

BASELLACEAE

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A family of 4 genera and ~20 species of succulent twining vines with scant secondary growth, with new stems produced from fleshy underground tubers; less often erect or trailing herbs (*Ullucus*). Represented in the Neotropics by 3 genera and 13 species of vines. A family with tropical distribution but most diverse in subparamo regions of the Andes in South America.

Diagnosics: Succulent, twining vines, usually a few m long, with clear or mucilaginous exudate; leaves alternate, simple, fleshy, with entire (except *Tournonia*), light colored or reddish margins; flowers small; underground parts tuberous. General appearance similar to Phytolaccaceae but distinguished by being herbaceous and having odorless leaves.

General Characters

1. **STEMS.** Most species have herbaceous stems that usually are reddish tinged with scant secondary growth, mostly cylindrical. Two species of *Anredera* are known to have stems that can reach several cm in diameter and many m in length. *Anredera baselloides* (Kunth) Baill. is reported to reach 2.5 cm in diam at the base of cultivated plants and few meters long; *A. tucumanensis* (Lillo & Hauman) Sperling, can reach 5 cm or more in diam., and up to 12 m in length. In most species, the stems die back, and new stems are produced from a tuberous base. Stems of *Anredera baselloides* (Kunth) Baill. and *Basella rubra* L. (= *B. alba* L.) have been reported as having successive cambia that produce isolated strands of vascular tissue. Those of *Anredera tucumanensis* contain axial vascular elements in radial segments (Figure 53B), marked by the presence of wide vascular rays that separate the axial element of the xylem and phloem into discrete radial portions.



Figure 53. *Anredera tucumanensis*. **A.** Branch. **B.** Cross section of stem with vascular elements in radial segments. Photos by P. Acevedo

2. EXUDATES. Clear and odorless, sometimes mucilaginous.
3. CLIMBING MECHANISMS. All climbing species are twiners.
4. LEAVES. Alternate, exstipulate, fleshy (Figure 53A), with entire (except for *Tournonia*), usually reddish, pinkish, or light green margins, cordiform in many species; petioles more or less elongated without glands.
5. INFLORESCENCE. Axillary, short, erect and spicate in *Basella*, long, erect to pendent racemes (sometimes clustered) in *Anredera*, and short dichasial cymes in *Tournonia*.
6. PEDICELS. Of variable lengths, flowers sometimes sessile.
7. FLOWERS. Actinomorphic, bisexual or unisexual; calyx of 2 distinct sepals; corolla of 5 distinct or basally united petals; stamens 5, the filaments adnate to the base of petals, the anthers opening by longitudinal slits or terminal pores; ovary superior, of 3 united carpels, 1-locular, with solitary basal ovule, the styles 3 or rarely one.
8. FRUIT. An utricle, usually fleshy, and covered by a persistent corolla or accrescent calyx; seeds one per fruit.

USES

The tubers of *Anredera* have been used in traditional medicine for the cure of various ailments. *Basella alba* is widely cultivated in the tropics for its edible, spinach-like leaves.



Figure 54. A. Cluster of aerial bulbils in nodal area in *Anredera cordifolia*. B. *Anredera vesicaria*, habit. Photos by P. Acevedo.

Key to the genera of climbing Basellaceae

- 1. Leaves with glandular-dentate margins; inflorescences of compound dichasial cymes
(highlands of Colombia and Ecuador).....*Tournonia*
- 1. Leaves with entire margins; inflorescences spicate or racemose.....2
- 2. Inflorescence of solitary or clustered racemes; corolla with petals connate only at the base,
neither accrescent nor fleshy; stamens inserted at the base of the corolla (Neotropics)
.....*Anredera*
- 2. Inflorescence a short, erect spike; corolla urceolate, tubular, 5-lobed, accrescent, and fleshy,
surrounding the fruit; stamens inserted on the upper portion of the corolla tube (Neotropics)
.....*Basella*

ANREDERA Jussieu, Gen. Pl. 84. 1789.

Herbaceous twining vines, few m long but up to 10 m in *A. vesicaria* (Lam.) Gaertn.



