Taxonomic revision of *Dehaasia* (Lauraceae) in Sumatra

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**Key words**
Dehaasia
Lauraceae
revision
Sumatra
taxonomy

**Abstract.** A revision of *Dehaasia* (Lauraceae) in Sumatra is presented. Eight species are recognized, including two newly described species (*D. bandaharense* and *D. pilosa*). A key to the eight species, descriptions and distribution maps of each species and illustrations of newly described species are provided. A neotype for *D. incrassata* is designated.

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**INTRODUCTION**

*Dehaasia* Blume belongs to the Lauraceae and consists of approximately 35 species distributed from South China to New Guinea, with a centre of diversity in Malesia (Rohwer 1993). *Haasia* Blume (Nees 1836) was published earlier than *Dehaasia* and comprised six species: *Haasia cuneata* Blume, *H. elongata* Blume, *H. incrassata* (Jack) Nees, *H. media* Blume, *H. microcarpa* Blume and *H. peduncularis* (Nees) Nees. Later, Blume (1837) published *Dehaasia* Blume with his four species: *Dehaasia cuneata* (Blume) Blume, *D. elongata* Blume, *D. media* Blume and *D. microcarpa* Blume. Both spellings, *Dehaasia* and *Haasia*, are named after Dirk de Haas (died in 1702), who became Governor of Ambon in 1687 (Balakrishnan & Chakrabarty 2011). Even though the spelling ‘Haasia’ was found to be older, the name ‘Dehaasia’ has always been more widely used; therefore, to avoid nomenclatural disruption and unnecessary practical problems the conservation of this spelling was proposed (Balakrishnan & Chakrabarty 2011). The proposal to conserve the spelling of *Dehaasia* has been recommended by the Nomenclature Committee for Vascular Plants (Appelquist 2012) and approved as *Dehaasia* orth. cons. by the General Committee (Wilson 2016). The type species of this genus is *D. microcarpa*, a synonym of *D. incrassata* (Jack) Kosterm. (Kostermans 1952a).

*Dehaasia* is a member of the tribe Perseaee, which contains genera such as *Persea* Mill., *Phoebe* Nees, *Alseodaphne* Nees and *Nothaphoebe* Blume. *Dehaasia*, *Alseodaphne* and *Nothaphoebe* are morphologically closely similar (Julia et al. 2009). *Dehaasia* differs from *Alseodaphne* only by 2-thecate vs 4-thecate anthers, respectively (Rohwer 1993, Van der Werff 2001). Recently, molecular studies (Rohwer et al. 2009, Li et al. 2011) showed that the species of the genus *Dehaasia* are scattered throughout the *Alseodaphne*-Dehaasia clade. The genus *Nothaphoebe* is also nested in this clade. These molecular data supported *Dehaasia*, *Alseodaphne* and *Nothaphoebe* as closely related. Li et al. (2011) proposed to include *Dehaasia* in *Alseodaphne*. However, because of the limited taxon sampling in their study, they suggested that a major revision was needed for the delimitation of *Dehaasia*, *Alseodaphne* and *Nothaphoebe*. As a molecular phylogenetic analysis is not included in this study and as long as the genus circumscription is not resolved, we will continue to use *Dehaasia* in its present delimitation.

Local taxonomic studies of the genus have been made, for instance in Java (Backer & Bakhuizen van den Brink f. 1963), Peninsular Malaya (Kochummen 1989) and Borneo (Julia et al. 2009). Kochummen (1989) recognised nine species in Peninsular Malaysia, including the endemic species *D. lancefolia* Ridl. Backer & Bakhuizen van den Brink f. (1963) recognized five species in Java. Julia et al. (2009) reported 16 species in Sabah and Sarawak. The island of Sumatra was chosen for this study, because of its species richness in this genus and lack of a recent taxonomical treatment.

**MATERIAL AND METHODS**

A revision of Sumatran *Dehaasia* was carried out by examining herbarium collections from the herbaria BO, L and U (for abbreviations see Thiers, http://sweetgum.nybg.org/science/ihv/). All dimensions given are of dried material except for the floral characters. Flowers were soaked in boiling water before observation and measurement. Synonyms of *Dehaasia* taxa from outside Sumatra are included when type material was seen by the first author. Scans of type material were accessed at the Global Plants website (http://plants.jstor.org) in March 2017, specimens seen only as image are denoted with an asterisk (*).
MORPHOLOGY OF DEHAASIA IN SUMATRA

Habit
The Dehaasia species in Sumatra are small to moderately tall trees, 6 to 35 m tall.

Twigs and terminal leaf buds
In general, the growth is sympodial and the twigs are mostly slender with prominent lenticels and leaf scars. The terminal leaf buds are glabrous to densely pubescent.

