SPECIAL PART:
TAXONOMIC TREATMENT

Trichosanthes


Cucumeroides Gaertn., Fruct. 2 (1791) 485.


Small or large climbers, to 25 m, glabrous or pubescent, sometimes tuberous; cystoliths usually obvious. Leaves simple, entire or lobed, or 3–5-foliate, frequently scabrid, usually with glands. Tendrils 2–5(–14)-branched, rarely simple. Probracts usually present. Flowers large, white, dioecious or
monoeocious, usually nocturnal. Male flowers usually in solitary, simple (rarely branched and fascicled) bracteate racemes, sometimes with a single flower co-axillary, or flower solitary; bracts small or large (rarely absent), with or without glands; receptacle tube long, subcylindrical, widened at apex, sometimes ovary-like thickened at base (but disk obsolete), lobes (sepals) small or medium, entire or lobed; petals free, conspicuously long-fimbriate; stamens 3, one 1-thecos, two 2-thecous, the thecae sigmoid, coalescent (rarely free), forming a synandrium, (almost) included, connectives narrow, often hispid-hairy, not produced, filaments short, free, inserted towards the throat on the tube. Female flowers solitary or rarely few (mixed with male flowers) in a raceme, resembling male flowers, disk obsolete; ovary smooth, glabrous or pubescent, ovules numerous, horizontal; style long, stigma 3(-5)-lobed, lobes entire or bifid. Fruit rather large, indehiscent, globose, ovoid, or oblong (rarely cylindrical), pericarp firm-carnose, exocarp leathery or thinly woody, greenish yellow or (orange-) red, speckled, flamed or not, smooth; pulp greenish black (fetid and acrid), or pink or whitish (sweet), rarely fibrous. Seed numerous, horizontal, densely packed, flat, various shape, usually margined, edge entire or ± sinuate, or seed tumid.

 DISTRIBUTION — India throughout SE Asia and Malesia, north to Japan, east to N Australia and Solomon Is. A genus of about 100 species, 39 species in Malesia.

CLASSIFICATION — Suprageneric classification: Jeffrey (1962) placed Trichosanthes in tribe Trichosantheae of the subfamily Cucurbitoideae. The tribe has large flower with long hypanthium, petal fringed or entire, pollen
garins tricolporate with various ornamentation. This tribe has been divided into three subtribes: *Hodgsoninae*, *Ampelosicyinae* and *Trichosanthinae*. The last subtribe has three different genera, namely *Gymnopethalum* (with only 3 species distributed in Indo-Malaya), *Tricyclandra* (monotypic and found only in Madagascar) and *Trichosanthes*. This system is adopted in this study.

**Infrageneric classification:** Cogniaux (1881) divided the genus into subgenera *Eutrichosanthes* and *Pseudotrichosanthes* based on the flower characters. The first subgenus has male flower in inflorescence and female flower solitary, whereas the second one has solitary male and female flower. Yueh & Cheng (1974) divided this genus into subgenera *Cucumeroides* and *Trichosanthes*. They included the genus *Cucumeroides* Gaertn., *Bryonia* subgen. *Cucumeroides* Roem., *Trichosanthes* sect. *Cucumeroides* (Gaert.) Kitam in subgenus *Cucumeroides* with two sections (*Cucumeroides* and *Tetragonospermae*). They divided the subgenus *Trichosanthes* into five sections (*Foliobracteola*, *Truncata*, *Involucraria*, *Pedatae* and *Trichosanthes*), based on bract, fruit pulp and seed characters. Jeffrey (1980) revised the earlier system of classification and divided the genus into 5 sections without recognizing any subgenus (sect. *Involucraria*, *Truncata*, *Foliobracteola*, *Cucumaroides* and *Trichosanthes*). The section *Tetragonosperma* mentioned by Yueh & Cheng (1974) was placed as a synonym of sect. *Cucumeroides* and sect. *Pedatae* was sunk into a subsect. *Pedatae* of sect. *Involucraria*. He proposed a new subsect. *Bracteata* under sect. *Involucraria*.

subgeneric classification of the genus, based on morphology, cytology, palynology and anatomy. They maintained subgen. *Cucumeroides* with two sections *Cucumeroides* and *Tetragonospermae*, and subgenus *Trichosanthes* with 3 sections *Trichosanthes*, *Foliobracteola*, and *Involucraria*. They described a new series *Ovifolia* Yueh & Huang, under sect. *Foliobracteola*.

