



Dregea taynguyenensis (Apocynaceae, Asclepiadoideae), a new species from Vietnam

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Abstract

The new species *Dregea taynguyenensis* from Vietnam is described, illustrated and compared with the other *Dregea* species occurring in Vietnam and neighbouring countries *D. cuneifolia*, *D. sinensis*, *D. volubilis* and *D. yunnanensis*. *Dregea taynguyenensis* differs from these species by the leaf blade secondary veins number, calyx lobes shape, and corolla lobes size.

Key words: Asclepiadaceae, Marsdenieae, Southeast Asia, *Wattakaka*

Introduction

The genus *Dregea* Meyer (1837: 199) comprises approximately 12 species (Li *et al.* 1995) mainly distributed in southern Asia and tropical Africa. Species of *Dregea* are woody vines with watery or milky sap, bearing pseudo-umbelliform, axillary pendulous inflorescences. Its flowers are characterized by broadly campanulate to almost rotate, deeply lobed corollas, corolla lobes contorted in bud, and a fleshy staminal corona with outer lobe processes obtuse or rectangular and inner lobe processes acute.

Dregea has often been treated as a synonym under *Wattakaka* Hasskarl (1857: 99), e.g. in Flora of Bhutan (Watson 1999: 723), Flora of India (Jagtap & Singh 1999: 172), and in the latest Apocynaceae classification (Endress *et al.* 2014: 187); however, *Dregea* predates *Wattakaka* by 20 years. Schlechter (1914) treated *Dregea* as a synonym of *Marsdenia* Brown (1810: 460), which was followed by Forster (1995). The systematic position of *Dregea* is indeed close to *Marsdenia* (Surveswaran *et al.* 2014) but whether the two genera should be considered synonymous could not be ascertained in the phylogeny obtained by Surveswaran *et al.* (2014), due to the insufficient sampling of the two genera and poor resolution of the *Marsdenia* clade.

In Vietnam, two species of *Dregea* have been recorded so far (Costantin 1912, Ho 2000, Li *et al.* 1995, Tran 2005, Tran 2010). Among neighbouring countries, in China occur four species (Li *et al.* 1995), *D. cuneifolia* Tsiang & Li (1974: 127), *D. sinensis* Hemsley in Forbes & Hemsley (1889: 115), *D. volubilis* Benth ex J.D. Hooker in J.D. Hooker (1883: 46) and *D. yunnanensis* (Tsiang) Tsiang & Li (1974: 129), while only *D. volubilis* is recorded for Laos (Newman *et al.* 2007) and Cambodia (Costantin 1912).

Fieldwork in Tay Nguyen area, Kon Ka Kinh National Park in 2011 by the first author led to the discovery of an unidentified *Dregea* species. Upon comparison with herbarium specimens at HN, HNU, HNPM, IBK, K, KUN, KYO, P, SING, TI, TO, TUT, and VNM, as well as images of type specimens available at Jstor Plants (<https://plants.jstor.org/>), it was identified as a new species, which is described and illustrated below.

Taxonomy

Dregea taynguyenensis T.B. Tran & Rodda, *spec. nov.* (Figs. 1–3)

Dregea taynguyenensis is most similar to *D. cuneifolia* due to the elliptic-oblong leaf blades, cuneate at base and acuminate at apex. The

former is distinguished from the latter by having 7–10 secondary veins each side of midrib (vs. 5–6 in *D. cuneifolia*), calyx lobes lanceolate to linear (vs. ovate) and corolla lobes 10.2–12.6 × 5.3–6.4 mm (vs. c. 4 × 4 mm).

Type:—Vietnam. Tay Nguyen: Gia Lai province, Kon Ka Kinh National Park, 14.26°00.1′N 108.21°45.7′E, 1194 m, 9 June 2011, *T.B. Tran, V.H. Do & H.Q. Bui Bach0906201101* (holotype HN [HN0000070158]; isotype HN [HN0000070159]).