Leaves
The simple leaves are spirally arranged, usually clustered near the tip of the branches. Leaf shapes range from elliptic to obovate. The biggest leaf size can be found in D. incrassata, up to 32 by 15 cm. The leaf surface is mostly glabrous, except for D. cuneata and D. tomentosa (Blume) Kosterm., which have hairs on the lower surface.

All species of Dehaasia in Sumatra have penninerved leaves. The midribs and secondary veins on the upper surface are usually flat or immersed or slightly raised, but raised on the lower surface in all species. The secondary veins are mostly curving and joining near the margin. The tertiary venation is reticulate or scalariform-reticulate, mostly inconspicuous on the upper surface and conspicuous on the lower surface. The characters of leaf venation are stable within a species and can be used to differentiate the species.

Most species have glabrous petioles, but they are hairy in D. cuneata and D. tomentosa. The length of the petiole varies within and among species; the longest petioles of up to 40 mm are found in D. sumatrana Kosterm. The adaxial side of the petiole is often channelled to the base but sometimes rounded or flat at the base. Dehaasia teijsmannii Kosterm. has petioles that are deeply channelled whereby both edges almost meet.

Inflorescences
Inflorescences of the Dehaasia species in Sumatra arise from the axils of bud scales, at the tip of branches or at the base of the new growth, and sometimes in the axils of the first leaves on the new growth, they appear to be axillary or subterminal. All species have type 2 inflorescences (Van der Werff 2001), which are paniculate-cymose and repeatedly branched, with the lateral flowers of the ultimate cymes strictly opposite; except for D. sumatrana, in which the cymes are modified to pseudo-umbels. This species also has the longest inflorescences, up to 22 cm long. The bracts are early caducous in all species.

Flowers
The floral characters are important for species delimitation within Dehaasia in Sumatra. In most species the outer tepals are smaller than the inner tepals except for D. caesia Blume with equal tepals. The tepals are often hairy but glabrous in D. sumatrana and D. pilosa Fijr. (sp. nov.). The number of stamens is 9, equally divided over three androecial whorls. The stamens are club-shaped and truncate, rounded or slightly emarginate at the apex, densely covered by 0.1–0.3 mm long hairs, especially on the filaments. The anthers are 2-locular and open by valves, one per theca. The anthers in the first and second whorl open introrse, while those in the third whorl open extrorse. In most species, the filaments are longer than the anthers, and those of the third whors basally bear two sessile or subsessile glands. Most species have three staminodes in the fourth whorl, except for D. incrassata, where staminodes are absent. The staminodes are awl-shaped, ovoid, cordate or with two separate apical-lateral glands, completely covered with hairs or with a hairy basal part only. Aawl-shaped staminodes are found in D. caesia, D. pilosa and D. teijsmannii, whereas ovoid staminodes occur in D. cuneata, D. sumatrana and D. tomentosa; staminodes with two separate apical-lateral glands are found in D. bandaharense Fijr. (sp. nov.). The ovaries are mostly glabrous except in D. pilosa.

Fruits
The fruits are narrowly ellipsoid to ellipsoid, with a fleshy, coloured and warty pedicel. The largest fruit is found in D. incrassata, up to 3.5 cm long with a swollen stipe of up to 3 cm length.

TAXONOMIC TREATMENT

Dehaasia

Dehaasia Blume in Nees (1836) 372 (’Haasia’), nom. & orth. cons.; Blume (1837) 161; (1851) 333; Miq. (1858) 928 (’Haasia’); Lecomte (1914) 150 (’Haasia’); Ridl. (1924) 87; Kosterm. (1952b) 120; Backer & Bakh. f. (1963) 130; Kosterm. (1957a) 36; (1957b) 228; (1964) 466; (1973) 427; Kochummen (1989) 138; Rohwer (1993) 381; van der Werff (2001) 136. — Type: Dehaasia microcarpa Blume (= Dehaasia incrassata (Jack) Kosterm.).

Cyanodaphne Blume (1851) 333; Kosterm. (1952b) 126. — Lectotype (designated by Kostermans 1952b): Cyanodaphne cuneata (Blume) Blume (= Dehaasia cuneata (Blume) Blume).

