



Tupistra ashiohi (Asparagaceae), a new species from north-eastern India

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Tupistra Ker Gawler (1814: 1655) belonging to Asparagaceae subfamily Nolinoideae (APG 2009, Chase *et al.* 2009), includes about 26 species (Govaerts 2016). These taxa spread mainly in south and south-east of continental Asia, including Nepal, Bhutan, India, Myanmar, China, Laos, Vietnam, Thailand and Malaysia (Tanaka 2003a, 2003b, 2010a, 2010b, Averyanov *et al.* 2016). This genus is characterised by leaves with slender petiolar base, relatively large stigma broader than the style, stout columnar style almost as thick as the ovary and usually tuberculate, dirty green, globular berry-like fruit (Tanaka 2003a, 2010a). In India, *Tupistra* is represented so far by four species, namely *Tupistra clarkei* Hooker (1894: 325), *T. nutans* Wall. ex Lindley (1839: 1223), *T. stoliczana* Kurz (1875: 199) and *T. tupistroides* (Kunth 1848: 12) Dandy (1932: 329).

In course of the study of the genus *Tupistra* in India, a very distinctive species was found growing in the Garden of Botanical Survey of India, Eastern Regional Centre, Shillong, Meghalaya. It was overlooked during last decades and its origin could not ascertain as different species of plants growing in the garden are introduced from the diverse areas of north-eastern India. Critical observations on the specimens and consultation of literature (Hooker 1894, Liang 1978, Jessop 1979, Liang & Tamura 2000, Tanaka 2003a, Tanaka 2010a, Tanaka 2010b, Averyanov & Tanaka 2012, Hu *et al.* 2013, Vislobokov *et al.* 2014, Averyanov *et al.* 2015, Averyanov *et al.* 2016) revealed that this species more or less resembles *T. grandis* Ridley (1900: 38), *T. grandistigma* Wang & Liang (1978: 8–10), and *T. sumatrensis* Tanaka (2003: 503), but differs clearly from them in many significant diagnostic characters. Therefore, it is described here as a new species with detailed photographic illustrations.

Description of the new species

Tupistra ashiohi D.K.Roy, N.Odyuo & Aver., *sp. nov.* (Figs. 1, 2)

Differs from *T. grandis*, *T. grandistigma* and *T. sumatrensis* by distinctly petiolate leaves, with wingless petioles, 15–25 cm long, comparatively shorter, elliptic-oblancoolate leaf-blade, to 50 cm long, shorter pistil, 8–9 mm long and in hemispheric, distinctly 6-lobed stigma, to 2 mm thick.

Type:—INDIA. 20 December 2016, *D.K. Roy 128909* (holotype, ASSAM!) prepared from a plant cultivated in Garden of Botanical Survey of India, Eastern Regional Centre, Shillong, Meghalaya.

Terrestrial clustering perennial herb, with leaves up to 60 cm high. Rhizomatous stem erect, stout, 1.5–2.0 cm in diameter, nodes dense, covered with remnant bases of sheath-leaves. Roots many, cord-like, thick, fleshy, 4–5 mm in diameter, velutinous. Sheath leaves straight, ensiform, 5–15 cm long, light green. Leaves 2–3, basal, erect, distinctly petiolate; petioles adaxially channelled, 15–25 cm long; leaf blade oblanceolate elliptic, 35–50 × 11–12 cm, shortly acuminate at apex, tapering to the base, lathery, uniform glossy green, with prominent midvein abaxially, secondary lateral veins many, parallel, hardly visible. Peduncle erect, terete, to 14 cm long, arising from apical part of stem, axillary, with no sterile bracts. Spike straight, cylindric, to 22 cm long and to 4 cm in diam., with many flowers; rachis slightly angled longitudinally, fleshy. Bracts 2 per flower, concave, fleshy, light green, slightly tinged with purple; outer bract borne below flower, oblong-ovate, bail-shaped, 3–4 × 4.5–5 mm, apex strongly incurved, rounded; inner bract (bracteole) smaller, borne lateral to flower, obovate, 2–2.3 × 2.5–3 mm long, apex slightly upright curved and slightly cucullate. Flowers many, sessile, widely open. Perigone campanulate, 6-cleft, fleshy, dark purple-violet; tube 5–6 mm long; lobes narrowly ovate, 8–9 × 4–6 mm, spreading, straight to slightly incurved, obtuse to acute. Stamens 6; anthers sessile, dorsifixed, narrowly ovoid, introrse, 3 × 1 mm, dull yellowish, attached to the base of perigone lobes below stigma. Pistil 1; style white, columnar, slightly broadening upward, 4.5–5 × 2–2.5 mm, shallowly ridged longitudinally, glabrous; stigma convex to almost hemispheric, 7–8 mm in diameter, to 2 mm

