Editors

N.P. SINGH
J.N. VOHRA
P.K. HAJRA
and
D.K. SINGH
FLORA OF INDIA

VOLUME 5

OLACACEAE - CONNARACEAE

Editors

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J.N. VOHRA
P.K. HAJRA

and

D.K. SINGH

BOTANICAL SURVEY OF INDIA
CALCUTTA
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ACKNOWLEDGEMENTS

The editors are pleased to record their thanks to all the contributors of this volume of Flora of India. They also express their thanks to Dr. R.L. Mitra, Scientist-SE (Retd.), Central National Herbarium, and to Shri U. Chatterjee, Scientist-in-Charge, Publication Section, Botanical Survey of India and all his associated staff members for their help and general assistance during the finalisation of this volume.

The editors also acknowledge the efficient work done by Shri Sanjay Uniyal, Data Entry Operator, Botanical Survey of India, Northern Circle, Dehra Dun for computer typesetting, scanning of illustrations and formatting of the manuscript. We also thank Shri Bhola Ram, Ex-chief Artist, Botanical Survey of India and Shri A.T. Durgadas, Artist, Northern Circle BSI, Dehra Dun for making some of the illustrations, and Shri Dev Raj Agarwal, Photographer, Northern Circle, BSI, Dehra Dun for photographic assistance. Hard work and whole hearted cooperation rendered by all the present and retired staff members of Botanical Survey of India in general, and those of Northern Circle, Dehra Dun in particular, during the course of this entire work, is also thankfully acknowledged.

Finally, we acknowledge the quick printing of this volume in final form by Mr. M.L. Jain of Deep Printers, New Delhi.
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Connarus wightii Hook.f. (Courtesy : K. Ravikumar)
OLACACEAE

(B.P. Uniyal)

Shrubs or trees, erect, scendent or climbing, unarmed or occasionally armed. Leaves alternate, simple, entire, exstipulate. Flowers bisexual, rarely unisexual (the plants then dioecious), bracteate, in axillary racemes, panicles, spikes, cymes, fascicles or solitary in the axils. Sepals 3-6, forming a cupular calyx, 3-6 toothed or lobed, rarely absent. Petals 3-6, free or connate at base, occasionally tubular. Disc intrastaminal or extrastaminal, annular or consisting of glands, alternating with the petals. Stamens as many as or 2-5 times the number of petals, some of them staminodial. Staminodial filaments distinct or adnate to the sepals or petals or connate into a sheath around the style; anthers tetrasporangiate, opening by longitudinal slits or seldom by terminal valves. Carpels (2-) 3 (-5), united to form a superior or inferior ovary; ovary 2-5-loculed at the base, 1-loculed above; style 1; stigma 2-5-lobed; ovule solitary in each locule. Fruit drupaceous or a nut, 1-seeded, often included in an accrescent calyx.

Pantropical; 25 genera and 250 species, 6 genera and 16 species in India.


KEY TO THE GENERA

1a. Climbing tendril shrubs; leaves palmatinerved at base; base subpeltate
   b. Plants non tendril; leaves penninerved; base not subpeltate

2a. Staminodes present
   b. Staminodes absent

3a. Stamens 8 or 10; half episepalous, half epipetalous; plants often armed
   b. Stamens all epipetalous; plants not armed

4a. Petals entirely free; calyx accrescent, almost covering the fruit
   b. Petals connate at least at base; calyx not accrescent

5a. Calyx cupular; petals thick, fleshy; anthers penicillate distally
   b. Calyx indistinct; petals thin; anthers not penicillate

1. Anacolosa
2. Erythropalum
3. Olax
4. Schoepfia
5. Strombosia
6. Ximenia
1. **Anacolosa** Blume

Shrubs or trees. Leaves alternate, simple, entire. Flowers in axillary cymes. Calyx cup-shaped, 5-7-lobed. Petals 5-6, free, valvate, hairy within. Stamens equal to the number of petals; filaments slender; anthers very small, globose. Staminodes absent. Ovary 1-loculed; style conical; stigma shortly lobed. Drupes surrounded by accrescent disc.

Tropical Africa, Indo-Malaya and Pacific; about 21 species, 4 in India.

