

***Passiflora incarnata* L.**
Passionflower Aerial Parts
Passiflorae Herba
Passifloraceae

Passionflower is widely used worldwide as a calming nervine, sedative, and antihypertensive. All the above-ground parts, including vines, leaves, flowers, and fruits, are used. Many species of *Passiflora* are traded; the primary species used medicinally are *P. incarnata* and *P. edulis*. Microscopically, these species are almost indistinguishable.

A. Leaf

Surface view: Cells of both surfaces have sinuous anticlinal walls except along major veins, where the cells are rectangularly elongated with somewhat beaded anticlinal walls; anomocytic stomata approximately 20–25 μm long are infrequent on the upper epidermis, but abundant on the lower one; unicellular or uniseriate (two- or three-celled) covering trichomes, approximately 80–250 μm long, are located predominantly along veins; these are thick walled, straight, slightly curved, or hooked with an acute or sometimes pointed apex; in uniseriate trichomes, the cell walls between the cells are much thinner than the outer walls, and the terminal cell is much longer than the other cells; numerous calcium oxalate cluster crystals in the mesophyll, up to 25 μm diameter, are visible along the veins, either solitary or in rows.

Transverse section: Bifacial; remarkably thick cuticle; palisade cells are in one layer; very dense, spongy mesophyll consists of small roundish cells; cluster crystals are predominantly in the spongy parenchyma.

B. Petiole

Surface view: Epidermal covering trichomes are similar to those of the leaf.

Transverse section: Roundish in outline, with two wings toward the blade; a broad band of collenchyma lies interior to the epidermis; vascular bundles are arranged in a concentric ring, with two small ones in the wings; calcium oxalate cluster crystals occur in the parenchyma.

C. Stem

Surface view: Epidermis with uniseriate, one- to five-celled covering trichomes resembling those of the leaf.

Transverse section: Interior to the epidermis lies a band of collenchyma containing abundant calcium oxalate cluster crystals, up to 40 μm diameter, arranged in rows; cortex of parenchyma and large groups of fibers, infrequent cluster crystals; secondary phloem has abundant calcium oxalate cluster crystals, up to 25 μm diameter, arranged in rows; the cambial line is frequently sinuous; secondary xylem forms a solid ring around the pith; it consists of cuneiform groups of vessels with a conspicuous large vessel (up to 300 μm diameter) near the cambium; tracheids are found between the vessels; medullary rays of thickened and pitted parenchyma cells; pith parenchyma cells are slightly thickened and pitted; a pith cavity occurs in older stems; starch is infrequent.

Longitudinal section: Wavy surface edge; epidermis with a thick cuticle; vessels and the heavily thickened medullary ray cells have conspicuous bordered pits. Numerous polygonal, thick-walled epidermal cells covering trichomes like on the leaf.

D. Tendril

Transverse section: The basic structure is similar to that of the stem; cortex of collenchyma and parenchyma, separated from secondary phloem by an endodermis of larger cells; secondary phloem contains small groups of fibers; secondary xylem consists of several cuneiform groups of vessels and lignified medullary rays of thickened and pitted cells; very large central parenchymatous pith occupies the largest portion of the section.

E. Flower (may be absent or present in very small numbers)

Surface view: Sepals are similar to leaves; petals have papillose epidermis; tricolpate pollen grains, 60–75 μm diameter, with reticulate exine.

F. Fruit (usually absent)

Transverse section: Brown pericarp with calcium oxalate cluster crystals; endocarp has thickened sclereids.