Woody vine; main stem to 10 m long or more. *Young stem* pubescent, becoming glabrescent with age; *internodes* 7.5–10 cm long. *Petioles* 1.2–1.8 cm long, 2.5–3 mm in diam., pubescent; *leaf blades* elliptic or oblong, 10.8–12 × 3.6–3.8 cm, cuneate at base, acuminate at apex, glabrous above, pubescent below; secondary veins 7–10 on each side of midrib, tertiary venation reticulate, prominent below. *Inflorescences* axillary, pseudo-umbelliform, convex, 18–40-flowered; *peduncle* 4.1–7 cm long, pubescent. Flower *bud* conical, 8.2–8.3 × 9–10 mm just before anthesis, greenish white. *Pedicels* 2.7–3 cm long, 0.8–1.5 mm thick, pubescent. *Flowers* 27–29 mm in diam. *Calyx lobes* slightly overlapping to the right or to the left at base, lanceolate to linear, 2.4–5 × 0.7–1.5 mm, green flushed brown outside, green inside, pubescent outside, glabrous inside, margin ciliate; with one basal colleter at each sinus, colleters c. 0.2 × 0.2 mm. *Corolla* rotate to shallowly bowl-shaped, deeply divided; tube 3.6–5.9 mm long, glabrous outside; lobes 5, contorted to the right, triangular, 10.2–12.6 × 5.3–6.4 mm, greenish white outside, whitish green or yellowish flushed purple inside, ciliate. *Corona* staminal 5.5–7 mm in diam., 3.3–3.4 mm tall, slightly stipitate; stipe 1.16–1.66 mm tall; corona lobes fleshy, adnate to stamens, ovoid to sub-globose, slightly flattened above, 1.66–1.79 × 1.39–1.79 mm, white to cream, outer process obtuse, inner process narrowing to an acute tooth incumbent to anthers. *Anthers* with membranous apical appendages. *Pollinia* erect, oblong, oblanceolate to clavate, 0.58–0.76 × 0.12–0.21 mm, without pellucid margin; corpusculum rectangular, 0.24–0.28 × 0.16–0.19 mm; caudicle 0.19–0.21 × 0.04–0.05 mm. *Ovary* conical, c. 0.7 × c. 0.33 mm, glabrous. *Fruit* and *seeds* not seen.

Etymology:—The specific epithet refers to the type locality, Tay Nguyen area in Vietnam..

Distribution and ecology:—*Dregea taynguyenensis* is only found in Vietnam, Gia Lai province, Tay Nguyen area where it grows in sunny places in secondary forest, in association with *Bidens pilosa* Linnaeus (1753: 832), *Jasminum lanceolarium* Roxburg (1820: 97), *Maclurodendron oligophlebium* (Merrill 1923: 246) T.G. Hartley (1982: 13), *Mallotus paniculatus* (Lamarck in Lamarck & Poiret 1786: 207) Müller Argoviensis (1865: 34), *Melicope pteleifolia* (Champion ex Bentham in Bentham 1851: 330) T.G. Hartley (1993: 521).

Phenology:—Flowering specimens were collected in June.

Conservation status:—Data Deficient (DD; IUCN 2017). *Dregea taynguyenensis* is known only from the type locality and from two nearby locations all within Kon Ka Kinh National Park. A comprehensive botanical survey of the park has not been carried out to date. Even if we estimate the AOO as the entire Kon Ka Kinh National Park (AOO < 500 km²), a provisional conservation status cannot be assessed, as we have no information on the number of population, their potential decline or fluctuation.

Observations:—The five species of *Dregea* found in Vietnam and neighbouring countries are clearly distinguishable from each other based on morphological characters (Table 1). In sterile state *D. taynguyenensis* can only be confused with *D. cuneifolia* because both taxa have elliptic-oblong leaf blades, cuneate at base and acuminate at apex; while *D. sinensis*, *D. volubilis* and *D. yunnanensis* have ovate-cordate to suborbicular leaf blades (lanceolate in *D. volubilis* var. *angustifolia* J.D. Hooker (1883: 47). The flowers of *D. taynguyenensis* are characterized by deeply divided corollas and lobes 10.2–12.6 × 5.3–6.4 mm, which are larger than those of the other three species. The species with the second largest corolla lobes is *D. volubilis*, (6–8 × 5–6 mm). Lastly, the calyx lobes of *D. taynguyenensis* are comparable in size with those of *D. volubilis*, however *D. taynguyenensis* has lanceolate to linear calyx lobes, while *D. volubilis* has ovate to oblong calyx lobes.