Since the delimitation of these sections have been based on gross morphology, it is not easy to place some species from Malesia. For practical purpose in this revision, the genus *Trichosanthes* tentatively is divided into five sections, based on morphological characters of leaves, probract, pulp and seed.

The sections can be identified by the following key.

**Key to the Sections in Malesia**

[Mainly based on seed characters]

1. Seed turgid, with hollow extensions at two sides. Fruit pulp white, orange or red. Probract absent ........................................ 2 Sect. *Cucumeroides*
2. Seed flat, thin or thick, not turgid ........................................... 2

2  a. Seed with margin, either with a narrow or broad marginal band or different colour and / or texture, or if this obscure, with the rim thickened or finely crenate. ................................................................. 3

3  b. Seed without or with faint margin, edge entire, shape subcircular, (ob)ovate, elliptic, rounded at both ends, rarely notched, at base pointed, mostly dark brown or blackish, rarely greyish. Fruit pulp green-black. Probract present ........................................................................................................ 3 Sect. *Involucraria*
3 a. Edge of margin coarsely undulate. Seed thickish, grey or pale brown. Fruit pulp white, turning orange-red when ripe. Probract absent ................................................. 1. Sect. Trichosanthes

b. Edge of margin entire (straight) or (partly) finely cremate. Seed thin or thickish, (pale) brown ............................................................... 4

4 a. Seed suborbicular, (ob)ovate, or elliptic(-oblong), rounded at both ends or truncate at one end; edge entire. Fruit pulp pinkish (always ?). Probract present or absent ............................................................... 4 Sect. Foliobracteola

b. Seed oblong, parallel-sided, quadrangular, or seed long-triangular, frequently truncate or notched at one or both ends; edges smooth or (partly) crenulate. Fruit pulp whitish or creamy, turning red. Probract present. ............................................................... 5. Sect. Edulis

I. Sect. Trichosanthes

Type species: *Trichosanthes cucumerina* L.

Monoecious, (sub) annual, climbers to 5–8 m long. Probract absent. Male bracts subpersistent or caducous, 0.5–2 mm long, margin entire. Seed elliptic-oblong, not densely packed in the fruit, flat, margin broad distinct or faint, edge undulate. Fruit pulp orange-red.

DISTRIBUTION — Widely distributed.
Malesian taxa (1 species and 1 variety): \textit{T. cucumerina} var. \textit{cucumerina} and \textit{T. cucumerina} var. \textit{anguina}.

1. \textit{Trichosanthes cucumerina} L.


\textit{Trichosanthes reniformis} Miq., \textit{Fl. Ind. Bat.} 1, 1 (1856) 675. — Type: Horsfield \textit{s. n.} Java (BM holo; U iso).

\textit{Trichosanthes pedatifolia} Miq., \textit{Fl. Ind. Bat.} 1, 1 (1856) 677. — Type: Horsfield \textit{s. n.}, Java (BM holo; U iso).