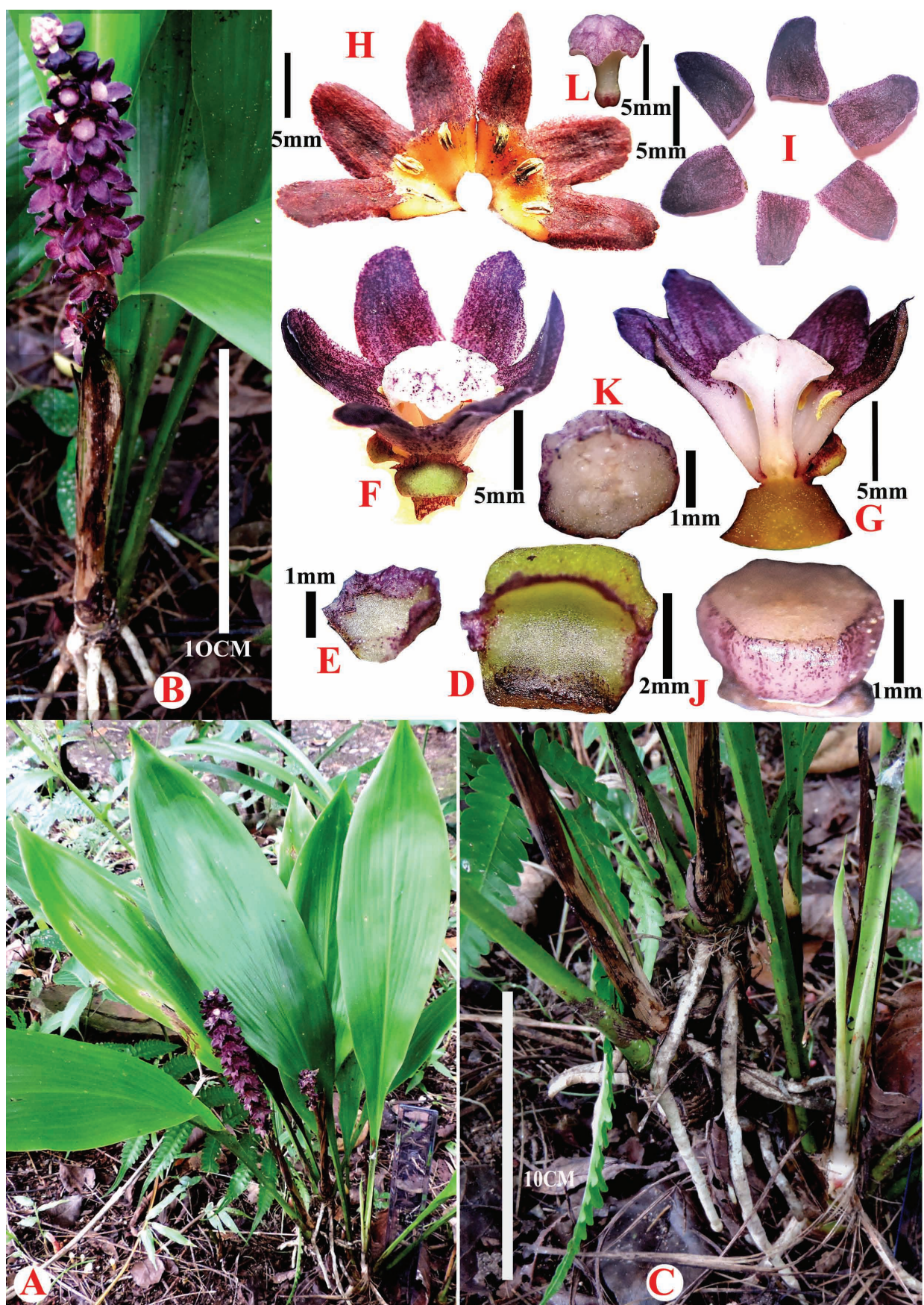


FIGURE 1. *Tupistra ashihoi*. A. Habit. B. Inflorescence. C. Basal part of the plant. D. Bract. E. Bracteole. F. Flower. G. Sagittal section of flower. H. Flattened perigone, adaxial surface. I. Perigone lobes. J. Ovary. K. Transversal section of ovary. L. Pistil.

