
Family 46. MENISPERMACEAE

A. G. MILLER

Dioecious, twining or trailing lianes or erect shrubs, sometimes bearing spiny cladodes. Leaves alternate, petiolate, sometimes peltate, simple, entire or lobed. Stipules absent. Flowers unisexual, actinomorphic, in sessile clusters or pedunculate panicles or in dense clusters on the cladodes. Male flowers: sepals free, 3–15, in 2 or 4–5 whorls; petals free, 2–4 or 6, in 2 whorls; stamens 2–9, free or united into a central column. Female flowers: sepals and petals similar to those of the male flowers; staminodes present or not; carpels 1 or 3–6, free; ovules 2 (one soon aborting). Fruits drupaceous, bearing the scar of the style subterminally or near the base due to excentric growth; seeds surrounded by a bony endocarp, horseshoe-shaped.

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| 1. Leaves peltate | 3. <i>Stephania</i> |
| + Leaves not peltate | 2 |
| 2. Leaves ovate or oblong-ovate to obovate or absent, the base cuneate to rounded; carpels 3–6; twining or trailing lianes or erect shrubs bearing spiny cladodes | 1. <i>Cocculus</i> |
| + Leaves broadly ovate-triangular, the base cordate; carpels 3; twining lianes | 2. <i>Tinospora</i> |

1. *COCCULUS* DC.*Cebatha* Forsskal (1775); *Laeba* Forsskal (1775).

Lianes or shrubs with branches bearing spiny cladodes. Leaves entire or lobed. Flowers in clusters. Sepals 6–15, in 2 or 4–5 whorls. Petals 6, auriculate at the base and clasping the filaments. Male flowers with 6–9 stamens. Female flowers with 3–6 carpels. Drupes globose, with a style-scar near the base, laterally compressed and ribbed on the lateral surfaces.

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| 1. Shrub bearing spine-tipped cladodes; leaves soon deciduous | 3. <i>C. balfourii</i> |
| + Twining or trailing liane; leaves persistent | 2 |
| 2. Branches usually white-pubescent; leaves usually glabrescent; fruits dark red, the septum surrounding the cavity at the centre of the endocarp not perforated | 1. <i>C. pendulus</i> |
| + Branches yellowish-tomentose, the bark brown; leaves usually tomentose; fruits black with a blue bloom, the septum surrounding the cavity at the centre of the endocarp perforated | 2. <i>C. hirsutus</i> |

1. *C. pendulus* (J. Forster) Diels in Engl. & Prantl, Nat. Pflanzenfam. 4, 94: 237 (1910). Syn.: *C. cebatha* DC., Syst. nat. 1: 527 (1817); *C. laeba* DC. op. cit.: 529. Illustr.: Fl. Pakistan 74: p.6 (1974); Collenette (1985 p.367).

Twining or trailing liane; stems up to 10m; young branches whitish pubescent; trunk white. Leaves ovate to oblong-ovate or deltoid, sometimes 1–2-lobed at the base, 0.5–5 × 0.3–2.5cm, obtuse and mucronulate or emarginate, the margin entire, the base cuneate or rounded, thinly pubescent, often becoming glabrous, whitish green; petiole 0.1–1cm. Flowers greenish yellow; clusters axillary or on leafless branches. Sepals 6, in 2 whorls: the outer ovate, 0.7–1 × 0.4–0.6mm; the inner ± circular, 1.5–2 × 1.5mm. Petals emarginate, 1–2mm. Carpels 6. Fruits 4–6mm long, dark red, the septum surrounding the cavity at the centre of the endocarp not perforated. **Map 431, Fig. 60.**

Dry rocky slopes, sandy plains, wadi-beds and cliffs in open semi-desert bushland; 5–1900m.

Saudi Arabia, Yemen (N & S), Socotra, Oman, UAE. Qatar. N Africa, tropical E Africa southwards to Kenya, S Iran, Pakistan & India.

2. *C. hirsutus* (L.) Theob. in Mason, Burmah (ed. Theob.) 2: 657 (1883). Syn.: *Cebatha villosa* (Lam.) C. Christ. (1922 p.37); *Cocculus villosus* DC., Syst. nat. 1: 525 (1817). Illustr.: Fl. Pakistan 74: 6 (1974); Fl. Trop. E. Afr.: 11 (1956).

Similar to *C. pendulus* but generally more densely hairy with yellowish tomentose branches and leaves; bark rough, brown; leaves oblong-ovate, up to 4 × 9cm; fruits black with a blue bloom, the septum surrounding the centre of the endocarp perforated. **Map 432, Fig. 60.**

Open *Acacia* bushland, on cliffs and terraces; 500–1550m.

Saudi Arabia, Yemen (N). Tropical Africa and tropical Asia to S China.

3. *C. balfourii* Schweinf. ex Balf. f. (1882 p.500); Illustr.: Balf.f. (1888 t.1). Type: Socotra, *Balfour* 439 (lecto. E, K).

