–10 free lobes; syntepalous part (perigone tube) urceolate, (1.4)1.6–1.8(2) cm long, (1.8)2–2.2(2.4) cm wide, entirely dark purple on both surfaces, adaxially very glossy, with 8–10 prominent fleshy keels coming from the middle of tube to the base of each lobe. Perigone lobes recurved at almost straight angle, white adaxially, dark purple outside, fleshy and smooth, oblong narrowly ovate, (8)9–10(11) mm long, (3.5)4–5(6) mm wide, obtuse or blunt at apex, unequal, outer lobes a little longer than inner ones. Stamens 8–10 (usually as many as perigone lobes); anthers sessile, placed at the base of perigone tube, quite near the base of ovary, almost flat, oblong to narrowly ovate, somewhat sank into the fleshy perigone, (3.6)3.8–4(4.2) mm long, (2.2)2.4–2.5(2.6) mm wide, well distant from each other; pollen sacs opening upwards, light yellow. Stigma circular in outline, almost sessile, fleshy, oblate, (0.9)1–1.1(1.2) cm high, (1.6)1.7–1.8(2) cm diam.; basal half broadly obconoid, dark purple, radially ribbed; apical part convex, pale purple, indistinctly 4–5-lobed, obscurely wavy, finely papillose, with 4–5 indistinct irregular radial fissures. Ovary very indistinct, white, 4-celled. Fruits unknown.

Diagnosis. Most similar to *A. maguanensis* S. Z. He et D. H. Lv but differs by short peduncle 5–9 mm long completely covered with 3–4 imbricate bracts, urceolate perigone tube with 8–10 free, unequal, white, narrowly ovate lobes, 8–10 stamens, and subsessile, oblate, purple, indistinctly 4–5-lobed stigma obscurely wavy along the margin.

Described from central Laos. — **Holotype:** Prepared from cultivated plant 27 IV 2021 by

L. Averyanov and T. Maisak, AL 150A, garden number 1638; the plant collected in central Laos, Bolikhamsai Prov., Thaphabat Distr., Nam Bon Village, Phou Khao Khouay National Park, Tad Xai Waterfall, around point 18°27'25.9" N 103°08'17.5" E in degraded secondary evergreen dry forest along rocky river on eroded sandstone at elevation about 350 m a. s. l., in shady places on sandy soil, rare, 9 XII 2015, L. Averyanov, T. Maisak, AL 150A (LE: LE 01077040, http://herbariumle.ru/?t=occ&id=91547&rid=image_0179790; analytical photo plate — LE 01122379, <http://en.herbariumle.ru/?t=occ&id=82864>).

Etymology. The species epithet refers to a very glossy, mirror-like adaxial surface of the perigone tube.

Habitat, phenology and conservation status. Terrestrial rhizomatous herb growing in dry evergreen forest on sandstone at elevations 300–400 m a. s. l., commonly on sandy soil in shady places along rivers. Not common. In cultivation flowers in April–May. Only a few plants forming a single population were found during sporadic field observations hence the area of occupancy in terms of the IUSN Red List (IUCN..., 2019) cannot be appropriately assessed. Following to the accepted list criteria the conservation species status should be qualified as “Data deficient” (DD).

Distribution. Endemic to central Laos (Bolikhamsai Province, Thaphabat District, Phou Khao Khouay National Park).

Notes. The new species belongs to the group of species having rather large habit and sessile, oblong or narrowly ovate anthers somewhat immersed in perigone wall. This well segregated but rather artificial group includes such mostly Chinese and Vietnamese species as *Aspidistra basalis* Tillich, *A. bogneri* Tillich, *A. chunxiuensis* C. R. Lin et Yan Liu, *A. deflexa* Aver., Tillich et V. T. Pham, *A. dodecandra* (Gagnep.) Tillich, *A. glandulosa*, *A. grandiflora* Tillich, *A. khangii*, *A. letreae* Aver., Tillich et T. A. Le, *A. liboensis* S. Z. He et J. Y. Wu, *A. locii* Arnautov et Bogner, *A. longiloba* G. Z. Li, *A. magnifica* N. S. Ly, K. S. Nguyen et S. T. Hoang, *A. opaca* Tillich, *A. quangngaiensis*

Fig. *Aspidistra nitens*.