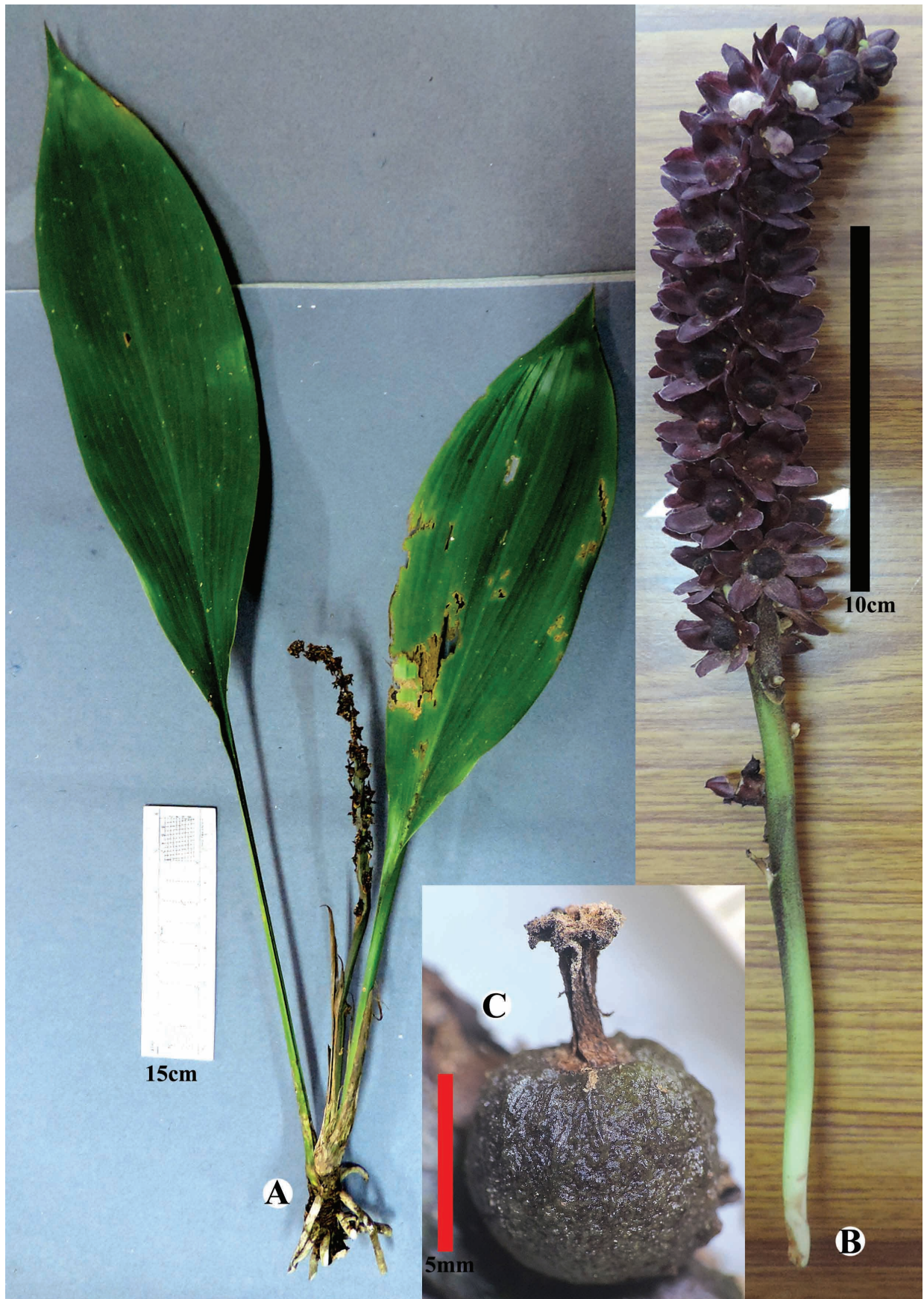


FIGURE 2. *Tupistra ashihoi*. A. Habit. B. Inflorescence. C. Fruit.

thick, white speckled with purple, becoming dark purple after anthesis, shallowly 5–6-lobed at margin, distal lobes broadly triangular, 1–1.5 × 1.5–2 mm; ovary superior, situated at extreme base of columnar pistil, 1.5–2 mm high, 3-locular. Fruit berry-like, subglobose, dark brown, irregularly tuberculate, 0.5–1 cm across, with persistent remnant of the style at apex. Flowering in September–October, fruiting in November–December.

Etymology:—The new species is named in honour of Ashiho A. Mao, Senior Scientist, Botanical Survey of India, Eastern Regional Centre, Shillong, Meghalaya, for his excellent contributions to the Plant taxonomy of north-eastern India.

Distribution:—The new species is currently known only from cultivated specimens in the Garden of Botanical Survey of India, Eastern Regional Centre, Shillong, Meghalaya, India.

Taxonomic relationships:—The comparison of morphology between the known species of *Tupistra* indicates that *T. ashiohi* shows similarity to *T. grandis*, *T. grandistigma* and *T. sumatrensis*. The new species differs from *T. grandis* by distinctly petiolate leaves with wingless petioles, up to 25 cm long (vs. poorly defined petioles up to 40 cm long, with wings), elliptic-oblong leaf blade up to 50 cm long (vs. sublinear, oblanceolate or elliptic, up to 150 cm long), perigone lobes longer than tube (vs. perigone lobes shorter than the tube), anthers located at the base of the perigone lobes (vs. anthers located in the middle of the perigone tube), pistil, 8–9 mm long (vs. 14 mm long), thick, hemispheric, stigma to 2 mm wide, distinctly 6-lobed at margin, purplish white, becoming dark purple after anthesis (vs. thin, peltate, orbicular, obscurely crenulated at margins, white). From *T. grandistigma* the new species differs by longer spike, to 22 cm long (vs. 16 cm long), 2 bracts per flower (vs. 1), shorter perigone lobes, to 16 mm long (vs. 22 mm long). From *T. sumatrensis* the described plant differs by shorter spike, to 22 cm long (vs. 35 cm long), shorter perigone, to 16 mm long, with lobes longer than tube (vs. to 30 mm long, with lobes equal the tube), anthers located at the base of the perigone lobes (vs. located in the subbasal portion of perigone tube).