**KEY TO THE SPECIES**

1a. Inflorescence pedunculate for 6-10 mm; peduncle without numerous bracteoles or scales 4. **A. ilicoides**

b. Inflorescence nearly sessile, with numerous bracts or scales 2

2a. Calyx puberulous 2. **A. frutescens**

b. Calyx glabrous 3

3a. Leaves oblong, smooth in dried specimens; cymes many-flowered 1. **A. densiflora**

b. Leaves lanceolate or ovate-lanceolate, tubercled at least on the undersurface in dried specimens; cymes few-flowered 3. **A. griffithii**


Mal.: *Kal manikkam*; Tam.: *Katta ockkali*.

Trees. Leaves oblong, up to 12 x 5 cm, acuminate, entire, glabrous, shining; petiole ca 5 mm long. Flowers in cymes, fragrant, yellow; pedicels equal to flowers in length. Calyx cup-shaped, glabrous, 4-6-toothed. Petals 4-6, ovate-lanceolate, reflexed at tips, hispid within. Filaments included, glabrous. Ovary surrounded by a broad disc, 3-loculed; stigma 3-lobed.

**Distrib.** India: In evergreen forests of Western Ghats, ascending up to 800 m. Tamil Nadu and Kerala. Rare.


*Fig. 1.*  

Evergreen shrubs or trees, up to 12 m tall. Leaves oblong or ovate-oblong, up to 22 x 8.5 cm, acuminate-bluntish, entire, coriaceous, glabrous, shortly petioled. Flowers axillary; peduncle short, thick, with minute bracts; pedicels puberulous. Calyx tawny puberulous. Drupes obovoid, scarlet, minutely velvety.

*Distrib.* India: Andaman & Nicobar Islands.

Myanmar, Malay Peninsula, Thailand, Philippines and Celebes.


Evergreen shrubs or trees. Leaves oblong-lanceolate, up to 7.5 x 2.7 cm, blunt or bluntish-acuminate, entire, glabrous, coriaceous; petiole ca 6 mm long. Flowers in almost sessile, axillary cymes, small; pedicels short, glabrous. Calyx glabrous.

*Distrib.* India: Andamans.

Myanmar, Indo-China and Thailand.

*Note.* Anjali Chakravarty (Bull. Bot. Surv. India 14: 171-72. 1972) studied the specimens at CAL and opined that *A. griffithii* Masters does not occur in India. It is included here on the basis of Herb. Hefler 821 (DD) bearing label “Tenasserin and Andaman” and also quoted by Sleumer (*Blumea* 26: 147. 1980).


Trees, up to 10 m tall. Leaves elliptic to oblong-lanceolate, up to 22 x 6 cm, acute to cuneate at base, acute-acuminate at tip; lateral nerves 6-8 pairs; petioles 5-10 mm. Flowers 3-8, in axillary, subumbeliate cymes, greenish white, 4-5 mm across. Calyx cupular, 5-6, toothed. Petals 5-6, much exceeding the calyx. Stamens opposite to petals; filaments broad, glabrous. Ovary imperfectly 3-celled. Drupes oblong-ellipsoid, ca 3 x 2 cm, included by enlarged disc.
Fig. 1. *Anacolosa frutescens* (Blume) Blume
Fl. & Fr.: May Dec.

Distrib. India: Meghalaya.

Indo-China, Thailand.

2. Erythropalum Blume

Climbing shrubs. Leaves alternate, entire, peltate, palmatinerved; tendrils axillary. Flowers in axillary cymes; peduncles and pedicels somewhat filiform. Calyx 4-5-lobed. Petals 5, valvate. Stamens 5, opposite to petals, epipetalous; filaments very short; anthers incurved, 2-celled, opening longitudinally. Staminodes 5, alternating with stamens. Ovary half immersed in the disc, 1-celled; style short, conical; stigma minute, 3-lobed. Drupes oblong or ellipsoid, crowned by remains of calyx, 1-seeded.

Eastern Himalaya to Celebes India, Myanmar, Indonesia, Malacca; 2-3 species, 1 in India.


Climbers or lianas; tendrils axillary, shortly bifid. Leaves lanceolate, ovate-lanceolate or ovate-oblong, 7-21 x 4-13 cm, rounded and narrowly peltate at base, acute or short acuminate, palmately 3-5 nerved; petiole up to 5 cm long. Cymes axillary, subsessile or peduncled. Flowers white or yellow or greenish, minute, ca 3 mm long. Calyx tube 1.5-2 mm. Petals ovate, with a tuft of short, white hairs on either side at the base of filaments. Stamens 5. Drupe ellipsoid or oblong-ovoid, ca 3.5 x 1 cm, obtuse, pendulous, yellowish-red becoming bright red on maturity.

