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LYCIUM MELLITUM J. Z. DONG, A NEW SPECIES OF SOLANACEAE JUSS. FROM QINGHAI, CHINA

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Key words: Lycium mellitum sp. nov.; Endemic species; Numhon; Solanaceae.

Abstract

The new species *Lycium mellitum* J. Z. Dong (Solanaceae) is established and illustrated from Qinghai province of China. It has a close association with *L. ruthenicum* and *L. ostrum* J. Z. Dong, but is distinguished by several morphological characters: stems much branched, thorns at nodes or not, usually clustered with leaves and flowers; leaves narrowly linear, fleshy, gray, usually apically light yellow; pedicel 10-20 mm long; berries orange-yellow, nearly transparent, inside placenta faintly visible; seeds 1-5, rarely more, light brown.

The genus *Lycium* L. (Solanaceae) comprises more than 100 species which mostly occur in Dry Tropical and Subtropical to Mongolia (Plants of the World Online, 2025). There are seven species and two varieties recorded in Flora of China (Zhang *et al.*, 1994). In recent years, three new species of *Lycium* from northwest China were reported (Chen *et al.*, 2012; Li *et al.*, 2011; Dong *et al.*, 2025).

In the years from 2007 to 2024, the authors conducted persistent field investigations on *Lycium* plants in the Qaidam Basin of Qinghai province, where multiple species of *Lycium* are distributed. Specimens of *L. ruthenicum* Murray, *L. ostrum* J.Z. Dong and another similar species were collected. After examination of the latter specimens, a new species was identified on the basis of its branch, flower and fruit morphology. It is here described as *Lycium mellitum* J. Z. Dong.

Lycium mellitum J. Z. Dong (甜果枸杞, tian guo gou ji), sp. nov. TYPE: China. Qinghai: Doulan Co., Numhon grassland, 15 Sep. 2009, *Z. J. Dong s. 2.* (holotype, HIB; isotype, IBSC). (**Fig. 1**)

Diagnosis. Lycium mellitum J. Z. Dong differs from *L. ruthenicum* Murray in its thorns at nodes or not, usually clustered with leaves and flowers (vs. thorns borne singly at nodes, rarely lack); leaves gray, usually apically light yellow (vs. leaf blade grayish); pedicel 10-20mm long (vs. pedicel 5–10 mm); berries nearly transparently orange-yellow, inside placenta faintly visible (vs. berry purple-black), seeds 1-5, rarely more (vs. 5–10). *Lycium mellitum* J. Z. Dong differs from *L. ostrum* J. Z. Dong in its stems stout, much branched (vs. Stems slender, flexible bearing thorns or not); berries nearly transparently orange-yellow (vs. berries brown, usually with a groove at apex,), seeds 1-5, rarely more (vs. 10–20).

Shrubs 0.5-1.5 m, copiously armed with thorny branchlets; stems stiff, much branched, erect, ascending, or prostrate; branches grayish white or brown, with much longitudinal fissuring on bark of older stems and branches; thorns at nodes or not, usually clustered with leaves and flowers; Leaves subsessile, usually in fascicles of 2 to 7, fleshy and succulent, usually narrowly lanceolate,

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or linear oblanceolate, 1-5 mm × 15-30 mm, leaf blades gray, usually apically light yellow at old branches, grayish green at young branches. Flowers solitary or 2 or 3 in a cluster with leaves; pedicels 10-20 mm, rarely less than 10mm. Calyx campanulate, 4-5 mm, usually 2-divided halfway, calyx in fruit slightly inflated; corolla pale purple, funnelform, 13-15 mm, tubes light green, with green longitudinal veins, limb usually 5-lobed, enlarged at throat, lobes broadly ovate, 1/3–1/2 as long as corolla tube; lobes glabrous and not ciliate; stamens inserted high on corolla tube, slightly exerted, filaments with villous hairs slightly above base, anthers oblong-elliptic, dehiscing longitudinally; ovary 2-locular, style 1, slender and glabrous, stigma green, slightly exerted. Ripe berry globose, orange-yellow, nearly transparent, inside placenta faintly visible, rarely whitish, honey taste, 3-8 mm diam.; seeds 1-5, rarely more, light brown, kidney-shaped, 1.9 × 2.1 mm.