A — flowering plants; B–D — apical part of rhizome with flower; E — flower bracts, adaxial (upper row) and abaxial (lower row) surface; F, G — flower, front view; H, I — flower, side view; J — base of flower with intact floral bracts; K — tangential flower section with intact pistil; L, M — sagittal flower section, pistil removed; N — perigone lobe, adaxial surface; O — sagittal section of perigone tube with anthers; P — intact stigma, side view; Q — stigma, top view; R — stigma, bottom view; S — stigma, sagittal sections; T — ovary, cross section. All photos made from the living plant used for the type preparation (L. Averyanov, T. Maisak, AL 150A garden number 1638). Photos by L. Averyanov, correction and design by L. Averyanov and T. Maisak.

N. S. Ly, Haev. et Tillich, *A. semiaperta* Aver. et Tillich, *A. stricta* Tillich, and *A. truongii* Aver. et Tillich. Among the species of this group, our plant is morphologically closest to *A. maguanensis* originated from Yunnan. The two species share such characters as stout plagiotropic rhizome, large petiolate leaves with elliptic leaf blade, dark purple syntepalous part of perigone with many free narrowly ovate recurved lobes, oblong light yellowish anthers immersed near the ovary, and large, subsessile oblate stigma circular in outline, prominently radially ribbed below. At the same time, the new species well differs by short peduncle 5–9 mm long completely covered by 3–4 imbricate bracts (vs. peduncle 10–12 mm long with 6 distant bracts), urceolate perigone tube with 8–10 free lobes (vs. perigone tube rather campanulate with 10–12 free lobes), perigone lobes oblong narrowly ovate, white adaxially, unequal, outer lobes a little longer than inner ones (vs. perigone lobes equal, triangular narrowly ovate, dark purple to almost black adaxially), stamens 8–10 (vs. stamens 12–13), stigma pale purple, indistinctly 4–5-lobed, obscurely wavy along the margin (vs. stigma white, obscurely hexagonal, irregularly finely crenulate along the margin).

The new species also somewhat resembles *A. bogneri*, *A. glandulosa*, and *A. magnifica* but differs in urceolate perigone tube, unequal perigone lobes with prominent fleshy keel at base, basal sessile anthers sunk in fleshy perigone wall, and subsessile oblate stigma.