Fl. & Fr.: Aug. March.

Distrib. India: In forest undergrowth and along margins of evergreen forests. West Bengal, Arunachal Pradesh, Assam, Nagaland, Manipur, Tripura, Meghalaya, Sikkim, Karnataka, Tamil Nadu, Kerala and Andamans.
Bangladesh, Nepal, Indo-China, Malay Peninsula, Philippines, Thailand, S.W. China and Celebes.

Note. The cirrhose nature of leaves as mentioned by Masters (l.c.) was not observed in the specimens studied.

3. Olax L.

Shrubs or small trees, sometimes scandent. Leaves simple, alternate. Flowers in axillary racemes, panicles or solitary. Bracts minute. Calyx cup-shaped, accrescent in fruit. Petals 3, 5 or 6, more or less cohering. Fertile stamens usually 3, rarely 4-5. Staminodes 5-6, usually bifid; rarely undivided anthers versatile. Ovary half immersed in the disc, 3-loculed at base, 1-loculed above; style simple; stigma 3-lobed. Fruit drupaceous, more or less covered by accrescent calyx. Seed 1.

Tropical Africa, Madagascar, Indo-Malaya and Australia; about 55 species, 6 in India.

KEY TO THE SPECIES

1a. Plants armed
   b. Plants unarmed
2a. Flowers solitary, axillary
   b. Flowers in axillary racemes
3a. Petals 3
   b. Petals 5 or 6
4a. Petals 6 combined in 3 pairs
   b. Petals 5
5a. Young branches transversely wrinkled; peduncles ascending, scarcely exceeding the bracts
   b. Young branches not wrinkled transversely; peduncles drooping, longer than the bracts

4. O. scandens
   2
3. O. ana
   3
1. O. acuminata
   4
2. O. imbricata
   5
6. O. zeylanica


Shrubs or small trees, up to 10 m tall; branchlets vertically ridged. Leaves ovate-lanceolate to oblanceolate, up to 16 x 6 cm, acute or acuminate,
entire, membranous; petiole 4-7 mm long, margined. Flowers white or greenish yellow in axillary, solitary or fasciculate racemes, 3-4 mm across. Calyx 3-toothed. Petals 3, oblong. Stamens 3. Drupes ellipsoid or ovoid, 15-20 x 10-12 mm, orange-red when ripe.

*Fl. & Fr.*: Most Part of the year.

*Distrib.* India: In forests from 1000-1500 m. West Bengal, Assam, Arunachal Pradesh, Tripura and Meghalaya.

Bhutan, Bangladesh and Myanmar.


Arboreous climbers, unarmed. Leaves oblong or ovate-oblong to narrowly elliptic, up to 15 x 7.5 cm, acute, entire, coriaceous, nerves prominent beneath; petiole up to 1 cm long. Flowers white, in axillary, dense racemes, racemes hardly exceeding the petiole. Bracts up to 0.5 mm long, broadly ovate, sparsely tomentose when young, becoming glabrescent later. Calyx glabrous dorsally. Petals ca 9 mm long, glabrous on dorsal surface. Drupes ovoid-globose, enclosed by the accrescent, leathery calyx.

*Fl. & Fr.*: Oct.–May.

*Distrib.* India: Along slopes and in dense mixed forest. West Bengal, Maharashtra, Tamil Nadu and Andaman & Nicobar Islands.

Myanmar, Sri Lanka, Indo-China, Thailand, Malay Peninsula, S.W. China, Taiwan, New Guinea, Solomon island and Micronesia.


Fig. 2.

Low undershrubs; rootstock woody. Leaves oblong-lanceolate, up to 6 x 1.5 cm, entire, glabrous, deep green above, glaucous beneath, recurved at
Fig. 2. Olax nana Wallich ex Benth.
the margin, subsessile. Flowers axillary, solitary, creamy or whitish; pedicels slender, up to 1.2 cm long. Calyx minute, cupular, accrescent in fruit. Petals 3, oblong-obovate, rounded at tip, cohering about half way. Stamens 3. Staminodes 6. Ovary ovoid; style shorter than the stamens. Drupes globose, ca 6 mm across, apiculate, nearly covered by the accrescent calyx, deep yellow when mature.

