

Two new species of *Viscum* (Viscaceae) from China

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Two new species of *Viscum* from the southern and southwestern China are described and illustrated. Both *Viscum macrofalcatum* and *V. hainanense* are monoecious plants with inflorescences axillary, usually 3-5 flowers in one cyme, the middle one male, outer ones females. *Viscum macrofalcatum* differs from *V. hainanense* by having 1-6 sessile cymes in the axil, whereas *V. hainanense* has only 1 cyme in the axil, and peduncle 0.5-1 mm long. The most closely related species to these entities is *V. yunnanense*. Based on the habit and habitat, external morphology, and palynological characters, we concluded that the three entities are specifically distinct.

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Introduction

The genus *Viscum* L. belongs to the family Viscaceae, and includes ca. 100 species distributed in Europe, throughout Africa, eastern Asia, Malesia and Australia (Barlow 1997). In Asia, it is represented by 38 species (Rao 1957) and in China by 11 species of which 4 are endemic (Qiu 1988). In our effort to study the systematics of the Viscaceae in China, two new species were discovered with distinct morphological (Table 1) and palynological (Table 2) characters that do not match any known species from China and neighbouring countries.

The new species *Viscum macrofalcatum* and *V. hainanense* are morphologically similar to *V. yunnanense* H. S. Kiu (Fig. 3 H, I, J). The three species usually occur in open or dense forest from 800-1300 m altitude. They are all monoecious plants with the middle flower in the cyme being male, and lateral flowers female. The distinguishing morphological and palynological characters of the three species are listed in Table 1 and Table 2 respectively.

Taxonomic treatment

1. *Viscum macrofalcatum* R. L. Han & D. X. Zhang, sp. nov.

V. yunnanense H. S. Kiu affinis, sed foliis similibus falcatis, inflorescentiae 1-6 axillaribus, floribus 3-5 seriatis eo mediano X, eis lateralibus 2 vel 4 C; pedunculo absens differt. – Fig. 1.

Type: China. Yunnan. Menghai Xian, 33 km from Menghai along Lancang Road, alt. 1340 m, roadside in open forest, 24 June 2001, R. L. Han 2003 (holotype, IBSC; isotypes, IBSC).

Plant monoecious. Stem 45 cm or longer, much branched, decussate or dichotomous; internodes terete, swollen at the nodes, green when fresh, longitudinally wrinkled when dried, the oldest ones 3-7 cm long, up to 5 mm in diameter, the youngest ones 1-3.5 cm long, 1-1.5 mm in diameter. Leaves opposite, elliptic to lanceolate, usually oblique, falcate, acuminate at the apex, entire or somewhat

Table 1. Distinguishing characters of the new taxa of *Viscum* and the related species.

Character	<i>V. macrofalcatum</i>	<i>V. hainanense</i>	<i>V. yunnanense</i>
Stem	Green when fresh, yellow-fuscescent when dry	Black-fuscescent when fresh, black when dry	Yellow-fuscescent when dry
Leaves	Usually falcate	Elliptic	Elliptic or lanceolate
Nerves	Usually 5	3-5	5
Inflorescences	1-6 axillary	1 axillary or terminal	2-3 axillary
Cyme	3-5, rarely 7 flowers	3-5 flowers	5-7 flowers
Bracts	Acute	Acuminate	Acute
Peduncle	Absent	0.5-1 mm long	2-3 mm long
Fruit	Green	Not observed	Light yellow

wavy at the margin, dull or slightly shining, thinly coriaceous, attenuate at the base into a very short petiole-like structure; lamina 2-7.5 cm long, 0.6-3.5 cm broad, very rarely slightly longer and broader, with usually 5, very rarely 6 longitudinal nerves. Inflorescences axillary, at first single in each axil, later with 3-6 cymes in each axil; subtended by one or more pairs of scales; peduncle absent. Navicular cup formed of connate bracts, up to 4.5 mm long; the central male flower opening first, followed by the lateral female flowers, up to 5 flowers produced in each cup. Male flower ovoid, c. 2.5 mm long, with 4 triangular sepals; anthers sessile, borne on the sepals. Female flower elliptic, c. 2 mm long, with 4 triangular sepals; ovary inferior, stigma nipple-like. Fruit usually ellipsoid, truncate with the nipple-like persistent stigma at the apex, green, smooth, wrinkled due to drying, up to 2-5 mm long, 2-3 mm in diameter. Pollen 3-colporate, ora circular, exine ornamentation ridged and granular. – Figs 1, 3. A, B, C.