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References

- Averyanov L. V., Le T. A., Nguyen K. S., Tillich H.-J., Nguyen D. D., Hoang L. T. A., Trang H. D., Dat P. T. T., Maisak T. V. 2019a. *Aspidistra erosa*, *A. sarcantha*, and *A. verruculosa* (Asparagaceae), three new species from Vietnam // Phytotaxa. Vol. 404, № 3. P. 102–110. <https://doi.org/10.11646/phytotaxa.404.3.2>
- Averyanov L. V., Nguyen K. S., Maisak T. 2019b. Plant diversity, flora and vegetation of Hin Nam No Protected Area. Saarbrücken: Lambert Acad. Publ. 431 p.
- Averyanov L. V., Nguyen K. S., Son H. T., Tillich H.-J., Maisak T. V. 2019c. New taxa and taxonomic notes in *Aspidistra* (Convallariaceae s. s.) of Laos and Vietnam // Nordic J. Bot. Vol. 37, iss. 7. P. 1–9. <https://doi.org/10.1111/njb.02352>
- Averyanov L. V., Nguyen K. S., Son H. T., Tillich H.-J., Wynn-Jones B., Maisak T. V. 2020a. New taxa and new records in *Aspidistra* (Convallariaceae s. s.) of Laos and Vietnam // Nordic J. Bot. Vol. 38, iss. 9. Art. e02877. P. 1–14. <https://doi.org/10.1111/njb.02877>
- Averyanov L. V., Nguyen K. S., Wynn-Jones B., Tillich H.-J., Maisak T. V., Nguyen V. D. 2020b. New species of *Aspidistra* (Convallariaceae s. s.) in the flora of Vietnam // Nordic J. Bot. Vol. 38, iss. 12. Art. e02932. P. 1–6. <https://doi.org/10.1111/njb.02932>
- Averyanov L. V., Tillich H.-J. 2012. New taxa of *Aspidistra* (Asparagaceae) from central Vietnam // Turczaninowia. Vol. 15, № 1. P. 5–10.
- Averyanov L. V., Tillich H.-J. 2013. *Aspidistra truongii*, a new species of Asparagaceae (Convallariaceae s. str.) from southern Vietnam // Taiwan. Vol. 58, № 2. P. 108–111. <https://doi.org/10.6165/tai.2013.58.108>
- Averyanov L. V., Tillich H.-J. 2014. *Aspidistra albopurpurea*, *A. khangii*, *A. lubae* and *A. stellata* spp. nov. (Asparagaceae, Convallariaceae s. s.) from Indochina // Nordic J. Bot. Vol. 32, iss. 6. P. 752–760. <https://doi.org/10.1111/j.1756-1051.2013.00273.x>
- Averyanov L. V., Tillich H.-J. 2015. *Aspidistra laotica*, *A. multiflora*, *A. oviflora* and *A. semiaperta* spp. nov. (Asparagaceae, Convallariaceae s. s.) from eastern Indochina // Nordic J. Bot. Vol. 33, iss. 3. P. 366–376. <https://doi.org/10.1111/njb.00664>
- Averyanov L. V., Tillich H.-J. 2016a. *Aspidistra anomala*, *A. elegans* and *A. sinensis* spp. nov. (Asparagaceae, Convallariaceae s. s.) from China, Laos and Vietnam // Nordic J. Bot. Vol. 34, iss. 2. P. 141–147. <https://doi.org/10.1111/njb.01014>
- Averyanov L. V., Tillich H.-J. 2016b. Notes on taxonomy and new taxa of *Aspidistra* (Ruscaceae) in the flora of Laos and Vietnam // Nordic J. Bot. Vol. 35, iss. 1. P. 48–57. <https://doi.org/10.1111/njb.01249>
- Averyanov L. V., Tillich H.-J., Guo Xiaoming, Bui Q. H., Nguyen K. S. 2016. Three new species of *Aspidistra* (Convallariaceae) from Vietnam // Wulfenia. Vol. 23. P. 57–67.
- Averyanov L. V., Tillich H.-J., Le T. A., Pham V. T., Maisak T. V., Vu T. C. 2017. *Aspidistra letreae* (Asparagaceae), a new species from central Vietnam // Phytotaxa. Vol. 308, № 1. P. 137–140. <https://doi.org/10.11646/phytotaxa.308.1.14>
- Averyanov L. V., Tillich H.-J., Nguyen K. S., Maisak T. V. 2018a. *Aspidistra bella* (Asparagaceae), a new species from northern Vietnam // Phytotaxa. Vol. 364, № 2. P. 205–208. <https://doi.org/10.11646/phytotaxa.364.2.8>
- Averyanov L. V., Tillich H.-J., Pham V. T., Nguyen S. K., Le T. A., Nguyen H. T., Maisak T. V., Tuan A. H. L., Nguyen D. D., Truong Q. C., Nguyen T. L. T., Vu T. C. 2018b.