*Fl. & Fr.*: April May.

*Distrib.* India: In drier places, ascending to 1600 m in to Himalaya and Shiwaliks. Punjab, Uttar Pradesh, Bihar, West Bengal, Assam, Arunachal Pradesh, Meghalaya, Gujarat and Andhra Pradesh.

Pakistan, Nepal and Thailand.

*Note.* A fire resistant species.

4. *Olax scandens* Roxb., Pl. Corom. 2: 2.t. 102. 1798; Masters in Fl. Brit. India 1:575. 1875. Fig. 3.

*Beng.: Koko-am; Hindi: Dhehiani; Tam.: Koelalarachi; Or.: Bodorodia.*

Large rambling or climbing shrubs; branches fulvous pubescent, old branches armed; thorns blunt. Leaves elliptic or ovate-oblong, up to 9.5 x 3.4 cm. obtuse, entire, glabrous above, glabrous or puberulous beneath; petiole ca 0.8 cm long, pubescent. Flowers white in short, axillary, solitary pubescent-densely short hairy racemes, sweet scented. Bracts ovate-oblong, ca 2 mm long, equalling the pedicels, caducous. Calyx cup shaped, finely ciliate. Petals usually 5, rarely 6, more or less connate, linear, cleft, 7-9 mm long. Stamens 3. Staminodes 2-cleft at apex. Ovary ovoid, glabrous; style linear, half as long as the petals; stigma 3-lobed. Drupes globose, yellow, enclosed by accrescent calyx except at tip, apiculate.

*Fl. & Fr.*: April Dec.

*Distrib.* India: Along edges of forests, roadsides near streams and in damp, shady forests. Uttar Pradesh, Bihar, West Bengal, Orissa, Madhya Pradesh, Maharashtra, Andhra Pradesh, Karnataka and Tamil Nadu.
Fig. 3. *Olax scandens* Roxb.
Bangladesh, Myanmar, Sri Lanka, Indo-China, Thailand, Malay Peninsula and Mauritius.

*Note.* Fruits are edible.


*Kan.*: *Gandgisa*; *Mar.*: *Kukarbit, Harduli, Urchirri.*

Large climbing shrubs. Leaves oblong-oval, up to 12 x 4.5 cm, acuminate, **subacute** or obtuse, entire, glabrous and shining; petiole ca 1 cm long. Flowers **white**, in axillary panicles; panicles exceeding the petiole. Bracts oblong, 2.5 mm long, densely brown tomentose on dorsal surface. Calyx dorsally brownish tomentose. Petals sparingly to densely brownish tomentose on dorsal surface. Stamens and staminodes equaling the petals. Drupes oblong or oval, ca 2 cm long, apiculate, orange yellow, enclosed by calyx except at the top.

*Fl. & Fr.:* Dec. May.

*Distrib.* India: In moist deciduous forests. Uttar Pradesh, Maharashtra, Goa, Karnataka, Tamil Nadu, and Kerala.

Sri Lanka.

*Note.* The fruit is eaten and is also said to be used in “Sharbet”. The leaves are used in skin diseases and the root in backache and jaundice.


Large shrubs or small trees; branchlets angular, giving a winged appearance, **transversely** ridged. Leaves ovate-lanceolate or oblong, up to 10 cm long, acuminate or subacute, entire, margins revolute, glabrous, often black-dotted beneath, prominently nerved; petiole 6 mm long. Flowers in short, axillary **glabrous racemes**, white. Petals oblong. Staminodes 2-cleft. Ovary ovoid.
Drupes broadly ovoid, apiculate, about half covered by accrescent, membranous calyx.

*Fl. & Fr.*: April.

Distrib. Peninsular India.

Sri Lanka.

*Uses.* Leaves are eaten as salad.


Trees; branches terete or angled. Leaves simple, alternate, petaioed. Flowers in axillary racemes or spikes, yellow, fragrant. Calyx adherent to the ovary. Corolla tubular, perigynous; limb 4-5 parted. Stamens 4-5, epipetalous. Staminodes absent. Ovary inferior or half superior, surmounted by a fleshy, epigynous disc, 3-loculed below, 1-loculed at the top; style cylindric; stigma capitate, 3-lobed. Drupes surrounded at the base by epicalyx, crowned by remains of calyx and corolla. Stone striated, 1-seeded.