Anredera cordifolia, photo by B. Hammel.

Stems usually fleshy, with scant secondary growth but reaching 2–2.5 cm in diam. in *A. baselloides* and *A. vesicaria*, and in *A. tucumanensis* 4-5 cm; *Anredera baselloides* known to produce successive cambia that

generate isolated strands of vascular tissue, and *A. tucumanensis* to *tucumanensis* to have wide rays separating the vascular elements in radial segments. Leaves alternate, slightly succulent, simple, with entire, colored margins, petiolate. Clusters of aerial bulbils sometimes produced in nodal area (Figure 54A). Inflorescences axillary, simple or clustered racemes. Flowers actinomorphic, bisexual or functionally unisexual, in pendulous, axillary, simple or clustered racemes. Calyx of 2 free sepals, much shorter than the corolla, united to the petals at the base; corolla not accrescent, 5 white or cream petals connate at the base; stamens 5; filaments free or connate and united to the petals, anthers oblong, dehiscent by longitudinal sutures; ovary superior, of 3 carpels, styles 3, free or connate at the base, as long as the ovary. Fruit an utricle, partly or fully enclosed by a persistent dry perianth.

Distinctive features: Plants fleshy with tuberous base; stems, herbaceous, twining, and usually reddish; leaves with entire, reddish or light green margins; aerial bulbils produced in clusters at the nodes; inflorescence a raceme.

Distribution: A genus of twining herbaceous vines with 12 species native to continental tropical America and likely introduced in the West Indies where it has become invasive on some of the islands (Figure 54B).

BASELLA Linnaeus, Sp. Pl. 272. 1753.

Herbaceous, succulent, twining vines, decumbent or creeping herbs, with thick, fibrous or



Basella alba, photo by P. Acevedo.

tuberous roots. Stems fleshy much branched.

Leaves alternate, succulent, simple, entire, and

petiolate. Inflorescence axillary, simple or

branched spikes. Flowers actinomorphic, bisexual

white or pinkish tinged, small. Calyx of 2 white or

pale green sepals, free to the base, much shorter

than the corolla, united to the petals at the base;

corolla tubular, urceolate, 5-lobed, succulent;

stamens 5, with short filaments, inserted on the

upper portion of the corolla tube, anthers dehiscent

by longitudinal sutures; ovary superior, globose or

pyriform, of 3 carpels, uniovulate, styles 3, free to

the base. Fruit an utricle, partly to completely

cover by the persistent, accrescent, sometimes

fleshy corolla.

Distinctive features: Plants fleshy, mucilaginous, with herbaceous, twining stems; leaves with entire and light green margins; spikes usually erect and short.

Distribution: A genus of twining vines with 5 species native to Africa or Madagascar. *Basella alba* L. is widely cultivated in the Neotropics and is known to be naturalized in Panama and Brazil.

TOURNONIA Moquin-Tandon in A. de Candolle, Prodr. 13(2): 225. 1849.

Herbaceous, succulent, twining vines, much branched from a thickened base. Leaves alternate, succulent, simple, cordiform, with glandular-dentate margins, petiolate. Inflorescence a short, axillary dichasium. Flowers actinomorphic, bisexual, greenish, small. Calyx of 2 pale green sepals, free to the base; corolla of 5 greenish petals connate at the base; stamens 5, connate and adnate to the petals at base, anthers basifixed, dehiscent by longitudinal sutures; ovary superior, globose, obscurely 6-ridged, 3-carpellate, styles 3, free to the base. Fruit an utricle, partly covered by the persistent perianth.

Distinctive features: Plants fleshy, mucilaginous, with herbaceous, twining stems; leaves cordiform with glandular-dentate margins; inflorescence a dichasium. *Tournonia* superficially resembles the genus *Cissus* (Vitaceae), but it is easily distinguished by the lack of tendrils and stipules.

Distribution: A genus of a single species distributed in subparamo and scrubs of the Andean valleys from southern Colombia to northern Ecuador; 2,500–3,600 m.