Additional specimens examined:

***D. taynguyenensis*:** VIETNAM. Tay Nguyen: Gia Lai province, Kon Ka Kinh National Park, 7 June 2011, *TB Tran, V.H. Do & H.Q. Bui Bach0706201101* (HN); Ibid, 8 June 2011, *TB Tran, V.H. Do & H.Q. Bui Bach0806201101* (HN).

***D. cuneifolia*:** VIETNAM. Lam Dong: Da Lat, 12 April 1984, *T.D. Ly LX-VN 1470* (HN).

***D. volubilis*:** VIETNAM. Ninh Binh, s.d., *V.T. Chinh s.n.* (HN); Nghe An, s.d., *Ngo Duc Phuong 428* (HNU); Ninh Thuan, s.d., *T.D. Ly s.n.* (HN); s.l., s.d. *Q.B. Nguyen, QB 286* (HN); Ho Chi Minh, s.d., *L. Pierre 3522* (HM).



FIGURE 1. *Dregea taynguyenensis*. Flowering branch in the habitat of the type locality. Photograph by T.B. Tran (9 June 2011).

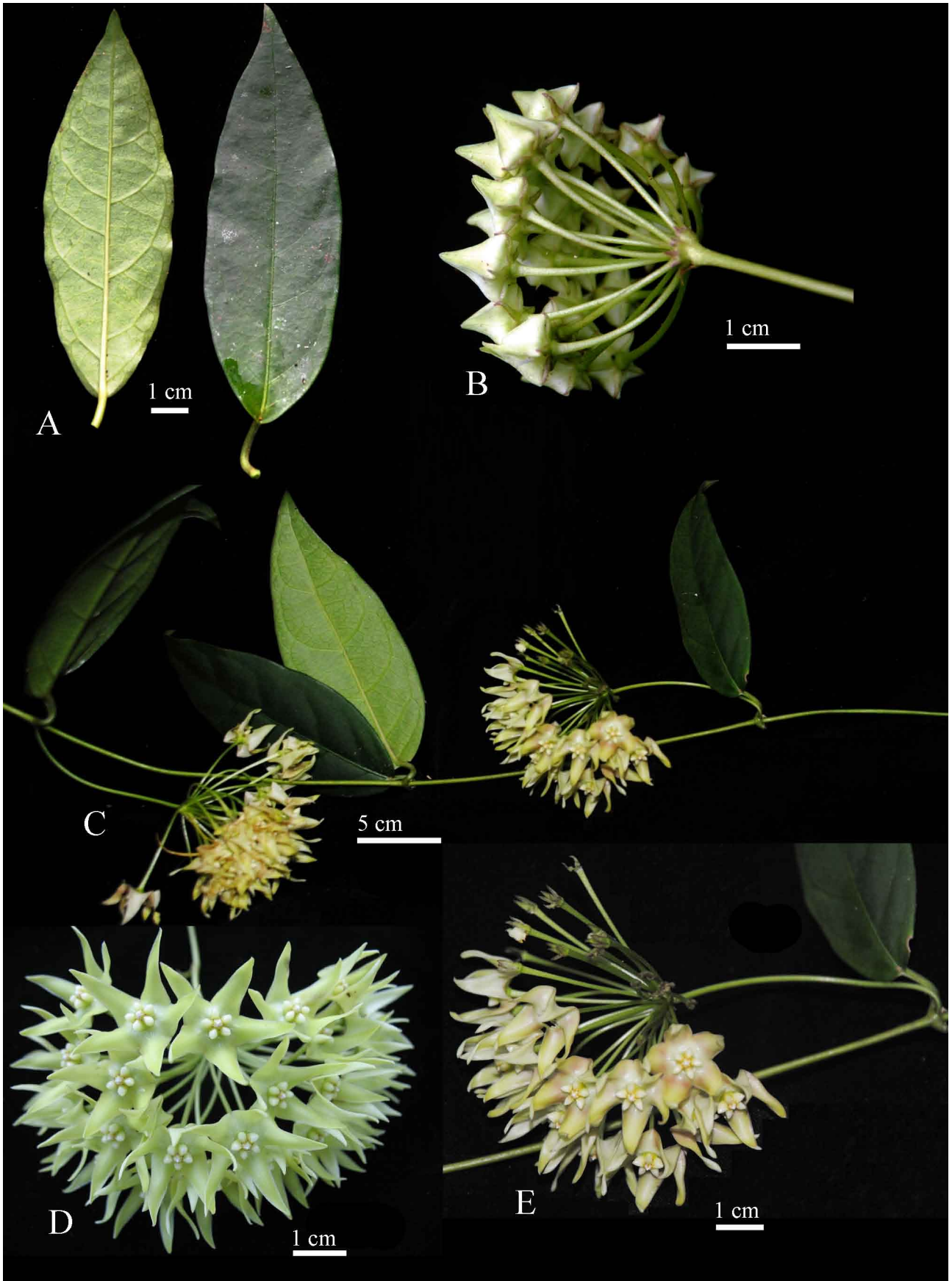


FIGURE 2. *Dregea taynguyenensis*. **A**, Leaf blade, abaxial side (left), adaxial side (right); **B**, Inflorescence with flower buds; **C**, Flowering branch; **D**, Inflorescence with greenish flowers; **E**, Inflorescence with flowers yellowish flushed purple. Based on *T.B. Tran et al. Bach 0906201101* (HN), photographs by T.B. Tran (9 June 2011).

