## *Rheum* spp. (*Rheum officinale* Baillon, *Rheum palmatum* L., *Rheum tanguticum* Maxim. ex Balf.)

### Chinese Rhubarb Root and Rhizome

*Radix et Rhizoma Rhei*

**Pinyin: Da huang**

**Sanskrit: Amla-vestasa**

*Polygonaceae*

Many species of *Rheum* are used worldwide for their laxative properties. The European pharmacopoeia accepts *Rheum officinale* and *Rheum palmatum,* as well as hybrids of these species. The Chinese pharmacopoeia accepts *Rheum tanguticum*. When viewed microscopically, the vascular tissue is observed as a radiate structure of dark orange medullary rays and light-colored parenchyma of the secondary xylem. This disappears during boiling with chloral hydrate because the mounting fluid dissolves the dark orange anthraquinones. During clearing, all tissues become yellow. The various species of rhubarb are generally used interchangeably.

### *A. Root*

**Transverse section:** Narrow cork; cortex consists of colorless, thin-walled cells; secondary phloem cells are thin walled; interior to the vascular cambium, parenchyma predominates; vessels of the secondary xylem are nonlignified and up to 100 µm diameter, occurring singly or in small groups; medullary rays are one or two cells thick; parenchyma cells throughout may contain calcium oxalate cluster crystals of varying size but up to 100–140 µm diameter; primary xylem is visible in the center.

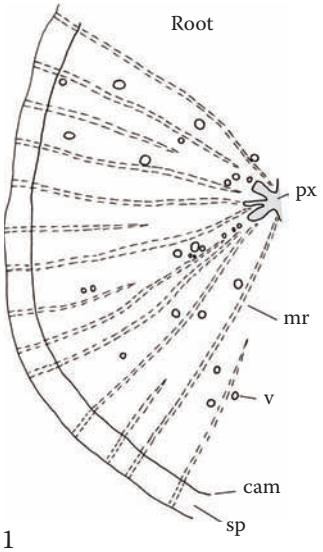
**Longitudinal section:** Nonlignified, scalariform, or reticulate vessels.

### *B. Rhizome*

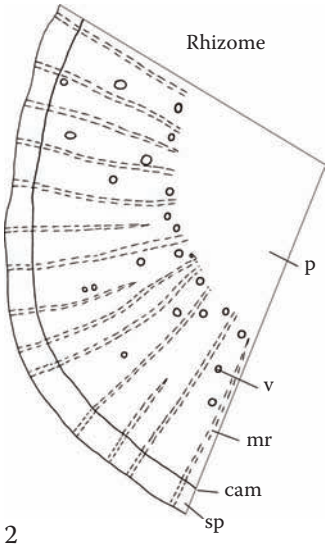
**Transverse section:** The structure of the rhizome is very similar to that of the root, except that it has a broad pith in the center; anomalous secondary thickening produces amphivasal vascular bundles in the pith of older rhizomes; these bundles are called star spots due to their stellate appearance in transverse section; a transverse section of the rhizome will yield transverse, longitudinal, and oblique views of the anomalous bundles.

**Starch:** Abundant; simple or compound granules in aggregates of two to four, more or less spherical, 4–20 µm diameter; hilum is typically a cleft or radiating split.

**Powder:** Yellow (addition of a droplet of potassium hydroxide changes the color to red); fragments of parenchyma with large calcium oxalate cluster crystals predominate; scalariform or reticulate vessels; lignified tissue is absent; starch.




1




2