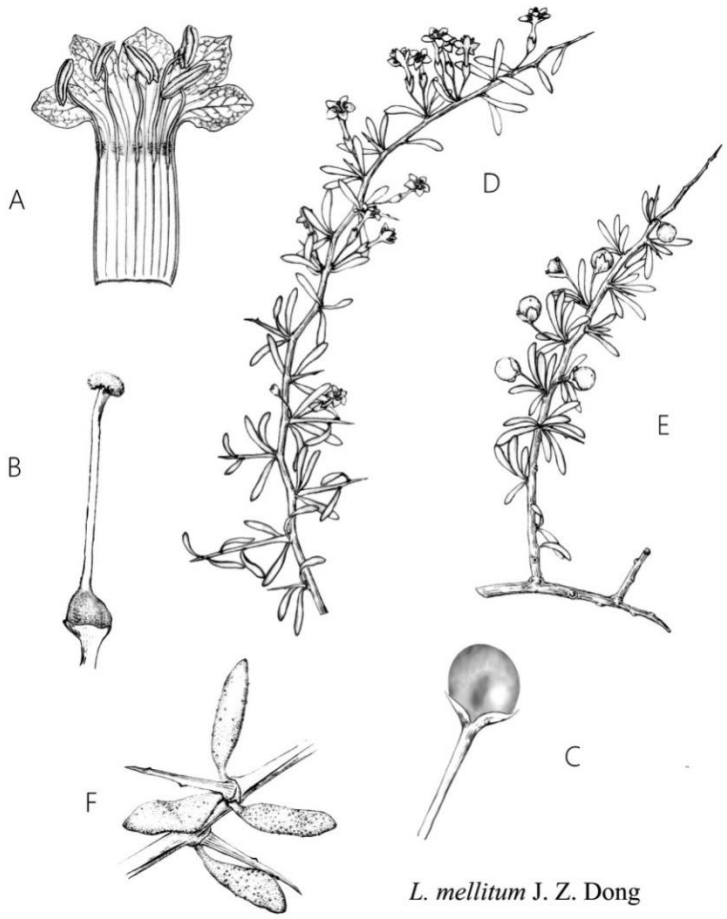

Fig. 1. *Lycium mellitum* J. Z. Dong. A. Dissected flower, showing the high insertion of filaments. B. Pistil. C. Globose fruit, nearly transparent, inside placenta faintly visible. D. A branch with thorns, leaves and flowers. E. A branch with thorns, leaves and fruits. F. Two nodes, with thorns and leaves.

Phenology: Flowering from June to September and fruiting from June to November.

Etymology: The specific epithet *mellitum* refers to the honey taste of the ripe fruits.

Habitat and distribution: Lycium mellitum is known from its type locality in saline grassland of Numhon in Qinghai province, ca. 36°27′N, 96°26.1′E, at elevation of 2774 m, and 36°26′N, 96°26′E, at elevation of 2802 m. The *L. mellitum* populations occurred together with *L. ruthenicum* Murray, *L. barbarum* L and *L. ostrum*. This species is rare and restricted to the populations of ca. 2000 to 5000 individuals, including young plants.

