8. GONIOTHALAMUS (Blume) J. D. Hooker & Thomson, Fl. Ind. 1: 105. 1855.


Trees or erect shrubs. Petiole short; leaf blade large, secondary veins arcuately looped near margin. Inflorescences axillary or extra-axillary, 1-flowered or several flowers in fascicles. Pedicel bracteolate at base. Sepals 3, valvate. Petals 6, in 2 whorls, with each whorl valvate; outer petals flat, thick; inner petals small, base shortly clawed, apex forming a cap. Stamens many; anther locules linear or oblong, extrorse; connectives oblong or clavate, 3-angular, apex truncate or rarely rounded. Carpels many; ovules 1–10 per carpel, ± basal; styles elongate; stigmas entire or apex 2-lobed. Fruit apocarpous; monocarps subsessile to shortly stipitate, oblong-ellipsoid or ovoid. Seeds 1–10 per monocarp.

A record of *Goniothalamus macrophyllus* (Blume) J. D. Hooker & Thomson from the Flora area (X. L. Hou, http://www.abclunwen.com/lunwen-free-387606; accessed on 25 Nov 2010) was based on a misidentification of *Polyalthia similis*.


*景洪哥纳香* jing hong ge na xiang

Trees to 5 m tall. Branches dark gray hispid. Petiole 2–2.5 cm, stout, rust-colored hisrate; leaf blade obovate, 56–76 × 13–19 cm, papery, abaxially sparsely hispid, adaxially glabrous, midvein densely rust-colored hisrate, secondary veins 26–30 on each side of midvein and prominent on both surfaces, base cuneate, margin densely rust-colored hisrate, apex caudate with a ca. 5 cm acumen. Flowers not seen. Fruiting carpels oblong-elliptic, 6–9 × 1.5–2 cm, densely rust-colored hisrate, lenticellate, acuminate on both ends. Seeds 4, oblong, ca. 2.5 × 1.5 cm. Fl. Mar, fr. Apr–Sep.


*田方骨* tian fang gu

Trees to 5 m tall, most parts densely rust-colored hisrate when young. Petiole 1–1.5 cm, stout; leaf blade obovate-lanceolate to oblong-lanceolate, 20–41 × 5.5–11.5 cm, papery, adaxially glabrous or hisrate along midvein, secondary veins 17–22 on each side of midvein, base cuneate, apex caudate with a 1–3 cm acumen. Flowers solitary. Pedicel short. Sepals...
broadly ovate, ca. 8 × 6 mm, inside glabrous. Petals reddish; outer petals obovate-lanceolate to oblong-lanceolate, ca. 2.3 × 0.5 cm; inner petals ovate-triangular, ca. 1.5 × 0.5 cm, inside glabrous, base attenuate into a ca. 3 mm claw. Stamens oblong, ca. 2 mm; anther locule with transverse stripes; connectives apically rounded to subtruncate. Carpels cylindric-ovoid, ca. 4.5 mm, hirsute; ovules 2 per carpel, subbasal; style oblong, ± long cally rounded to subtruncate. Carpels cylindric-ovoid, ca. 4.5 mm; anther locule with transverse stripes; connectives apically truncate. Carpels ca. 14, ca. 3 mm, puberulent; inner petals elliptic, ca. 1.5 × 1 cm. Stamens linear but obconic when dry, ca. 1.8 mm; connectives apex subcapitate, puberulent. Carpels cylindric, glabrous; ovule 1 per carpel, basal; styles terete; stigmas apically shallowly 2-cleft. Monocarps oblong-ellipsoid to ellipsoid, 1–1.8 × 0.5–0.8 cm, glabrous. Seed 1 per monocarp. Fl. May–Jun, fr. Nov.

Densely forested slopes; 300–800 m. Hainan [Cambodia, Laos, Thailand, Vietnam].


