

Valeriana officinalis L. **Valerian Rhizome and Root**

Valerianae Rhizoma et Radix
Valerianaceae

Valerian root has been used since at least the ninth century for its sedative qualities. Numerous clinical trials suggest that it is a safe and effective, nonaddictive sleep aid. *V. officinalis* is widely cultivated and is not commonly subjected to adulteration, though other species of *Valeriana* are traded internationally.

A. Root

Surface view: Polygonal epidermal cells, slightly axially elongated, yellow-brown, with some cells modified into root hairs; cork is infrequent.

Transverse section: Yellow-brown epidermis, outer cell wall convex, some cells modified into root hairs; Much larger hypodermal cells are polygonal or quadratic and frequently contain oil droplets; wide cortex consists of spheroidal, moderately thickened parenchyma cells containing large amounts of starch; endodermis is brown and cells are tangentially elongated; central stele is small; in older roots, the phloem and xylem form a continuous ring around a small pith; vessels are up to 60 μm diameter.

Longitudinal section: Epidermis and hypodermis quadratic or slightly axially elongated; cortical cells elongated; reticulate, scalariform, or bordered-pitted vessels.

B. Rhizome

Surface view: Polygonal cork cells.

Transverse section: Cork cells are polygonal, almost quadratic; broad cortex consists of spheroidal parenchyma cells containing large amounts of starch; endodermis is dark brown; stele with numerous circularly arranged cuneiform vascular bundles; vessels up to 30 μm diameter; stele often shows branching into lateral roots and stolons, so the general arrangement of bundles appears irregular; large pith is composed of large parenchyma cells with occasional sclereids in the center; in older rhizomes, differentiation between the internodes and the nodes takes place within the pith such that internode cells remain thin

walled, while cells at the nodes have slightly thickened and pitted walls.

Longitudinal section: Spiral, reticulate, or bordered-pitted vessels; pith of younger rhizomes appears homogeneous, while in older ones, thickened and pitted cells occur at the nodes and alternate with thin-walled cells at the internodes; in much older rhizomes, the pith parenchyma ruptures, forming lacunae separated by thickened parenchyma.

C. Stolon

Surface view: Rectangular epidermal cells are slightly elongated in the axial direction.

Transverse section: Small, quadratic epidermal cells; subepidermal cork formation occasionally occurs, polygonal cork cells; wide cortex consists of parenchyma containing starch; brown endodermis; stele is composed of a ring of small vascular bundles, each separated from adjacent bundles by parenchymatous medullary rays; central pith is large.

Longitudinal view: Similar to the root.

Starch: Abundant in cortical parenchyma of the stolon, rhizome, and root; granules are simple or compound in aggregates of up to four granules; cleft- or star-shaped hilum; largest granules are up to 20 μm diameter.

Powder: Grayish brown; characteristic aroma is unpleasant; taste is slightly sweet, becoming aromatic and bitter. Parenchyma of cortex and pith, fragments of reticulate, spiral, or bordered-pitted vessels; sclereids are infrequent; starch (water).