Notes: The distinguishing features of *L. mellitum* (Table 1) provide support for its recognition as a new species distinctive from *L. ruthenicum*. *L. ruthenicum* is found widely distributed in Gansu, Inner Mongolia, Ningxia, Qinghai, Shaanxi, Xinjiang and Tibet, mostly in saline deserts, sands and roadsides, while *L. mellitum* is found in limited areas as noted above. *Lycium mellitum* is also distinctive in its corolla, and fruits from the three published *Lycium* species (Chen *et al.*, 2012; Li *et al.*, 2011; Dong *et al.*, 2025). *Lycium qingshuiheense* X. L. Jiang and J. N. Li was reported to be closely related to *L. ruthenicum*; its corolla tube is nearly equal to the corolla limb and lobes in length, and the berry is darkly red-brown, compressed-globose, with 1–4 seeds (Li *et al.*, 2011). *L. ningxiaense* R. J. Wang & Q. Liao, originally described as *L. parvifolium* T. Y. Chen and X. L. Jiang (nom. illeg., non Roem. & Schult.), was reported to be closely related to *L. barbarum*, and has a corolla tube nearly equal to the limb in length and a pale yellow, compressed-globose or ellipsoidal berry with 5–8 seeds (Chen *et al.*, 2012; Wang and Liao, 2014). *Lycium ostrum* J. Z. Dong was recorded close association with *L. ruthenicum* Murray with the distinguishing characters as berries brown, globose, usually with a groove at the apex, seeds numbering 10 to 20, lobes 1/3–1/2 as long as corolla tube (Dong *et al.*, 2025).

Table 1.Diagnostic characters comparing *Lyciummellitum* J.Z.Dong with*L. ruthenicum*Murrayand*L ostrum* J.Z. Dong.

Characters	*L. mellitum*	*L. ostrum*	*L. ruthenicum*
Plants	shrubs 0.5-1.5m, much branched, nodes mostly bearing with apically thorny branchlets	shrubs 0.5-1.5m, ascending, slender	shrubs 0.2-0.5m, much branched, copiously armed
Leaves	gray, usually apically yellowish-green	gray, usually apically yellowish-green	Gray
Thorns	at nodes or not, usually clustered with leaves and flowers	at nodes or not, usually clustered with leaves and flowers	singly at nodes, rarely lacking
Pedicels	10-20mm or longer	15-20mm or longer	5-10mm
Lobe/tube	1/3-1/2	1/3-1/2	1/3-1/2
Berries	orange-yellow, gobose, nearly transparent, inside placenta faintly visible	brown, globose, usually with a groove at apex	purple black, usually oblate
Berries/ branch	5 to 10, rarely more	10 to 20	20 to 30 or more
Seeds	1 to 5, rarely more, light brown	10 to 20, light yellow to light brown	5 to 10, dark brown

This species is much less widely distributed than some Chinese *Lycium* species. Possible limiting factors of *L. mellitum* in the past might include less fruits and less seeds which indicate low reproduction. The principal threats to this species' survival in the future could include the extension of grassland farming, overgrazing, and floods eroding the river banks, which would cause the reduction of *L. mellitum* populations.

Paratypes: China, Qinghai, Doulan, the grassland adjacent to Numhon River, 36° 26′N, 96° 26′E, 2802 m, June5, 2025, Collectors, J. Z. Dong and J. N. Wang (HB). Found in adjacent to Numhon River, E: 96° 26′, N： 36° 26′, AL: 2802m. about 3000 individuals.

Based on the taxonomic key to *Lycium* species in the English-language Flora of China (Zhang *et al.*,1994), we previously suggested an amended key (Dong *et al,* 2025). This amended key is now updated below to include this new species that were mentioned above in which *L. mellitum* keys out with *L. ostrum*.

Amended Key to the species of Lyciumin China after Zhang et al. (1994).