Native of Himalaya and tropical *south America*, also distributed in Myanmar, Indo-China, China, Japan, *Thailand* and *Sumatra*; about 35 species, 3 in India.


**KEY TO THE SPECIES**

1a. Flowers in axillary racemes; bract and bracteoles, connate into a 3-lobed epicalyx
b. Flowers in fascicled, axillary spikes; bracts connate with the apex of each pedicle

2a. Flowers more or less urceolate; corolla tube broadest below ovary
b. Flowers more or less tubular; corolla tube slightly broadened towards throat

1. *S. fragrans*

2. *S. griffithii*

3. *S. jasminodora*

Kh.: *Dieng-Khao-Khorai, Dieng-shlong-khlaw, Dieng sa Niriang.*

Trees, up to 15 m tall. Leaves ovate-lanceolate or elliptic, up to 10 x 3 cm, acuminate, glabrous, entire, thinly coriaceous, petioled; petiole ca 8 mm long, margined. Flowers yellowish white or golden yellow, 3-9; pedicels slender, 5-7 mm long, each supported by an epicalyx of 3 ciliate bracts united into a cup. Calyx accrescent. Petals usually 5, united to 3/4 of their length, 7-8 mm long with a tuft of hairs inside about the middle, recurved at tip. Stamens epipetalous, included. Ovary half superior, loculed above, 3-loculed below, surmounted by a fleshy disc. Drupes ellipsoid, nearly covered by accrescent calyx.


*Distrib.* India: In primary forests between 300-800 m. Arunachal Pradesh, Assam, Nagaland, Manipur and Meghalaya.


*Note.* Wood is used for making guitars.


Middle sized trees; branches elongated, often clustered. Leaves alternate, ovate acuminate, entire; petiole 1-3 mm. Flowers in axillary spikes, many, cream coloured, tinged with purple, fragrant; bracts minute, scale-like. Calyx ring-like. Corolla tube ochraceous, 6-8 mm long. Stamens 5: filaments short, filiform; anthers 2-celled, dehiscing longitudinally. Ovary inferior; style included; stigma 3-lobed. Fruit red or orange, turning black on maturity.

*Distrib.* India: Arunachal Pradesh (Delei Valley).

Bhutan.

Small trees, up to 15 m tall; branches yellowish grey. Leaves ovate, lanceolate or broadly deltoid, up to 6 x 4 cm, cordately acuminate, obtuse at base, coriaceous, entire; petioles broad, up to 7 mm long. Flowers sessile, in long racemes or 3-4-flowered spikes, orange-brown or yellowish, fragrant. Corolla tubular, 6-7 mm long. Ovary inferior. Drupes up to 1.2 cm long, 1-seeded.

*Distrib.* India: In tropical forests, up to 1000 m. Manipur and Arunachal Pradesh.

Tibet, Myanmar, China, Japan and Macao.

5. *Strombosia* Blume

Shrubs or trees. Leaves simple, alternate. Flowers in cymes or axillary fascicles, small, regular, bisexual. Calyx cup-shaped, inferior or partly superior. Petals 5, valvate, hairy within. Stamens 5, opposite to petals and adnate to them. Staminodes absent. Ovary partly inferior or superior, 5-loculed; ovules pendulous from central placenta. Disc large, fleshy. Fruit a drupe, crowned by remains of calyx lobes and style; stone crustaceous, 1-loculed, 1-seeded.

Tropical Africa, India, Sri Lanka, Myanmar and Malesia; about 17 species, 1 in India.


Medium or large, evergreen trees with white scaly bark. Leaves ovate or oblong-elliptic, up to 17 x 7.5 cm, glabrous, shining, rounded at tip; petiole *ca* 1.5 cm long, glabrous. Flowers small, in axillary fascicles or on woody tubercles. Calyx tube glabrous, campanulate; lobes ovate, obtuse, ciliate. Petals oblong, hairy; lobes ovate, obtuse, ciliate within at tips. Drupes globose, pyriform or oblong-ovoid, 3 x 2.5 cm, pink. Seeds globose, finely tuberculate.