Shrubs to medium trees; bark usually thin, white, smooth and easy to peel off; wood yellow. Twigs mostly sympodial, whitish, slender with prominent lenticels and leaf scars, glabrous or minutely puberulous with appressed light brown hairs, terminal leaf buds glabrous to densely covered with silky brown hairs. Leaves spirally arranged at the end of twigs, simple, elliptic to obovate or oblong–obovate; blade coriaceous or chartaceous, rarely membranous, penninerved; petioles mostly channelled on adaxial side, glabrous or hairy. Inflorescences auxiliary to cataphylls or occasionally to foliage leaves, paniculate-cymose, with the lateral flowers of the ultimate cymes strictly opposite, mostly minutely puberulous with appressed light brown hairs, bracteoles on the pedicel caducous. Flowers bisexual, perigynous, with a shallow or deep receptacle tube; tepals 6, arranged in two whorfs, often unequal, then outer tepals smaller, glabrous to densely covered with appressed light brown hairs. Stamens 9, club-shaped, hairy, mostly filaments longer than anthers, arranged in three whorls, anthers of first and second whorls introrse, in third whorl extrorse and with two sessile or subsessile glands at each filament; anthers 2-locular, truncate, rounded or slightly emarginate at the apex, opening with single valves. Staminodes 3 in the fourth whorl or absent. Ovary superior, ovoid, ellipsoid or globose, glabrous or hairy; style terete, shorter or longer than ovary, glabrous or hairy. Fruits ellipsoid or narrowly ellipsoid, rarely globose; exocarp glossy, mesocarp thin and fleshy; stalk distinctly swollen, fleshy, coloured and warty.

Distribution — About 35 species distributed from South China to New Guinea, and centred in Malesia with most species on the Malay Peninsula, Sumatra and Borneo. In this revision, eight species are recognized for Sumatra.

Uses — The wood of Dehaasia is rather soft to hard and moderately durable to extremely durable (e.g., D. caesia); it has many uses, such as construction material of houses (exterior and interior uses), furniture, pianos, tools, oars, boats, carvings and knife sheaths. It can also be used in the veneer and plywood industries (Kostermans 1973, Wiselius 1998).

KEY TO THE SPECIES

1. Terminal leaf buds glabrous to or sparsely hairy 2
2. Terminal leaf buds densely hairy 6
3. Inflorescences paniculate-cymose 3
4. Inflorescences paniculate with the ultimate flowers of each branch pseudo-umbellate 6
5. D. sumatrana

D. cuneata

D. tomentosa

D. incrassata

D. pilosa

D. teijsmannii

D. sumatrana

D. bandaharense

D. caesia

D. pilosa

D. teijsmannii

D. sumatrana

D. pilosa

D. teijsmannii

D. sumatrana

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D. sumatrana

D. pilosa

D. teijsmannii

D. sumatrana

D. pilosa
3. Tepals unequal, outer tepals 1.1–1.6 mm long, inner tepals 1.7–2.7 mm long; receptacle shallow ........................................ 4
4. Tertiary veins on lower leaf surface reticulate. Staminodes present .................................................. 5
5. Rachis of inflorescences with sparsely to densely pubescent. Ovary glabrous. Leaves coriaceous, tertiary veins on upper leaf surface conspicuous .......... 1. D. bandaharense

1. Dehaasia bandaharense Fijrid., sp. nov. — Fig. 1; Map 1

Dehaasia bandaharense differs from D. corynantha Kosterm. in smaller lamina (shorter than 12 cm vs up to 25 cm long) and a cuneate (vs acute) base. The inflorescence is longer (up to 10 cm vs up to 7 cm long). The staminodes are with two separate apical-lateral glands (vs awl-shaped with no glands). — Type: W.J.J.O. de Wilde & B.E.E de Wilde-Duyfjes 15557 (holo L.1797857; iso MQ [Van der Werff, pers.comm.]), [Indonesia], Sumatra, Aceh, Gunung Leuser Nature Reserve, Gunung Bandahara, 20 Mar. 1975. Paratype: W.J.J.O. de Wilde & B.E.E de Wilde-Duyfjes 15557 (L.), Indonesia, Sumatra, Aceh, Gunung Leuser Nature Reserve, Gunung Bandahara.