Trees to 5 m tall. Bark brown. Branches pale brown, glabrous. Petiole 5–13 mm, drying blackish, slightly rugose; leaf blade oblong-elliptic to oblong-lanceolate, 7–23 × 2.8–7 cm, thinly papery, glabrous, secondary veins 7–15 (–21) on each side of midvein and adaxially depressed to slightly raised, base broadly cuneate, apex acute to acuminate. Inflorescences axillary, sometimes from leafless nodes, 1- or 2-flowered; peduncle 1–2 mm; bracts 2–4, ovate, 1–2 mm. Pedicel (2–)4–9 (–13) mm, sparsely pubescent. Sepals broadly ovate-triangular, 5–8 × 4–8 mm, outside pubescent, inside glabrous. petals reddish yellow; outer petals narrowly ovate-lanceolate, 2.2–3 × ca. 0.7 mm, inside densely rust-colored tomentulose; inner petals obovate to oblong-ovate, 7–11 × 4–5 mm, connate above middle, pubescent, base attenuate to a ca. 2 mm claw. Stamens many, (1.5–)2.2–3 mm; connectives apically truncate. Carpels ca. 14, ca. 3 mm, puberulent or glabrous; ovules 2 per carpel, basal; styles ca. 2 × as long as ovaries. Monocarps elliptoid to ellipsoid, 1.8–2.5 × 0.8–0.9 cm, glabrous, minutely punctate, apex shortly cuspidate. Seeds (1 or) 2 per monocarp. Fl. Apr–Jun, fr. Nov.

Densely forested slopes; 100–800 m. S Yunnan.

金平哥纳香  jin ping ge na xiang


Trees to 5 m tall, glabrous except for flowers. Branches lenticellate. Petiole 6–10 mm, ca. 2 mm thick; leaf blade obovate-oblong to sometimes oblanceolate, 6–29 × 4.5–9 cm, papyry, secondary veins 9–18 on each side of midvein, base cuneate to broadly cuneate, apex shortly acuminate to acute. Inflorescences axillary, 2-flowered. Flowers ca. 1.6 cm. Pedicel ca. 1.5 cm, puberulent, bracteolate at base. Sepals broadly ovate, ca. 5 mm, outside sparsely puberulent, inside glabrous. Petals reddish yellow; outer petals ovate, 1.8–2.3 × 1.1–1.5 cm, thickly leathery, outside sparsely puberulent, inside rust-colored tomentulose, base shortly clawed, apex acute; inner petals ovate, ca. 1.3 × 0.8 cm, leathery, outside glabrous, inside pubescent, base with a ca. 3.5 mm claw, margin densely pubescent, apex acute. Stamens ca. 1.5 mm; connectives apically truncate. Carpels ca. 18, linear, ca. 4 mm, glabrous; ovules 10 per carpel, in 2 series; styles clublike, as long as ovaries. Monocarps solitary or several fasciculate, ovoid, 4–7 × 2.2–4.2 cm, glabrous. Seed 1 per monocarp, reniform, 2.5–3 × ca. 2 cm. Fl. May–Jul, fr. Aug–Nov.

Forest slopes; 700–1600 m. S Yunnan.


台灣哥納香  tai wan ge na xiang

*Uvaria amuyon* Blanco, Fl. Filip. 463. 1837; *Polyalthia sasakii* Yamamoto.

Shrubs or small trees, 2–5 m tall. Petiole 6–8 mm, sparsely pubescent; leaf blade oblanceolate to elliptic, 8–16 × 3–5.5 cm, papyry, glabrous, abaxially with brown specks, secondary veins 8–11 on each side of midvein and adaxially slightly prominent, base broadly cuneate, apex obtuse. Inflorescences axillary. Pedicel ca. 6 mm. Sepals ovate-triangular, outside pubescent. Outer petals lanceolate, ca. 3.5 × 0.7 cm, thick, outside pubescent; inner petals ovate, smaller than outer petals. Stamens many; connectives broadly 3-angular. Carpels cylindric; ovules 1–3 per carpel; styles linear, ca. 3.5 mm. Fruiting carpels ovoid to ellipsoid, 1–1.8 × 0.6–0.9 cm. Seeds 1 or 2 per monocarp. Fl. May–Jul, fr. Jul–Oct.

Mixed woods; 300–500 m. S Taiwan [Philippines].