Habitat: Open and closed forests, 1050-1340 m altitude, usually parasitic on Flacourtiaceae.

Distribution: Endemic to southern and southwestern

Yunnan, China.

Specimens examined: China, Yunnan, Mengla, alt. 990 m, near road on *Macaranga denticulata*, 26 May 1981, Y. L. Xiao 22054 (IBSC).

2. *Viscum hainanense* R. L. Han & D. X. Zhang, sp. nov.

V. yunnanense H. S. Kiu affinis, sed foliis longo-ellipticis, 1.5-5 cm longis, 0.5-1.3 cm latis, e basi 3-5 nervis, inflorescentia solitaria, axillari vel apicali, floribus 3-5 seriatis eo mediano X, eis lateralibus 2 vel 4 C; pedunculo 0.5-1 mm longo differt. – Fig. 2.

Type: China. Hainan. Changjiang Xian, Bawangling National Nature Reserve For Gibbon, alt. 800 m, roadside in dense forest, parasitic on *Michelia mediocris* Dandy (Magnoliaceae). 28 March 2002, R. L. Han 53 (holotype, IBSC; isotypes, IBSC).

Plant monoecious. Stem 45 cm long, much branched, decussate or dichotomous; internodes terete, swollen at the nodes, fuscescent when fresh, the oldest ones 3-4 cm long, up to 4 mm in diameter, the youngest

Table 2. Distinguishing palynological characters of the new taxa of *Viscum* and the related species.

Character	<i>V. macrofalcatum</i>	<i>V. hainanense</i>	<i>V. yunnanense</i>
Shape	Sub-spheroidal	Sub-prolate	Sub-spheroidal
Aperture	3-colporate, ora circular	3-colporate, ora irregular, elongate	3-colporate, ora composed of two minute holes
Exine ornamentation	Basically uniform, irregularly ridged	Non-uniform, polar and lateral planes of colpi irregularly ridged, equatorial surfaces granular	Basically uniform, irregularly ridged