- New taxa and taxonomic notes in *Aspidistra* (Convallariaceae s. s.) in China, Laos and Vietnam // Nordic J. Bot. Vol. 36, iss. 7. Art. e01833. P. 1–19.
https://doi.org/10.1111/njb.01833
- Colin O. 2015. *Aspidistra tillichiana* (Asparagaceae), a new species from Northern Vietnam // Phytotaxa. Vol. 212, № 3. P. 243–245.
https://doi.org/10.11646/phytotaxa.212.3.7
- He S.-Z., Xu W.-F., Wang Y.-Y., Sun Q.-W. 2011. A new species of *Aspidistra* (Ruscaceae) from Guizhou China // Novon. Vol. 21, iss. 2. P. 187–189.
https://doi.org/10.3417/2009001
- Huang X.-Y., Sosoulithanee K., Ke F., Xu W. B., Sydara K., Thepkaysone K., Hu R.-C., Lin C.-R. 2018. *Aspidistra laongamensis* (Asparagaceae), a new species from Laos // Taiwania. Vol. 63, № 4. P. 393–396.
https://doi.org/10.6165/tai.2018.63.393
- IPNI. 2021. International Plant Name Index // The Royal Botanic Gardens, Kew; Harvard University Herbaria & Libraries; Australian National Botanic Gardens.
https://www.ipni.org/ (Accessed 04.05.2021).
- IUCN Standards and Petitions Committee. 2019. Guidelines for Using the IUCN Red List Categories and Criteria. Version 14. Prepared by the Standards and Petitions Committee.
http://www.iucnredlist.org/documents/RedListGuidelines.pdf (Accessed 04.05.2021).
- Jin H. Y., Ahn T. H., Lee H. J., Song J. H., Lee C. H., Kim Y. J., Yoon J. W., Chang K. S. 2016. A checklist of plants in Lao PDR / Korea National Arboretum. Pocheon-si. 402 p.
- Leong-Škorničková J., Tillich H.-J., Nguyễn Q. B. 2014. Two new species and one new variety of *Aspidistra* (Asparagaceae: Nolinoideae) from Vietnam // Gard. Bull. Singapore. Vol. 66, № 1. P. 27–37.
- Li G. Z. 1988. A new species of *Aspidistra* from Guangxi // Acta Phytotax. Sin. Vol. 26, № 2. P. 156–157.
- Li G. Z. (ed.). 2004. The genus *Aspidistra* / Li G. Z., Lang K. Y., Wang R. X., Wei Y. G., Zhao D. Y., Tang S. Q., Li X., Li F. Y., Wang Y. G., Qi X. X., Tang W. X., Tang S. C., Qi S. H., Su H. L. Nanning: Guangxi Sci. Techn. Publ. House. 229 p.
- Lin C.-R., Xu W.-B., Huang Y. S., Liu Y. 2012. *Aspidistra jingxiensis* (Asparagaceae), a new species from Guangxi, China // Ann. Bot. Fenn. Vol. 49, № 3. P. 193–196.
https://doi.org/10.5735/085.049.0306
- Lin C.-R., Huang Y. S., Liu Y. 2014. *Aspidistra ovatifolia* (Asparagaceae), a new species from Guangxi, China // Novon. Vol. 23, iss. 3. P. 287–290.
https://doi.org/10.3417/2011004
- Lin C.-R., Huang X. Y., Xu W. B., Liu Y. 2015. Two new species of *Aspidistra* (Asparagaceae) from Guangxi, China: *A. chunxiuensis* and *A. longshengensis* // Phytotaxa. Vol. 208, № 2. P. 163–169.
https://doi.org/10.11646/phytotaxa.208.2.5
- Liu Y., Kono Y., Lin C. R., Xu W. B., Peng C. I. 2011. *Aspidistra erecta* (Asparagaceae), a new species from limestone areas in Guangxi, China // Bot. Stud. (Taipei). Vol. 52, № 3. P. 363–369.
- Ly N. S., Tillich J.-H. 2016. *Aspidistra averyanovii* and *A. parviflora* (Asparagaceae), two new species [from] Central Vietnam // Phytotaxa. Vol. 282, № 1. P. 53–60.
https://doi.org/10.11646/phytotaxa.282.1.6
- Ly N. S., Tillich J.-H. 2017. *Aspidistra cadamensis* (Asparagaceae), a new species from Central Vietnam // Phytotaxa. Vol. 303, № 3. P. 84–88.
https://doi.org/10.11646/phytotaxa.303.1.8
- Ly N. S., Haevermans T., Tillich J.-H. 2017. *Aspidistra quangngaiensis* (Asparagaceae), a new species from Vietnam // Phytotaxa. Vol. 312, № 1. P. 123–128.
https://doi.org/10.11646/phytotaxa.312.1.11
- Newman M., Ketphanh S., Svengsuksa B., Thomas P., Sengdala K., Lamxay V., Armstrong K. 2007. A checklist of the vascular plants of Lao PDR. Edinburgh: Royal Botanic Garden. 394 p.
- Nguyen K. S., Averyanov L. V., Tillich H.-J., Pham V. T., Maisak T. V., Sam L. N. 2017. *Aspidistra cyathiflora* var. *bifolia* and *A. neglecta* spp. nov. (Convallariaceae) from northern Vietnam // Nordic J. Bot. Vol. 35, iss. 4. P. 482–487.
https://doi.org/10.1111/njb.01504
- Nguyen K. S., Averyanov L. V., Tillich H.-J., Le T. M. L., Nguyen T. H. 2020. *Aspidistra babensis* (Asparagaceae), a new species from northern Vietnam // Ann. Bot. Fenn. Vol. 57, № 1. P. 17–22.
https://doi.org/10.5735/085.057.0103
- Nuraliev M., Vislobokov N., Averyanov L., Kuznetsov A., Kuznetsova S. 2017. The genus *Aspidistra* (Asparagaceae) in Vietnam: Diversity, intraspecific variation and distribution patterns // Abstr. XIX Intern. Bot. Congr. Shenzhen, 23–29 July 2017. P. 341.
- Phonsena P., de Wilde W. J. J. O. 2010. The genus *Aspidistra* Ker Gawl. (Asparagaceae / Ruscaceae) in Thailand // Thai Forest Bull. Bot. Vol. 38. P. 48–58.
- Tillich H.-J. 2005. A key for *Aspidistra* (Ruscaceae), including fifteen new species from Vietnam // Feddes Repert. Vol. 116, iss. 5–6. P. 313–338.
https://doi.org/10.1002/fedr.200511076
- Tillich H.-J. 2008. An updated and improved determination key for *Aspidistra* Ker-Gawl. (Ruscaceae, Monocotyledons) // Feddes Repert. Vol. 119, iss. 5–6. P. 449–462.
https://doi.org/10.1002/fedr.200811174
- Tillich H.-J. 2014. The genus *Aspidistra* Ker-Gawl. (Asparagaceae) in Vietnam // Taiwania. Vol. 59, № 1. P. 1–8.
https://doi.org/10.6165/tai.2014.59.1
- Tillich H.-J., Averyanov L. V. 2008. Two new species and one new subspecies of *Aspidistra* Ker-Gawl. (Ruscaceae) from Vietnam // Feddes Repert. Vol. 119, iss. 1–2. P. 37–41.
https://doi.org/10.1002/fedr.200711143
- Tillich H.-J., Averyanov L. V. 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 et F. C. How // Gard. Bull. Singapore. Vol. 64, № 1. P. 201–209.
- Tillich H.-J., Averyanov L. V. 2018. A critical survey of infraspecific taxa in the genus *Aspidistra* (Asparagaceae) // Feddes Repert. Vol. 129, iss. 3. P. 185–188.
https://doi.org/10.1002/fedr.201800002
- Tillich H.-J., Averyanov L. V., Dzu N. V. 2007. Six new species of *Aspidistra* (Ruscaceae) from Northern Vietnam // Blumea. Vol. 52, № 2. P. 335–344.
https://doi.org/10.3767/000651907X609070

