
Peridiscaceae

Peridiscaceae Kuhlman, Arq. Serv. Florest. 3:4 (1950), nom. cons.

C. BAYER

Trees, glabrous or with an indumentum of long simple hairs. Leaves alternate, simple, entire, basal veins prominent or (*Soyauxia*) not so; petiole present, pulvinate; stipules intrapetiolar, almost amplexicaul, enclosing vegetative buds, caducous or (*Soyauxia*) free. Flowers in axillary, elongated or condensed racemes, pedicellate, actinomorphic, hermaphroditic, hypogynous, scented; sepals 4–7, free, imbricate; petals 5 (*Soyauxia*), otherwise 0; corona short, entire (*Soyauxia*); stamens numerous, distinct or fused at the base; anthers bisporangiate or (*Soyauxia*) tetrasporangiate, opening by a longitudinal slit or lateral flaps; disk intrastaminal, in *Peridiscus* enclosing more than half of the ovary; gynoecium syncarpous, 3–4(5)-carpellate; ovary unilocular, free or partly sunken into the disk, glabrous or pubescent, in *Soyauxia* with a central column; stylodia distinct, ending in subulate stigmatic tips; ovules usually 6–8, pendulous from the top of the locule. Fruits drupaceous or (*Soyauxia*) capsular, 1-seeded; endosperm abundant, horny; embryo small.

A tropical lowland family of three genera, one in West Africa, and two from tropical South America.

VEGETATIVE STRUCTURES. In the American genera, the intrapetiolar stipules are early caducous and leave oblique, almost amplexicaul scars. On the lower surface of the leaves, pits are found in the axils of the prominent basal veins and, more rarely, of other first-order lateral veins. These pits seem to be glandular and resemble domatia.

The anatomy of the three genera was studied by Record (1941), Normand (1960), Metcalfe (1962) and Miller (1975). Some cells of leaves and stems contain calcium oxalate crystals. Stomata are anomocytic and restricted to the abaxial leaf surface. Two cylindrical vascular strands are present in the distal portion of the petiole. The cortex of the stem contains secretory cells and few fibres. The phloem is enclosed by a ring of sclereids and

fibres. The wood includes very long libriform fibres, tall, uniseriate-homocellular or (in *Soyauxia*) -heterocellular and (in *Peridiscus* and *Whittonia*) pluriseriate-heterocellular rays with elongate ends, and abundant, diffuse parenchyma. Vessel-segments have scalariform perforation-plates and scalariform to opposite lateral pitting; those of *Soyauxia* are exceptionally long (1,769–2,653 μm). Medullary bundles are present in *Peridiscus* but lacking in *Whittonia* and *Soyauxia*.

REPRODUCTIVE STRUCTURES. The inflorescences usually arise from the axils of persisting or fallen leaves on indeterminate shoots. In *Peridiscus*, the flowers are arranged in elongated, open racemes with persistent bracts; the pedicels are devoid of prophylls. Several racemes may be arranged in (cymose?) clusters. The inflorescences of *Soyauxia* are similar, whereas *Whittonia* has axillary clusters which might represent condensed racemes.

A short, tubular corona with entire margin is present in *Soyauxia*, which therefore sometimes has been included in Paropsieae/Passifloraceae or Flacourtiaceae, but its homology with the corona in Passifloraceae is doubtful.

The stamens of *Whittonia* are basally united to groups. The fused filament bases form an elevation on the receptacle, commonly interpreted as a disk. In *Peridiscus*, the disk is lobed and encloses the major portion of the ovary. The arrangement of the stamens does not exhibit any apparent order but the inner stamens are much shorter than the peripheral ones. Nevertheless, it is unknown if this difference is due to a centripetal development of the androecium.

The junction between the flattened base of the anthers and the tapering tip of the filaments is somewhat flexible. In most stamens of *Peridiscus* and *Whittonia*, only two pollen sacs are visible, and their anthers are usually described as monothechal (e.g. Kuhlmann 1947; Sandwith 1962, but not Hutchinson 1967). It is not yet clear how these an-

thers develop. Since single filaments with two bisporangiate "anthers" and pair-wise, partly fused filaments are occasionally found, it cannot be excluded that the bisporangiate stamens correspond to split tetrasporangiate ones. Fusion to various degrees between adjacent filaments occurs in many flowers of *Peridiscus*. The tetralocular anthers of *Soyauxia*, which dehisce by flaps, are distinct.

According to the description given by Kuhlmann (1947), the mature fruit of *Peridiscus* contains a single seed, in which the minute, straight embryo is found in a cavity adjacent to the chalaza. The embryo is provided with membranous, ovate to lanceolate cotyledons and a short, thick radicle. The seeds of *Soyauxia* and *Peridiscus* share a distinctive seed coat of collapsed black cell walls and massively thickened, probably hemicellulosic endosperm cells (P.F. Stevens, pers. comm.).