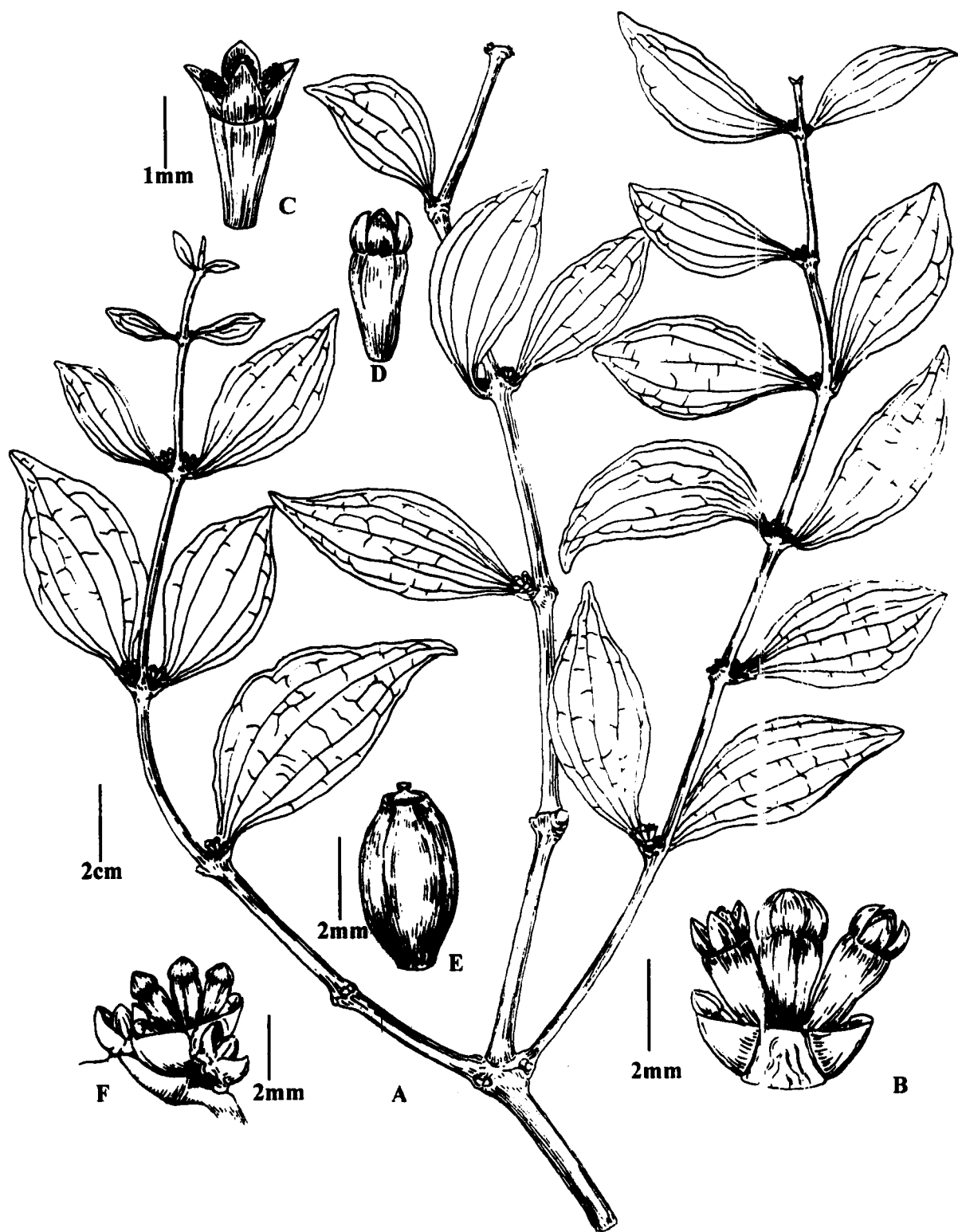


Fig. 1. *Viscum macrofalcatum* – A. Habit. – B. Inflorescence. – C. Male flower. – D. Female flower. – E. Fruit. – F. Axillary Cymes. – R. L. Han 2003, IBSC.