Trees, 20–30 m tall, stem up to 40 cm diam, wood yellowish; twigs slender to thick, 2–7 mm diam, cracked and easily peeling off when dried; terminal buds glabrous, cataphylls ciliate. Leaves spirally arranged near the end of twigs; lamina coriaceous, elliptic to subobovate, 6–11 by 3–4.7 cm, apex short acuminate, base cuneate, glabrous on both sides, midrib flat above, raised below, secondary veins 8–11 pairs, raised to flat above, raised and joining near the margin below, tertiary veins reticulate, conspicuous above, prominent below. *Petioles* 8–16 mm long, 0.5–1 mm diam, glabrous, channelled above towards the base. *Inflorescences* subterminal and axillary, paniculate-cymose, up to 10 cm long; rachis filiform, with sparse to dense minute appressed light brown hairs. *Flower* buds grey-green; tepals unequal; outer tepals ovate, c. 1.6 by 1.2 mm, with minute light brown appressed hairs, margin ciliate; inner tepals broadly ovate, c. 2 by 1.8 mm, apices broadly acute, with minute light brown appressed hairs, margin ciliate; receptacle shallow, pedicel c. 3.7 mm long. *Stamens* 1.3–1.7 mm long, anthers rounded to truncate or slightly emarginate at apex; filaments longer than anthers, pubescent, filaments of the third whorl with two sessile glands each. *Staminodes* with two separate apical-lateral glands, filament c. 0.7 mm long, pubescent. *Pistil* c. 2 mm long; ovary ovoid, c. 1.2 by 0.7 mm, glabrous; style terete, c. 0.8 mm long, glabrous; stigma triangular. *Fruit* not seen.

Distribution — Aceh.

Habitat & Ecology — Mountain rainforest, at 800–1000 m altitude. Flowering in March.

Note — This species is similar to the Bornean species *D. corynantha* Kosterm.; which has bigger leaves (up to 25 cm long) with impressed secondary veins above and an ellipsoid ovary as long as the style.

2. *Dehaasia caesia* Blume — Map 1


Trees, up to 25 m tall, stem up to 20 cm diam; twigs symподial, terete, 4–7 mm diam, glabrous, lenticels inconspicuous, terminal bud with sparse minute appressed brown hairs. Leaves spirally arranged, clustered at the end of branches; lamina coriaceous, obovate to elliptic, 4.5–15 by 2–6 cm, apex acuminate, base cuneate (rarely obtuse), lamina glabrous on both sides, greyish below, midrib impressed to flat above, raised below, secondary veins 8–11 pairs, flat to raised above, raised below, curving and joining near leaf margin, tertiary veins reticulate, conspicuous above, inconspicuous below. *Petioles* 10–20 cm long, 1–2 mm diam, glabrous, channelled above. *Inflorescences* subterminal and axillary, paniculate-cymose, 4–12 cm long; rachis filiform, with sparse to dense minute appressed brown hairs. *Flowers*: tepals equal or nearly so, with minute brown appressed hairs; outer tepals ovate, 0.7–1.1 by 0.7–1.1 mm, apex broadly acute, margin ciliate; inner tepals ovate, 1–1.1 by 0.9–1.1 mm, apex broadly acute, margin ciliate; receptacle deeply tubular; pedicel 1.5–2.5 mm long. *Stamens* 0.6–0.8 mm long, anthers truncate at apex; filaments as long as or slightly longer than anthers, pubescent, filaments of the third whorl with two sessile glands each. *Staminodes* awl-shaped, 0.4–0.5 mm long, pubescent. *Pistil* 1–1.4 mm long; ovary globose, 0.5–0.7 mm diam, glabrous; style terete, 0.5–0.7 mm long, glabrous; stigma capitulate. *Inflorescences* 4–8.5 cm long, glabrescent. *Fruit* ellipsoid, 2–2.1 by 1.1–1.4 cm; stalk swollen, 0.6–1 cm long, fleshy and warty.

Distribution — Palembang, Bangka Island, Bengkulu and Lampung.

Habitat & Ecology — Growing at 5–900 m altitude. Flowering: February.

Vernacular Names — Medang batu, medang tanduk, medang tungkai.
Fig. 1  *Dehaasia bandaharense* Fijrid. a. Flowering leafy twig; b, c. flower buds; d, e. outer and inner tepals; f. first whorl stamen; g. second whorl stamen; h. third whorl stamen with a pair of glands; i. staminode; j. ovary (all: W.J.J.O. de Wilde & B.E.E. de Wilde-Duyfjes 15557, L). — Drawing by Esmée Winkel.
Note — Dehaasia caesia differs from the other Dehaasia species of Sumatra by its subequal tepals and a capitulate stigma.

3. Dehaasia cuneata (Blume) Blume — Map 1

Dehaasia cuneata (Blume) Blume (1837) 164; Koord. & Valeton (1904) 203; Ridl. (1924) 87; Backer & Bakf. (1963) 131; Kosterm. (1964) 467; (1973) 435; Kochummen (1989) 139. — Cryptocarya cuneata Blume (1825) 558. — Haasia cuneata (Blume) Blume in Nees (1836) 378, nom. inval., genus name rejected. — Cyanodaphne cuneata (Blume) Blume (1851) 334. — Type: Blume s.n. (holo L.0036313; iso L.00363315), [Indonesia], Java, Nusa Kambangan.