Densely branched, ± aphyllous shrub; stems up to 1m, puberulous, bearing cladodes; cladodes flattened or ± terete, spine-tipped, 3–9 × 0.1–1cm. Leaves soon deciduous, ovate to obovate, 1–2 × 0.5–1cm, retuse or apiculate, entire, the base cuneate, shortly petiolate. Flowers cream, in sessile clusters on the cladodes or on the stem below the cladodes. Sepals 12–15, in 4–5 whorls, reducing in size outwards; inner sepals broadly obovate, c.1.5 × 1.25mm. Petals acute, c.1.25mm. Carpels 3. Fruits c.4mm, bright red. **Map 433, Fig. 60.**

On the mainland on rocky slopes (usually on limestone) in *Acacia-Commiphora* bushland; on Socotra in low *Cephalocroton socotranus-Rhus thyrsoflora* bushland, on granite; 50–1600m (above 460m on Socotra).

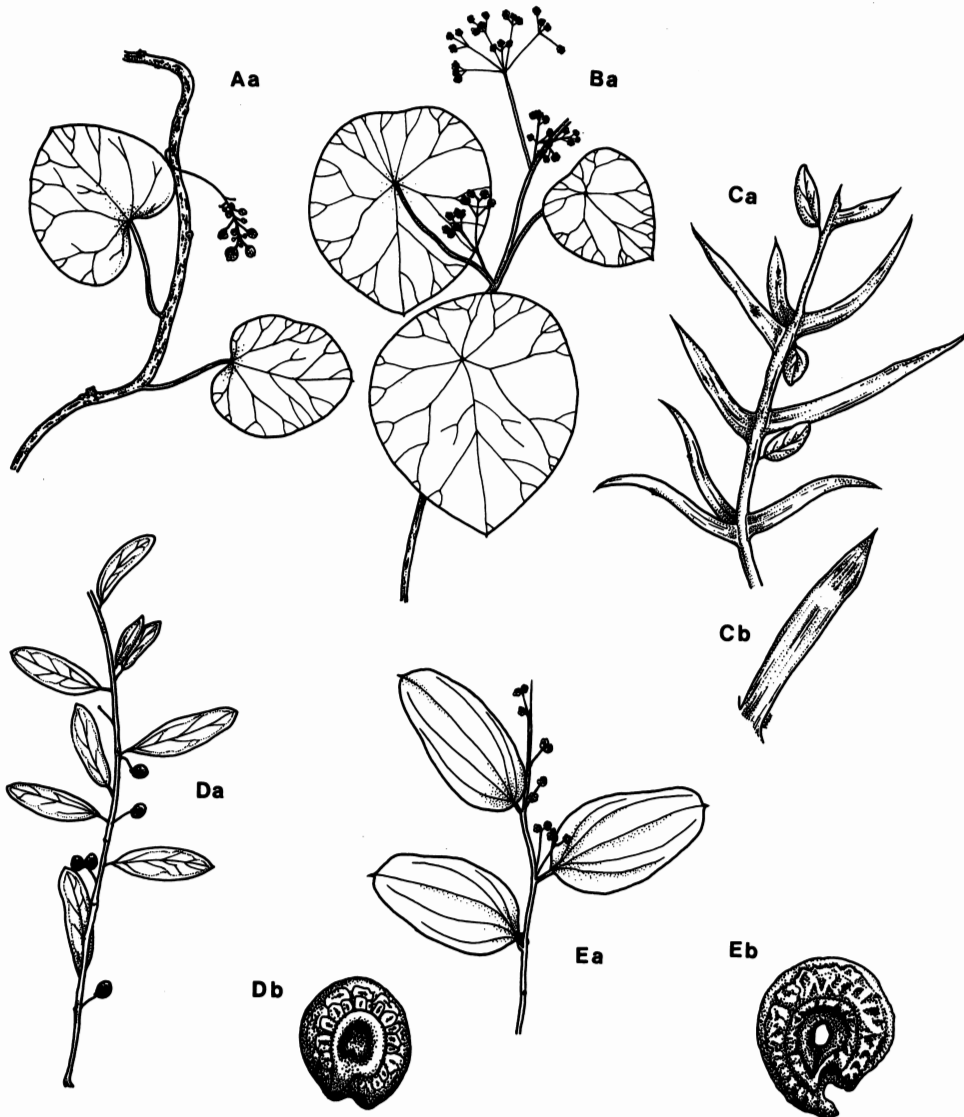


Fig. 60. Menispermaceae. A. *Tinospora bakis*: Aa, flowering branch ($\times \frac{1}{2}$). B. *Stephania abyssinica*: Ba, flowering branch ($\times \frac{1}{2}$). C. *Cocculus balfourii*: Ca, flowering branch ($\times \frac{1}{2}$); Cb, cladode ($\times 1$). D. *C. pendulus*: Da, fruiting branch ($\times \frac{1}{2}$); Db, fruit ($\times 5$). E. *C. hirsutus*: Ea, flowering branch ($\times \frac{1}{2}$); Eb, fruit ($\times 5$).