Climber to 5 m (to 8 m in var. \textit{anguina}); monoecious; (sub)annual, with sparse (dense) minute hairs (hairs on petiole sometimes coarser), partly glabrescent, green on drying, cystoliths not obvious; stem 1.5–2(–5) mm diam., grooved. Probract absent. Tendril (2 or) 3-branched. Leaves simple, unlobed, or 3–5–angular or subpalmately 3–7-lobed; petiole 2–7(–12) cm; blade membranous, finely pubescent, sometimes faintly scabrous, subcircular or broadly reniform in outline, 5–12(–20) by 5–12(–25) cm, base (deeply) cordate with broad sinus, apex...
acute(-acuminate); lobes to 2/3 deep, triangular or elliptic-oblong, margin entire or remotely shallowly dentate-undulate, and with spaced minute mucros; nerves 3 main ones palmate from the base, with auxiliary main nerves departing from the lateral basal ones which follow the sinus closely, nerves straight; glands absent or few scattered, minute. Male raceme sometimes with co-axillary a solitary male flower or with co-axillary a solitary female flower (the female flower developing well in advance of the male raceme), the male raceme 8–25 cm long, pubescent or glabrescent; peduncle 5–15 cm long, 1(–2) mm thick; rachis not thicken ed, with 5–8 (or more) flowers; bracts subpersistent or caducous, membranous, ellipsoid, 0.5–2 mm long, without glands, entire or rarely with few lobes. Male flowers: pedicel 5–20 mm, persistent; receptacle tube 15–20 mm long, at apex 3–4(–5) mm diam.; sepals linear, 2–3 mm long, c. 1 mm wide at base, margin entire; petals ovate-oblong, 6–10 mm long, threads c. 10 mm long, synandrium 2–3 mm long, filaments short. Female flowers: pedicel 5–12 mm long (longer in var. anguina); ovary elliptic-oblong, 3–10 mm long (in var. anguina to 30 mm long), hairy. Fruit (broadly) ovoid-oblong, narrowed towards apex, (2.5–)3–5(–6) by 1.5–4 cm (much longer, to 150 cm in var. anguina), green, turning bright orange, pale sprinkled or flamed; pericarp ± juicy, when dry 3–5 mm thick, exocarp ( thinly) leathery, smooth; pulp orange; fruiting pedicel 1–2 cm long, c. 2 mm thick. Seed pale or dark brown, flat, elliptic-oblong, 6–18 by 4–9 mm, 2.5–3.5 mm thick (largest in var. anguina), margin broad, distinct or faint, edge undulate.
Key to the varieties

1. Plant delicate, growing in wild conditions. Leaves 5–14 cm diam.; fruit (2.5–)4–6 cm, containing up to 10 seeds; seed 6–8(–10) mm long ... var. cucumerina

2. Plant more robust in all parts, cultivated. Leaves to 25 cm diam.; fruit much elongated, snake-like, 35–100(–150) cm long, containing many seeds; seed 14–18 mm long. ... var. anguina

a. var. cucumerina

Plant annual, growing in wild conditions; stem delicate, 1–2 mm diam., and petiole with or without scattered pale coarse hairs (1 mm). Petiole 2–6 cm long. Fruit (2.5–)4–6 cm, containing few (up to 10) seeds; pulp bitter (always?). Seed oblong, 6–8(–10) mm long.

DISTRIBUTION — The wild type-variety is widely distributed from India through Malesia into W, N and NE Australia.

HABITAT & ECOLOGY — Forest edges, scrub, disturbed open areas; apparently solely in areas with a seasonal climate; 0–500(–1000) m altitude; fl. & fr. in and after the wet season.

SPECIMENS SEEN — BORNEO: Winkler 2173. — JAVA: Blume s.n.; Backer 7931, 8615, 19831, 20919, 21029, 26711, 30423; Coert 535, 927; Delevert s.n.; Gruiterink 3216; Horsfield s.n.; Koorders 20815 b, 21115 b, 22765 b, 27327 b; Korthals s.n.; Popta 793; Reinwardt s.n.; de Wilde & Duyfjes 21685. — PHILIPPINES: Conklin et al. PNH 80673; Merrill 3899; Ramos BS 10080;
Ridsdale 1873. — SULAWESI: Chin 3596. — LESSER SUNDA ISLANDS: McDonald & Sunaryo 4573 (Sumba); Kostermans 18027 (Sumbawa).

b. var. anguina (L.) Haines


Plant subperennial, cultivated; stem 2–5 mm diam., grooved or angular.

Petiole 2–12 cm long. Fruit long, snake-like, 30–100(–150) cm long or more, containing up to 50 seeds, pulp rather sweet. Seed 14–18 mm long.

DISTRIBUTION — Widespread in cultivation.