Trees, up to 35 m tall, stem up to 50 cm diam; bark yellowish; sapwood yellow, heartwood darker yellow; twigs whitish, with prominent lenticels and leaf scars, glabrous to sparsely covered with minute appressed light brown hairs, terminal leaf buds densely hairy. Leaves spirally arranged at end of twigs; lamina coriaceous, obovate (or elliptic), (3.5–)7–13(–16.5) by (2.5–)3–6(–7.5) cm, apex rounded or obtuse (rarely short acuminate), base cuneate or obtuse, (oblique), glabrous above, grey with sparse minute appressed light brown hairs below, midrib impressed to flat above, raised to flat below, secondary veins 6–9 pairs, curving and joining near margin, slightly raised to flat and glabrous above, raised to flat below, tertiary veins conspicuous, reticulate above, scalariform-reticulate below. Petioles (3–)8–20(–27) mm long, with sparse minute appressed light brown hairs to more densely hairy at the base, flat to channelled but almost terete at the base. Inflorescences subterminal and axillary, paniculate-cymose, up to 14 cm long, with minute appressed light brown hairs. Flowers: tepals unequal, with dense appressed light brown hairs, margin ciliate; outer tepals spreading, c. 0.5 by 0.6 mm; inner tepals broadly ovate, c. 1.3 by 1.4 mm, apex broadly acute; receptacle tubes deep; pedicel c. 2.7 mm long. Stamens c. 0.8–0.9 mm long, anthers truncate or slightly emarginate at apex; filaments longer than anthers, pubescent, filaments of the third whorl with two sessile glands each. Staminodes narrowly ovoid, thin, c. 0.6 by 0.3 mm, abaxially pubescent and adaxially glabrous. Pistil c. 1.4 mm long; ovary ovoid, glabrous, c. 0.7 by 0.5 mm; style terete, c. 0.7 mm long, glabrous, stigma triangular. Inflorescences (2–)4.5–13.5 cm long. Fruit ellipsoid or oblongoid, 2.3–2.8 by 1.1–1.5 cm, with a sour taste and strong smell; stalk distinctly swollen, 1.1–1.7 cm long, fleshy, warty, red when fresh.

Distribution — Thailand, Malay Peninsula, Sumatra (Aceh, North Sumatra, South Sumatra, West Sumatra, Bengkulu, Lampung, Simalur (Simeulue) Island, Sipora Island, Siberut Island and Enggano Island), Java, Borneo, Sulawesi, Maluku and New Guinea.

Habitat & Ecology — Primary and secondary forests, at 50–1200 m altitude. Flowering: February to December; fruiting: February to December.

Vernacular names — Medang puti, medang tanahan, meidang tanduk.

Note — This species is quite similar to D. tomentosa. The latter has a shallow receptacle, subequal tepals, thick staminal nodes, midrib on the upper leaf surface with sparse light brown hairs.

4. Dehaasia incrassata (Jack) Kosterm. — Map 1

Dehaasia incrassata (Jack) Kosterm. (1952a) 91; Merr. (1952) 230; Backer & Bakf. (1963) 131; Kosterm. (1964) 468; (1973) 441; Kochummen (1989) 139. — Lauroa incrassata Jack (1822) 33; Kosterm. (1964) 637. — Mchulais incrassatus (Jack) Nees (1831) 70; Kosterm. (1964) 910. — Haasia incrassata (Jack) Nees (1836) 376, nom. inval., genus name rejected. — Persea incrassata (Jack) Nees (1836) 127, 376; Kosterm. (1964) 1230. — Type: Jack s.n. † (see note), [Indonesia], Sumatra, Natal; neotype (selected here): Teyssmann s.n. (neo L.0036315), [Indonesia], Sumatra.

Haasia microcarpa Blume in Nees (1836) 373. — Dehaasia microcarpa (Blume) Blume (1837) 162; Kosterm. (1964) 469. — Lectotype (selected here): Hasskarl s.n. (lecto L.0036315; isolecto L.00027282), [Indonesia], Java, Bantam [Banten].

Dehaasia squarroso Zoll. & Moritz in Zoll. (1854) 115; Hassk. (1855) 8, as nom. nov. — Haasia squarroso (Zoll. & Moritz) Miq. (1858) 929; Kosterm. (1964) 537. — Type: Zollinger 1376 (holo BO not found; iso P.O1753085*, U002732), [Indonesia], Java.

Dehaasia media Blume (1837) 163; Kosterm. (1964) 469. — Lectotype (selected here): sinn coll. (lecto L.0036322; isolecto L.0036323, L.0036324), [Indonesia], Ambon (Ambon).