Yemen (S), Socotra, Oman. Endemic.

For a discussion of this species see Forman, L.L. (1980). *Kew Bull.* 35: 379–381.

2. TINOSPORA Miers

Twining lianes. Leaves simple, entire. Flowers in raceme-like panicles. Sepals 6, in 2 whorls. Petals 6, fleshy with inrolled margins. Male flowers: stamens 6. Female flowers: carpels 3. Drupes ovoid, with the style-scar subterminal and with a rugose endocarp.

1. T. bakis (A. Rich.) Miers in Hook., *Niger Fl.*: 215 (1849).

Stems succulent, glabrous, up to 5m. Leaves broadly ovate-triangular, 2–3 × 3–5cm, with a rounded to shortly acuminate tip and cordate base, glabrous or puberulous beneath; petiole c. 0.8mm. Inflorescence 2.5–12cm long. Flowers greenish yellow; outer sepals ovate, c. 1 × 0.5mm; inner sepals obovate c. 4 × 2mm; petals c. 1.8 × 1mm. Drupes 6 × 4mm. **Map 434, Fig. 60.**

Twining on shrubs in sandy wadis; c. 150m.

Saudi Arabia, ?Yemen (N). Sahel region and tropical E Africa.

In Arabia very rare, known only from a single wadi in the extreme SW of Saudi Arabia. J. Wood (pers. comm.) also collected a sterile specimen of *Tinospora* (at about 300m between Bait Faqih and Mansuriah in Yemen) which may be referable to this species.

3. STEPHANIA Lour.

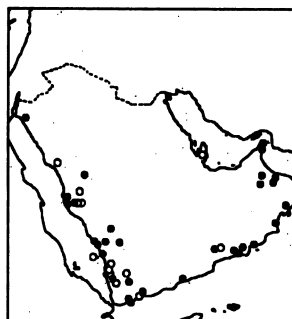
Twining lianes. Leaves simple, entire, peltate. Flowers in pedunculate, umbel-like panicles. Male flowers: sepals 6–8; petals 3–4; stamens 2–6, fused into a central column with the anthers in a horizontal ring. Female flowers: sepals 3–6; petals 2–4; carpel solitary, 3-lobed at the apex. Drupe subglobose, with a style-scar near the base, the endocarp with 3 rows of small prickles or tubercles.

1. S. abyssinica (Dillon & A. Rich.) Walp., *Repert. bot. syst.* 1: 96 (1842).

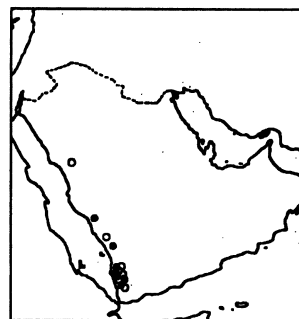
Scrambling or climbing glabrous herb. Leaves broadly ovate to suborbicular, 2–9 × 2–8cm, with a rounded to obtuse tip and rounded base; petioles 3–10cm. Panicles solitary or in clusters of 2–4; peduncles 4–10cm. Flowers yellow-green. Sepals ovate to obovate, 1.2–2.5mm. Petals broadly ovate to suborbicular, 0.8–1.2mm. Drupe 5–8mm. **Map 435, Fig. 60.**

Scrambling over shrubs and walls; c. 2200m.

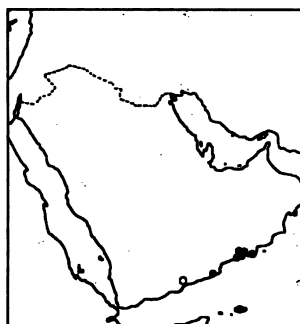
Yemen (N). Tropical and southern Africa.



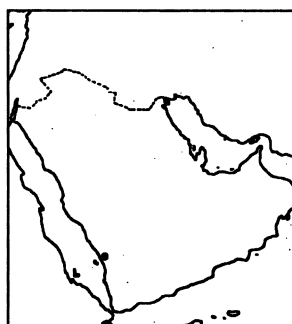
Map 431. *Cocculus pendulus*



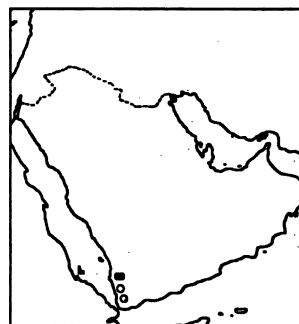
Map 432. *C. hirsutus*



Map 433. *C. balfourii*



Map 434. *Tinospora bakis*



Map 435. *Stephania abyssinica*