POLLEN MORPHOLOGY. The pollen grains are small and tricolporoidate (Sandwith 1962); those of *Soyauxia* are tricolpor(oid)ate/reticulate (Erdtman 1952; Brenan 1953).

AFFINITIES. *Peridiscus* was originally described in Flacourtiaceae and subsequently was usually treated as a doubtful genus of Flacourtiaceae. By contrast, Hallier (1908) found most agreement between *Peridiscus* and Capparidaceae (*Stixis*, *Forchhammeria*). Metcalfe (1962) and Miller (1975) pointed to anatomical and morphological characters shared by *Peridiscus* and *Whittonia*, justifying their family rank distinct from Flacourtiaceae. *Soyauxia*, transferred from Passifloraceae to Medusandraceae by Brenan (1953: Medusandraceae) but retained in Paropsieae-Passifloraceae by Takhtajan (1997), had also been allied to *Peridiscus* and *Whittonia* (Metcalfe 1962; Sandwith 1962). This suggestion is substantiated by morphological features common to the three genera, such as inflorescence type and position, the shape of stamens (tetrasporangiate in *Soyauxia* but otherwise similar), the three- or four-carpellate, unilocular ovary surrounded by a disk, the number and position of ovules, the distinct stylodia with subulate stigmas, the small embryos, and the occurrence of crystal idioblasts in the leaf epidermis.

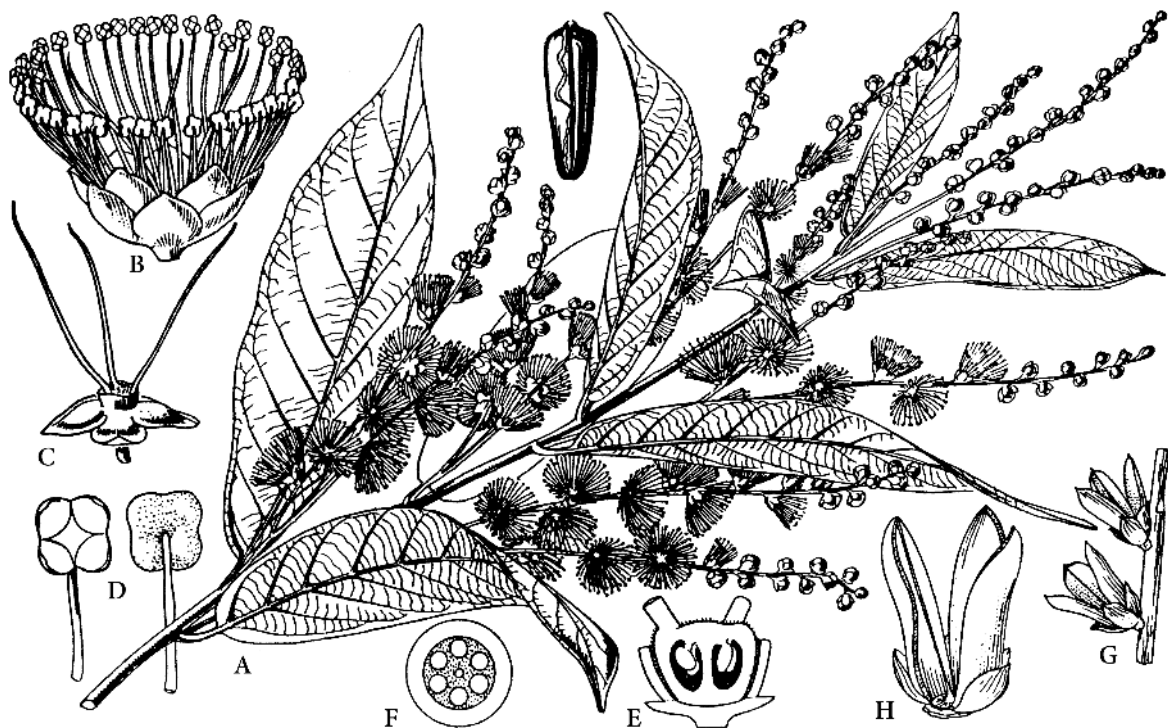


Fig. 102. *Peridiscaceae. Soyauxia floribunda.* A Flowering branch. B Flower. C Same, petals and stamens removed. D Stamens, front and back, showing peltate 4-celled anther. E Ovary, vertical section. F Ovary, transverse section.

G Two dehiscent fruits. H Dehiscent fruit, showing persistent central column attached at base to ovary and at apex to left-hand valve. I Seed. (Hutchinson and Dalziel 1954)