Trees, up to 20 m tall, stem up to 40 cm diam; bark smooth; twigs symподial, slightly striate, slender to thick, 3–7 mm diam, glabrous; terminal leaf buds glabrous to glabrescent, cataphylls ciliate. Leaves spirally arranged at the end of twigs; lamina chartaceous to subcoriaceous, elliptic to broadly elliptic or subobovate, (6.5–)12–26(–32) by (2.5–)3.5–12(–15) cm, glabrous on both sides, apex acute to acuminate, base cuneate, midrib flat to slightly raised above, midrib raised below, secondary veins (6–)8–10(–13) pairs, flat to raised above, raised and joining near margin below, tertiary veins scalariform-reticulate, conspicuous above, prominent below. Petioles 7–25 mm long, 1–4 mm diam, glabrous, flat to channelled above. Inflorescences terminal and axillary, paniculate-cymose, (4–)10–13(–18) cm long; rachis pale green to red when fresh, filiform, with minute light brown appressed hairs. Flowers greenish white; tepals unequal, ovate, outer tepals 1.1–1.3 by 1.5–2.5 mm, glabrous or with sparse minute light brown appressed hairs, margin ciliate; inner tepals broadly ovate, 2.5–2.7 by 2–2.7 mm, apex broadly acute, glabrous or with sparse minute light brown appressed hairs, margin ciliate; receptacle shallow; pedicel c. 6.7 mm long. Stamens 1.5–2 mm long, anthers rounded to truncate or slightly emarginate at apex; filaments longer than anthers, pubescent, filaments of third whorl with two sessile glands each. Staminodes absent. Pistil c. 2.5 mm long; ovary subgloboid to ovoid, c. 1 by 1.3 mm, glabrous; style terete, glabrous, slender, longer than ovary; c. 1.5 by 0.1 mm; stigma triangular. Inflorescences 2–8.5 cm long, glabrous. Fruit ellipsoid, 2–3.5 by 1–2.5 cm, shiny black when fresh; stalk distinctly swollen, 2.5–3 cm long, fleshy and warty, bright red when fresh.

Distribution — Thailand, Malay Peninsula, Sumatra (Aceh, North Sumatra, South Sumatra, West Sumatra, Bengkulu, Lampung, Simalur (Simeulue) Island, Sipora Island, Siberut Island and Enggano Island), Java, Borneo, Sulawesi, Maluku and New Guinea.

Habitat & Ecology — Primary and secondary forests, at 50–1200 m altitude. Flowering: February to December; fruiting: February to December.

Vernacular names — Kayu madang kuning, kayu si marhu-lung, masasen kuning, medang kayu mesang, medang keladi, medang kuning.

Note — The type specimen of Jack’s collection from Sumatra was destroyed in 1824 (Merrill 1952, Balakrishnan & Chakrabarty 2011). Therefore a neotype is designated here using Teijsmann’s collection, also collected from Sumatra. This specimen is a paratype of Dehaasia squarroso, a synonym of D. incrassata.

5. Dehaasia pilosa Fijrid., sp. nov. — Fig. 2; Map 2

Dehaasia pilosa differs from D. brachybotrys (Merr.) Kosterm. in smaller jointly joining near the margin (vs distinctly joining near margin); the inflorescence generally longer (up to 10 cm vs up to 6 cm long); the ovary hairy (vs glabrous). — Type: Boschroepstasion E.1063 (holo L.1797809), [Indonesia], Sumatra, Bengkulu, Redjang.
Fig. 2  Dehaasia pilosa Fijrid. a. Flowering leafy twig; b. flower buds; c, d. inner and outer tepals; e. first whorl stamen; f. second whorl stamen; g. third whorl stamen with a pair of glands; h. staminode; i. ovary (all: Boschproefstation E1063, L). — Drawing by Esmée Winkel.
Trees, twigs slender, 2–4 mm diam, greyish, slightly grooved, with inconspicuous lenticels; terminal buds glabrous to gla-

brescent, cataphylls ciliate. Leaves spirally arranged at end of
twigs; lamina chartaceous, elliptic to obovate, 6–22 by 3.5–7
cm, glabrous on both sides, apex subacute to acuminate, base
cuneate to obtuse, midrib impressed to flat above, raised below,
secondary veins 10–13 pairs, impressed to flat above, raised
and not all distinctly joining near margin below, tertiary veins
reticulate, inconspicuous above, conspicuous below. Petioles
7–30 mm long, 0.7–1.5 mm diam, glabrous, channelled towards
the base. Inflorescences subterminal, paniculate-cymose, up
to 10 cm long; rachis filiform, glabrous. Flowers: tepals unequal,
outer tepals broadly ovate to rounded, 1.1–1.3 by 1.5–1.8
mm, glabrous to glabrescent, margin ciliate; inner tepals
broadly ovate, 1.7–2 by 1.7–1.8 mm, apices broadly acute to
obtuse, glabrescent, margin ciliate; receptacle shallow, pedicel
c. 3.2 mm long. Stamens 1.3–1.7 mm long; anthers rounded
to truncate at apex, slightly wider than filaments; filaments longer
than anthers, with short appressed hairs, filaments of the third
whorl with two subsessile glands each. Staminodes awl-shaped,
c. 0.5 mm long, with short appressed hairs. Pistil c. 2 mm long;
ovary ovoid, c. 0.9 by 0.7 mm, hairy; style terete, c. 1.1 mm
long, sparsely hairy at base; stigma triangular. Fruit not seen.
Distribution — Bengkulu. This species is only known from
the type specimen.