1.	Berry purple-black, brown or orange yellow, globose; thorns at nodes or not; leaves narrowly linear, fleshy; corolla tube 3-4 × as long as lobes; filaments pubescent	2
-	Berry red or orange-yellow, elongated or sometimes globose; thorns usually clustered with leaves and flowers, rarely lacking; leaves broader, linear-lanceolate, lanceolate, or elliptic, fleshy or not; corolla tube ca. 2 × as long as limb and lobes or shorter; filaments glabrous or pubescent.	4
2.	Berry purple black; stems stout, much branched, thorns singly at nodes, rarely lacking; leaves grayish, pedicel 5–10mm	*L. ruthenicum*
-	Berry brown or yellow orange, stems slender or stout, thorns at nodes or not, usually clustered with leaves and flowers; leaves grayish, usually apically light yellow, pedicel10-20mm	3
3.	Berry brown; stems slender, flexible; pedicel 15–20mm or longer	*L. ostrum*
-	Berry orange yellow, nearly transparent, stems stout, much branched, pedicel 10–15mm	*L. mellitum*
4.	Corolla lobed about 1/4 way down; filaments sparsely pubescent near base	5
-	Corolla lobed 1/3 way down or more; filaments and corolla with a villous ring just above point of insertion	6
5.	Branches slender, flexible; leaves narrow, widest near middle; calyx truncate at apex or unequally divided, lobes not ciliate; apex of young fruit mucronate from a persistent style	*L. truncatum*
-	Branches stout, stiff; leaves usually oblanceolate, sometimes broadly so; calyx lobed halfway down, lobes usually ciliate; apex of young fruit rounded	*L. dasystemum*
6.	Corolla less than 7 mm; stamens manifestly exceeding corolla; seeds ca. l mm; berry globose, ca. 4 mm	*L. yunnanense*
-	Corolla more than 9 mm; stamens shorter than or slightly exceeding corolla; seeds 2-3 mm; berry oblong or ellipsoid, more than 5 mm	7
7.	Calyx usually 2-lobed; corolla lobes marginally glabrescent, tube and limb funnelform	8
-	Calyx usually 3-lobed or 4- or 5-dentate; corolla lobes marginally pubescent, tube cylindric or funnelform, about as long as lobes	10
8.	Corolla tube obviously longer than lobes; berry oblong or ovoid; leaves 2–3 cm × 3–6 mm	*L. barbarum*
-	Corolla tube nearly equal to lobes; berry compressed globose; leaves 0.8–2.8(−3) cm × 1–2(−3) mm	9
9.	Branches zigzag; berry pale yellow, nearly transparent, seeds 5 to 8	*L. ningxiaense*

-	Branches straight; berry dark red–brown, seed(s) 1 to 4	*L. qingshuiheense*
10.	Corolla tube cylindric, longer than lobes; leaves lanceolate	*L. cylindricum*
-	Corolla tube funnelform, shorter than or subequaling lobes; leaves mostly broadly or narrowly ovate, rhomboid, or elliptic	*L. chinense*

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References

Chen, T.Y., Jiang, X. L., Li, Q. S., Zhang, Z.Y. and J. Li. 2012. A new species and a new variety of *Lycium* (Solanaceae) from Ningxia, China. Guihaia **32**: 5–8.

Dong, J, Z., Wang, J, N. and Wang, Y. 2025. *Lycium ostrum*, a New Species of *Lycium* (Solanaceae) from Qinghai, China. NOVON **33**: 67-70.

Li, J. N., Jiang, X. L., Z. G. Li, Chen, T. Y. and Zhang, Z. Y. 2011. *Lycium qingshuiheense*, a new species of Solanaceae from Ningxia, China. Guihaia **31**: 427–429.

Liao, Q. and Wang, R. J. 2014. *Lycium ningxiaense*, a replacement name for *Lycium parvifolium* T. Y. Chen & Xu L. Jiang (Solanaceae). Phytotaxa **173**: 299–300.

Plants of the World Online. 2025. Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names: 30001330-2, Accessed 5 March 2025.

Zhang, Z. Y., Lu, A. M. and D'Arcy, W. G. 1994. Solanaceae. pp. 300–332.*In:* Z. Y. Wu & P. H. Raven (editors), Flora of China, Vol. 17 (Verbenaceae through Solanaceae). Missouri Botanical Garden Press, St. Louis, Science Press, Beijing.

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