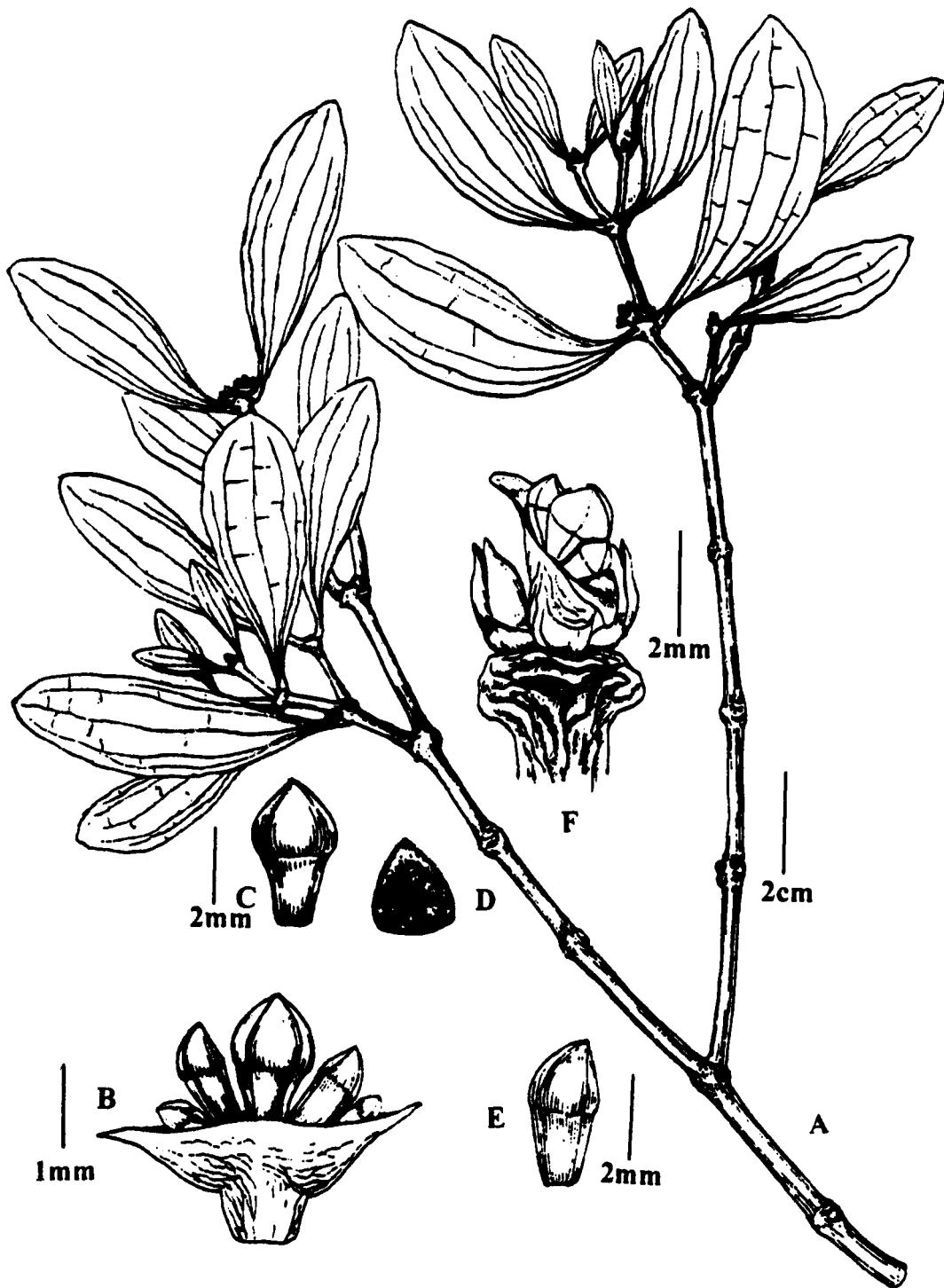


Fig. 2. *Viscum hainanense* – A. Habit. – B. Inflorescence. – C. Male flower. – D. Anther in Male flower's sepal. – E. Female flower. – F. axillary and terminal Cymes. – R. L. Han 53, IBSC.