Habitat & Ecology — Growing at c. 1100 m altitude. Flower-
ing: June.

Vernacular name — Medang tanduk.

Note — This species is morphologically almost similar to D.

brachybotrys; the latter has bigger leaves, glabrous ovaries,
shorter and hairier inflorescences.

6. Dehaasia sumatrana Kosterm. — Map 2

Dehaasia sumatrana Kosterm. (1973) 470.— Type: Boschproefstation
E.1077 (holo BO1273069; iso L.1797944), [Indonesia,] Sumatra, Beng-
koelen, Redjang, Tjoercep.

Trees, 6–22 m tall, stem 12–34 cm diam; bark thin, peeling,
with lenticels, inner bark brown; sapwood yellow; twigs sym-

diadal, thick, glabrous, rough, with protruding lenticels and leaf
scars; terminal leaf buds glabrescent; cataphylls broadly ovate,
apices cuspidate to caudate, inner side glabrous, margin ciliate.
Leaves spirally arranged at the end of twigs; lamina stiffly char-
taceous, obovate to elliptic, 10–30 by 3.7–10 cm, apex obtuse
to acuminate, base cuneate, glabrous on both surfaces, rather
glossy above, rough and glaucous below, midrib impressed
to flat above, raised below, secondary veins 8–11–14 pairs,
curving and joining near the margin, impressed to flat above,
raised below, tertiary veins reticulate, inconspicuous above,
prominent below. Petioles 25–40 mm long, 2–3 mm diam,
glabrous, adaxial side flat, thicker and rough in the proximal
half of the base because of protruding lenticels. Inflorescences
subterminal, paniculate with the ultimate flowers of each branch
pseudo-umbellate, 8–22 cm long; rachis slender, glabrous,
purplish pink. Flowers: tepals subequal, glabrous except for the
ciliate margin; outer tepals broadly ovate, 1.2–1.5 by c. 1.1 mm,
apex acute to broadly acute; inner tepals broadly ovate, c. 1.5
by 1.5 mm, apices broadly acute; receptacle tubes deep; pedicel
filiform, 0.4–2 cm long, greenish white. Stamens 0.8–1.2 mm
long, anthers rounded to truncate or slightly emarginate at the
apex with minute unicellular hairs; filaments as long as anthers
or slightly shorter, pubescent, filaments of the third whorl
with two sessile glands each. Staminodes ovoid to broadly ovoid,
0.4–0.6 by 0.2–0.5 mm, inner face glabrous, outer face villose
along the central part. Pistil c. 1.4 mm long; ovary globose,
c. 0.6 by 0.8 mm, glabrous; style terete, glabrous, c. 0.8 by
0.1 mm; stigma triangular. Inflorescences c. 14 cm long. Fruit
subglobose, 3–4 cm wide, glossy (purple-)black; stalk swollen,
c. 3 cm long, fleshy, warty, bright red when fresh.

Distribution — Payakumbuh, Aceh, Bengkulu. This species
is endemic to Sumatra.

Ecology — Primary, secondary and disturbed forest, at 10–
1100 m altitude. Flowering: January to June; fruiting: August.

Vernacular names — Medang jambu, medang kuning, me-
dang sangka.

Note — This species is easily recognized among the other
Dehaasia species of Sumatra by its long filiform pedicels,
petioles rough and thick in the basal half, and the prominently
reticulate lower leaf surface.

7. Dehaasia teijsmannii Kosterm. — Map 2

Dehaasia teijsmannii Kosterm. (1973) 471.— Type: Teijsmann s.n. (holo
BO1273060; iso BO1273064, L0036337), [Indonesia,] Sumatra, Bangka,
Sungai Liat.