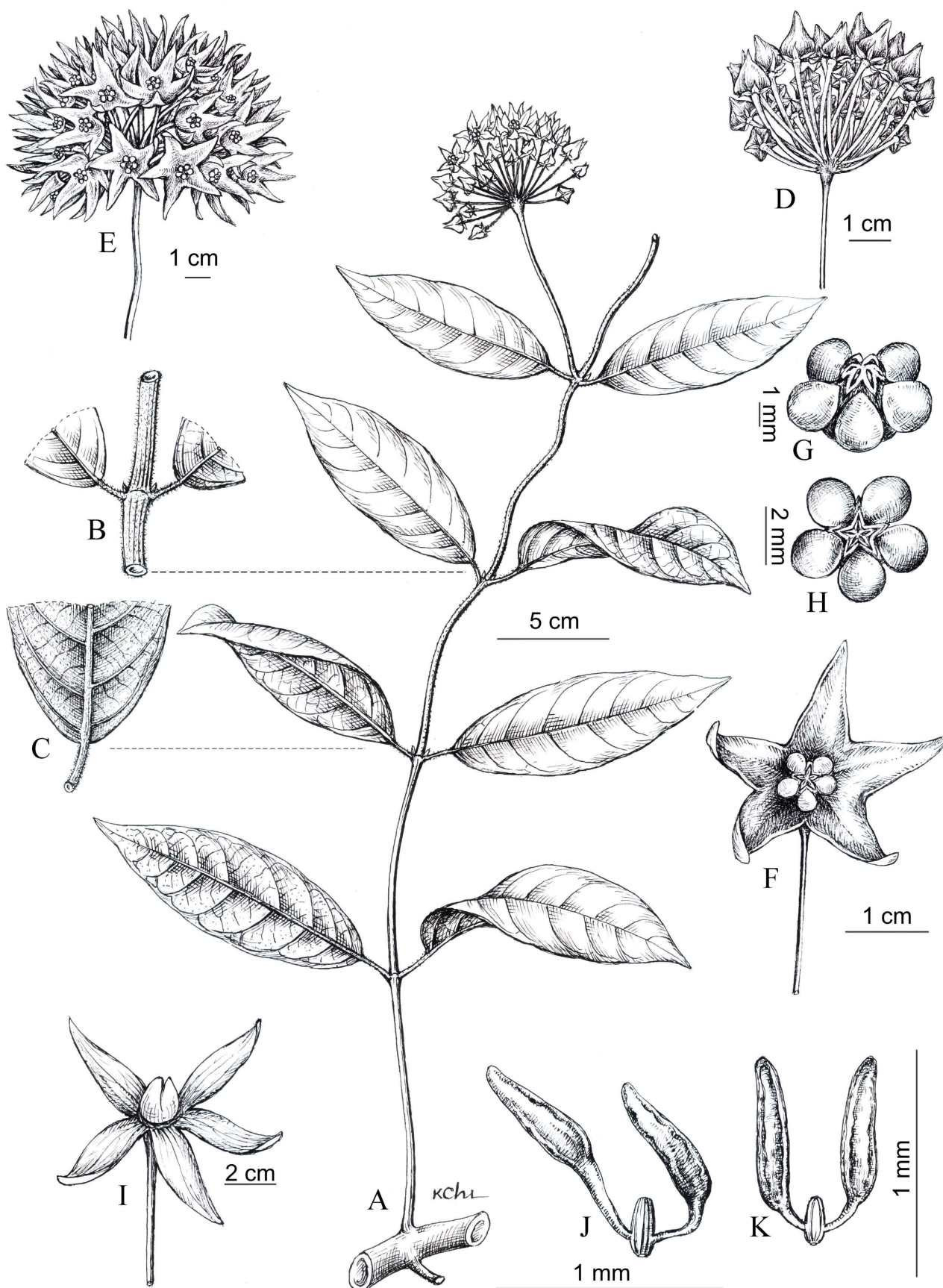


FIGURE 3. *Dregia taynguyenensis*. **A**, Flowering branch; **B**, Detail of node with leaf bases; **C**, Detail of leaf base, abaxial side; **D**, Inflorescence with flower buds; **E**, Inflorescence with flowers in anthesis; **F**, Flower in anthesis (from **E**); **G**, Corona, side view; **H**, Corona, top view; **I**, Calyx and ovary; **J–K**, Pollinaria. Based on *T.B. Tran et al. Bach 0906201101* (HN), drawn by Le Kim Chi.

TABLE 1. Comparison among *Dregea taynguyenensis* and the other *Dregea* species occurring in Cambodia, China, Laos and Vietnam. Measurements and descriptions are based on Li *et al.* (1995), Ho (2000), on the specimens examined and images of types at <https://plants.jstor.org/>.

Characters	<i>D. taynguyenensis</i>	<i>D. cuneifolia</i>	<i>D. sinensis</i>	<i>D. volubilis</i>	<i>D. yunnanensis</i>
Leaf blade shape	elliptic to oblong	oblong to elliptic	ovate, cordate to suborbicular	broadly ovate or suborbicular (lanceolate in <i>D. volubilis</i> var. <i>angustifolia</i>)	ovate to cordate
Leaf blade base	cuneate	cuneate	auriculate with sinus 1–1.5 cm deep	cordate, truncate or round	cordate