- Tillich H.-J., Chun-Rui Lin, Averyanov L. V. 2017. What is *Aspidistra tonkinensis* (Gagnep.) Wang et Lang (*Asparagaceae*) // Feddes Repert. Vol. 128, iss. 3–4. P. 102–104.
<https://doi.org/10.1002/fedr.201700012>
- Vislobokov N. A. 2015. Two new species of *Aspidistra* (*Asparagaceae: Nolinoideae*) from Northern Vietnam: *A. clausa* and *A. triradiata* // Phytotaxa. Vol. 207, № 3. P. 265–272.
<https://doi.org/10.11646/phytotaxa.207.3.4>
- Vislobokov N. A., Sokoloff D., Degtjareva G., Valiejo-Roman C., Kuznetsov A., Nuraliev M. S. 2014. *Aspidistra paucitepala* (*Asparagaceae*), a new species with occurrence of the lowest tepal number in flowers of *Asparagales* // Phytotaxa. Vol. 161, № 4. P. 270–282.
<https://doi.org/10.11646/phytotaxa.161.4.2>
- Vislobokov N. A., Nuraliev M. S., Kuznetsov A. N., Kuzmicheva A. E. 2019. *Aspidistra corniculata* (*Asparagaceae, Nolinoideae*), a new species from Vietnam // Phytotaxa. Vol. 397, № 1. P. 125–128.
<https://doi.org/10.11646/phytotaxa.397.1.15>
- Xi H.-C., Yin J.-T., Ma X.-D., Wang W.-G. 2020. *Aspidistra purpureomaculata*, a new species of *Aspidistra* (*Asparagaceae*) from Laos // Taiwan. Vol. 65, № 2. P. 228–231.
<https://doi.org/10.6165/tai.2020.65.228>
- Xu W.-F., Lv D.-H., Wang B., He S.-Z. 2017. *Aspidistra maguansensis* (*Asparagaceae*), a new species from Yunnan, China // Phytotaxa. Vol. 312, № 1. P. 147–149.
<https://doi.org/10.11646/phytotaxa.312.1.16>
- Xu W.-F., Wang Y., He S.-Z. 2015a. A new species of *Aspidistra* (*Asparagaceae*) from Guizhou, China // Phytotaxa. Vol. 205, № 4. P. 295–298.
<https://doi.org/10.11646/phytotaxa.205.4.10>
- Xu W.-F., Wang Y., He S.-Z. 2015b. A new species of *Aspidistra* (*Asparagaceae*) from Guizhou, China // Phytotaxa. Vol. 231, № 3. P. 297–299.
<https://doi.org/10.11646/phytotaxa.231.3.9>