大花哥納香  da hua ge na xiang

Trees to 8 m tall. Branchlets pubescent, glabrescent. Petiole 0.7–1.5 cm, robust; leaf blade oblanceolate to elliptic, 17–35 × 5.5–9 cm, papyry, glabrous, midvein stout and adaxially depressed, secondary veins 14–20 on each side of midvein and slightly elevated on both surfaces, base rounded to broadly cuneate, apex obtuse to shortly acuminate. Inflorescences axillary or extra-axillary, 1-flowered. Pedicel 1–1.5 cm, glabrous, many bracteolate at base. Sepals broadly ovate, 2–2.5 cm, glabrous. Outer petals oblong-lanceolate, 5–6.5 × ca. 1.5 cm, puberulent; inner petals oblanceolate, ca. 2 × 0.8 cm, puberulent. Stamens oblong, ca. 4 mm; connectives 3-angular. Carpels cylindric, ca. 6 mm, pubescent; ovules 2 per carpel; styles elongate; stigmas apically 2-cleft. Monocarps fasciculate, subsessile, ovoid, ca. 1.5 × 0.8 cm, puberulent. Seed 1 per monocarp. Fl. Apr–Aug, fr. Aug–Nov.

Forest slopes; 800–1500 m. S Yunnan [N Thailand].

Saunders and Chalermglin (Bot. J. Linn. Soc. 156: 359–363. 2008) regard the Chinese material identified as *Goniothalamus griffithii* J. D. Hooker & Thomson to be more correctly placed in *G. calvicarpus*, treating *G. griffithii* as a local species restricted to S Myanmar and adjacent W Thailand. The Chinese material is somewhat intermediate
between the two, and clearly the situation needs more detailed investigation.


海南哥纳香 hai nan ge na xiang

Trees to 15 m tall, glabrous except for flowers. Petiole 7–10 mm; leaf blade oblong to sometimes elliptic, 10–25 × 4–8 cm, papery, brownish when dry, secondary veins 10–15 on each side of midvein, base cuneate to rounded, apex shortly acuminate to obtuse. Inflorescences axillary, 1-flowered. Pedicel 1–2 cm, puberulent, several bracteolate at base. Sepals broadly ovate, ca. 5 mm, outside puberulent. Petals yellowish green; outer petals broadly ovate, 2.2–2.5 × 1.6–1.8 cm, leathery, sparsely pubescent; inner petals broadly ovate to subrhomboid, 1.3–1.5 cm, thickly leathery, densely hispid. Stamens oblong; connectives orbicular. Carpels 15–18, pubescent; ovules 6 per carpel, in 1 series; styles oblong, as long as ovary; stigmas apically 2-cleft. Monocarps ovoid to cylindric-ovoid, 3–6 × 2–2.5 cm, glabrous. Fl. Mar–Sep, fr. May–Jan.

● Forested slopes; 300–800 m. Hainan, S Yunnan.


柄芽银钩花 bing ya yin gou hua


Trees to 10 m tall, glabrous except for flowers. Branches robust. Petiole ca. 7 mm; leaf blade oblong, 13–18 × 3–5 cm, leathery, abaxially pale gray/glaucous, adaxially glossy, mid-vein adaxially concave, secondary and reticulate veins obscure, base attenuate, apex obtuse and shortly cuspidate. Inflorescences 3- or 4-flowered. Flowers ca. 1.2 cm. Pedicel 6–7 mm, robust, bracteolate at base. Sepals broadly ovate to suborbicular, erect, outside puberulent, inside glabrous. Outer petals lanceolate, suberect, both surfaces pubescent; inner petals obovate, ca. 2 × as long as outer petals, both surfaces pubescent, base clawed, margin ciliate. Stamens many; connectives semi- orbicular, papillose. Carpels 10, cylindric, glabrous; ovules 8–10 per carpel; stigmas fusiform, papillose. Fruit not seen. Fl. Apr–Jun, fr. Jul–Oct.

Dense woods; ca. 700 m. S. Yunnan [Laos, C and N Thailand].

Weerasooriya and Saunders (Syst. Bot. 30: 262. 2005) follow Bân and exclude this species from Mitrephora.