Trees, twigs terete but angular near the tip, slender, smooth,
lenticels conspicuous near the tip, 3–5 mm diam, glabrous but
with sparse minute appressed hairs near the tip, terminal leaf
buds densely covered with silky hairs. Leaves spirally arranged;
lamina membranous, elliptic to sub-ovate, 8–16 by 4–8.5 cm,
glabrous on both surfaces, apex obtuse to acuminate, base
cuneate, midrib flat to sunken near the base above, raised
below, secondary veins 10–12 pairs, curving and joining near
margin, sunken to flat above, raised below, tertiary veins reticu-
late, inconspicuous above, slightly prominent below. Petioles
6–13 mm long, 1–1.5 mm diam, deeply channelled so that the
edges almost meet, glabrous or with sparse minute appressed
hairs. Inflorescences paniculate-cymose, axillary, 2–4 cm long,
low-flowered, rachis with sparse minute appressed light brown
hairs. Flowers: tepals unequal, outer tepals ovate, c. 0.7 by
0.8 mm, glabrous but with ciliate margin; inner tepals broadly
ovate, 1.3–1.5 by 1.4–1.5 mm, glabrescent, margin ciliate,
 apex broadly acute; receptacle tubes deep; pedicel slender,
c. 7.7 mm long. Stamens 0.8–1.4 mm long; anthers glabrous,
 truncate at apex; filaments longer than anthers, with dense,
0.1–0.2 mm long brown hairs, filaments of third whorl with two
sesse glands each. Staminodes 1(–3?), shortly awl-shaped,
c. 0.6 mm long, with dense 0.1–0.2 mm long brown hairs on
both sides. Pistil c. 1.7 mm long; ovary ellipsoidal, c. 1 by 0.7 mm,
Dehaasia tomentosa

8. Dehaasia tomentosa (Blume) Kosterm. – Map 2

Distribution — Bangka Island. This species is only known from the type specimen.

Vernacular name — Medang candik.

Note — This species has similar membranaceous leaves as D. membranacea Kosterm., which differs in having longer inflorescences and pedicels, heart-shaped and glabrous staminodes, and a caudate leaf apex.

Dehaasia tomentosa

Stamens 0.6–0.8 mm long; anthers rounded to truncate.

Flowers pale green or white, fragrant; tepals sub-ovate, 1.2–1.5 by 1.2–1.7 mm, apex broadly acute; filaments slightly longer than ovary.

Note — This species is very similar to Dehaasia cuneata. Kostermans (1973) distinguished D. palembanica from D. cuneata by its larger outer tepals, and by leaves that are not grey below and have a different size. These are not strong characters to distinguish them. Kostermans (1973) also cited bb 9611 as Dehaasia cuneata. Moreover, all sheets of bb 9611 were labelled with different names by Kostermans. Of the two sheets in BO Kostermans labelled: BO.1240752 as D. microsepalpa Kosterm.: a name which was never published, whereas BO.1273090 was labelled as D. caesia. The other sheet of bb 9611 in L (L.1796990) was labelled by Kostermans as D. cuneata. The paratypes cited by Kostermans (1973) are vegetatively different from the type specimens. Because these specimens are sterile, it was difficult to determine to which species they belong. Therefore, it seems best to place this species as an imperfectly known species until more fertile specimens become available.

Dehaasia subcaesia

EXCLUDED NAMES FOR SUMATRA

Dehaasia pauciflora Blume (1851) 333; Kosterm. (1973) 466.


Note — This species has been reported as distributed in Sumatra (Kostermans 1973, Kochummen 1989). However, we have not seen any material from Sumatra to support this claim.

Alseodaphne polyneura Miq. (1858) 916. — Dehaasia polyneura (Miq.) Kosterm. (1973) 466. — Syntypes: Teijssmann s.n. (BO, U not found), [Indonesia, Sumatra,] Padang, P. pisang. = Alseodaphne polyneura Miq.

Note — This species was formerly named Alseodaphne polyneura Miq. (Miquel 1858), and the type specimen in BO is a sterile young shoot (Kostermans 1973). The sheets of Soepadmo 159 ([Indonesia,] Sumatra, upper Riauw, Pakanbaru Tenajan) and bb 23556 ([Indonesia,] Sumatra, Bengkoelen, Moeko, L. Loeas) housed at Leiden were labelled by Kostermans as Dehaasia polyneura (Miq.) Kosterm. in 1971 and published in Kostermans (1973) as a new combination. After observing Soepadmo 159, it was apparent that the flowers have 4-loculate anthers and the filaments of the third whorl have two distinctly stalked glands. These are genus characters for Alseodaphne with Alseodaphne polyneura Miq. as the valid name.
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Miquel FAW. 1860. Flora Indiae Batavae, Supplementum Primum. Prorum Florae Sumatranae. Van der Post, Amsterdam, etc.