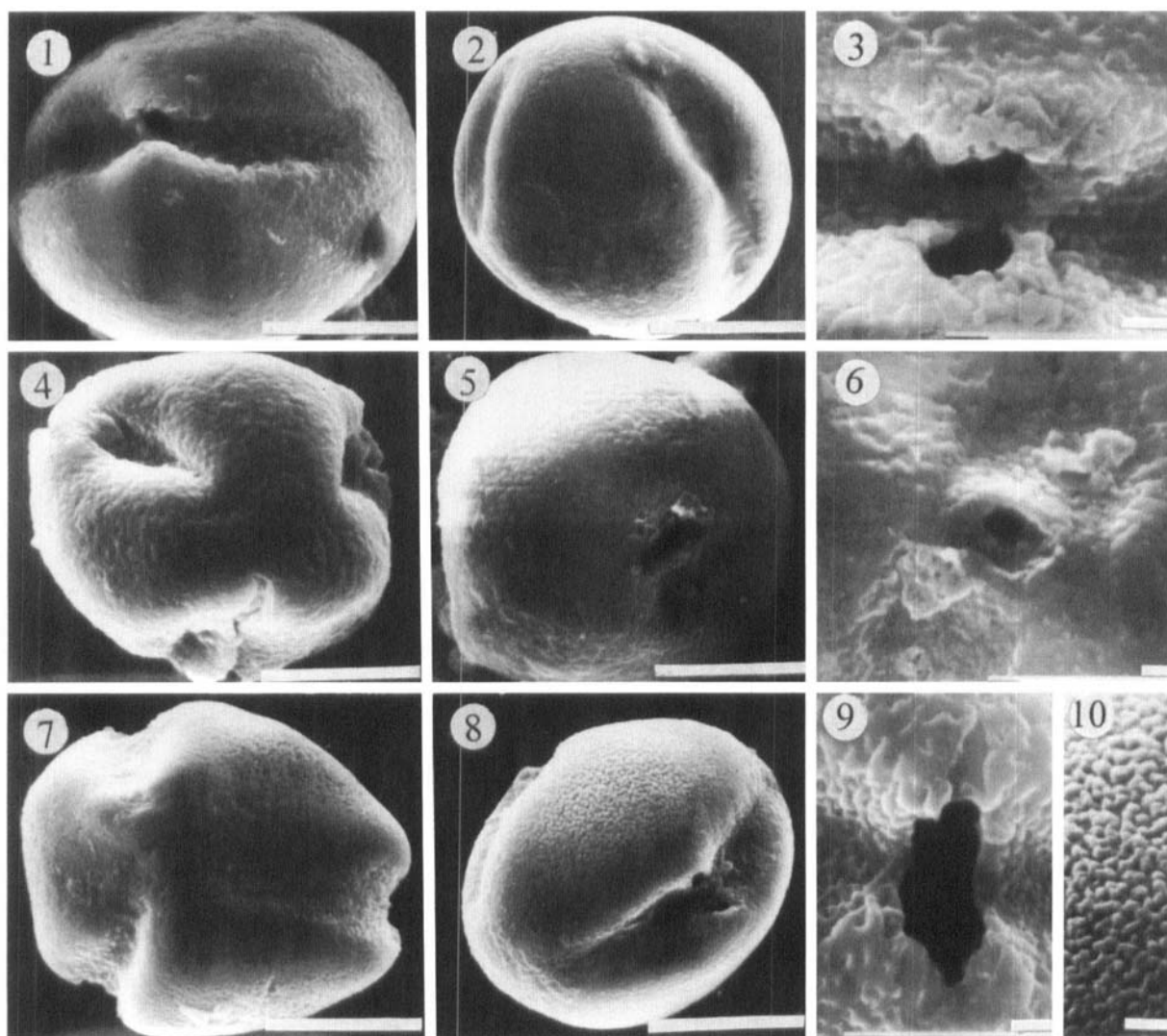


Fig. 3. Pollen features of the new taxa of *Viscum* and the related species. A-C. *V. macrofalcatum*. D-G. *V. hainanense*. H-J. *V. yunnanense*. – Scale bars: A, B, D, E, H, I: 10 μ m; C, F, G: 1 μ m.

ones 0.5-1 cm long, 1 mm in diameter. Leaves opposite, elliptic, entire at the margin, thinly coriaceous, attenuate towards the base; lamina 1.5-5 cm long, 0.5-1.5 cm broad, very rarely slightly longer and broader, with usually 3-5 longitudinal nerves, usually inconspicuous at the apex. Inflorescence solitary in each axil or terminal; peduncle 0.5-1 mm long. Navicular cup of connate bracts, up to 4 mm long; the central male flower opening first, followed by the lateral female flowers; up to 5 flowers produced in each cup. Male flower ovoid-globular, c. 2 mm long, with 4 triangular sepals; anthers sessile, borne on the sepals. Female flowers elliptic, c. 2 mm long with 4 triangular sepals; ovary inferior, stigma nipple-

like. Pollen 3-colporate; ora lalongate; exine ornamentation different in polar and equatorial areas; Polar and lateral planes of colpi minutely perforate or minutely ridged; equatorial surfaces granular. – Figs 2, 3 D, E, F, G.

Habitat: Dense forests from 800 m altitude, parasitic on *Michelia mediocris* Dandy (Magnoliaceae).

Distribution: Endemic to southwestern Hainan, China.

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