Leaf blade apex	acuminate	acuminate	acute	acute or short acuminate	acute
Secondary veins on each side of midrib	7–10	5–6	3–7	2–4	3–5
Petiole length (cm)	1.2–1.8	1–1.5	1.5–5	2.5–8	1.5–2.5
Number of flowers per inflorescence	18–40	15–30	10–20	(15–)30–60	5–15
Peduncle length (cm)	4.1–7	7–13	3–6	2–6	2–4.5
Pedicle length (cm)	2.7–3	1.2–1.7	2–3	1.5–3	1–1.5
Calyx lobes shape	lanceolate to linear	ovate	ovate to oblong	ovate to oblong	ovate
Calyx lobes size (mm)	2.4–5 × 0.7–1.5	1.5 × 1	1.5–2 × c. 1	2–3 × 0.8–1.2	1.8–2.2 × 0.9–1.2
Corolla lobe colour	whitish green or yellowish flushed purple inside, greenish white outside	greenish white	white flushed purple inside, white outside	green or yellowish green	white flushed pink inside and outside
Corolla lobes shape	triangular	ovate-triangular	ovate-oblong	broadly ovate	ovate
Corolla lobe shape	ovoid to sub-globose, slightly compressed above	globose	ovoid	spreading, compressed above	ovoid
Corolla tube length (mm)	3.6–5.9	c. 2	2.5–3.5	3.5–4	c. 2
Corolla lobe size (mm)	10.2–12.6 × 5.3–6.4	c. 4 × 4	5–7 × 3–5	6–8 × 5–6	4–8.5 × 3–4.5

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