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References

- Angiosperm Phylogeny Group (2009) An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG III. *Botanical Journal of the Linnean Society* 161: 105–121.
<https://doi.org/10.1111/j.1095-8339.2009.00996.x>
- Averyanov, L.V., Tanaka, N., Nguyen, K.S., Nguyen, H.T. & Konstantinov, E.L. (2015) New species of *Ophiopogon* Ker Gawl., *Peliosanthes* Andrews and *Tupistra* Ker Gawl. (Asparagaceae) in the flora of Laos and Vietnam. *Adansonia, sér. 3* 37: 25–45.
<https://doi.org/10.5252/a2015n1a4>
- Averyanov, L.V. & Tanaka, N. (2012) New species of *Peliosanthes* and *Tupistra* (Asparagaceae) from eastern Indochina. *Taiwania* 57: 153–167.
- Averyanov, L.V., Tanaka, N., Nguyen, K.H., Truong, B.V., Nghiem, D.T. & Nguyen, T.H. (2016) New species of *Ophiopogon*, *Peliosanthes* and *Tupistra* (Asparagaceae s.l.) in the flora of Vietnam. *Nordic Journal of Botany* 34: 23–37.
<https://doi.org/10.1111/njb.00854>
- Chase, M.W., Reveal, J.L. & Fay, M.F. (2009) A subfamilial classification for the expanded asparagalean families Amaryllidaceae, Asparagaceae and Xanthorrhoeaceae. *Botanical Journal of the Linnean Society* 161: 132–136.
<https://doi.org/10.1111/j.1095-8339.2009.00999.x>
- Dandy, J.E. (1932) *Tupistra stoliczana*. *Journal Botany* 70: 329.
- Govaerts, R. (2016) *World checklist of Asparagaceae*. Facilitated by the Royal Botanic Gardens, Kew. Available from: [http:// apps.kew.org/wcsp/](http://apps.kew.org/wcsp/) (accessed 20 December 2016)
- Hooker, J.D. (1894) Liliaceae. In: Hooker, J.D. (Ed.) *The Flora of British India* 6. L. Reeve & Co., London, pp. 299–362.
- Hu, G.-W., Li, H., Tan, Y., Liu, Y. & Long, C.-L. (2013) *Tupistra hongheensis* (Ruscaceae), a new species from Yunnan, China based on morphological, karyotypic, and pollen morphological studies. *Journal of Systematic and Evolution* 51: 230.
https://doi.org/10.1111/jse.12008_6
- Jessop, J.P. (1979) *Tupistra grandis*. In: Steenis, C.G.G.J. van (Ed.) *Flora Malesiana* 1 (9). Sijthoff & Noordhoff, Alphen aan den Rijn, pp. 221–223.
- Ker Gawler, J.B. (1814) *Tupistra squalida*. *Curtis's Botanical Magazine* 40: 1655.
- Kurz, W.S. (1875) *Tupistra stoliczana*. *Journal of Asiatic Society of Bengal, Part 2, Natural History* 44 (2): 199.

- Liang, S.Y. (1978) *Tupistra grandistigma*. In: Wang, F.T. & Tang, T. (Eds.) *Flora Reipublicae Popularis Sinicae* 15. Science Press, Beijing, pp. 8–10.
- Liang, S.Y. & Tamura, M.N. (2000a) *Campylandra*, *Rohdea* and *Tupistra*. In: Wu, Z.Y. & Raven, P.H. (Eds.) *Flora of China* 24. Science Press, Beijing & Missouri Bot. Garden Press, St. Louis, pp. 235–240.
- Liang, S.Y. & Tamura, M.N. (2000b) *Tupistra grandistigma*. In: Wu, Z.I. & Raven, P.H. (Eds.) *Flora of China* 24. Science Press, Beijing & Missouri Botanical Garden Press, St, p. 240.
- Lindley, J. (1839) *Tupistra nutans*. *A Sketch of the Vegetation of the Swan River Colony* 1839: t. 1223.
- Ridley, H.N. (1900) *Tupistra grandis*. *Journal of Botany* 38: 73.
- Tanaka, N. (2003a) New combinations in *Rohdea* (Convallariaceae). *Novon* 13: 329–333.
<https://doi.org/10.2307/3393269>
- Tanaka, N. (2003b) A new species of *Tupistra* (Convallariaceae) from Sumatra. *Blumea* 48: 503–506.
<https://doi.org/10.3767/000651903X489492>
- Tanaka, N. (2010a) A taxonomic revision of the genus *Tupistra* (Asparagaceae). *Makinoa New Series* 9: 55–93.
- Tanaka, N. (2010b) A new species of *Tupistra* (Asparagaceae) from Laos. *Journal of Japanese Botany* 85: 69–73.
- Vislobokov, N.A., Tanaka, N., Averyanov, L.V., Nguyen, H.T., Nuraliev, M.S. & Kuznetsov, A.N. (2014) *Tupistra khangii* (Asparagaceae), a new species from northern Vietnam. *Phytotaxa* 175: 287–292.
<https://doi.org/10.11646/phytotaxa.175.5.8>