

***Glycyrrhiza uralensis* Fisch. ex DC., *Glycyrrhiza inflata* Batalin, *Glycyrrhiza glabra* L.**

**Licorice Root**

*Radix Glycyrrhizae*

Pinyin: Gan cao

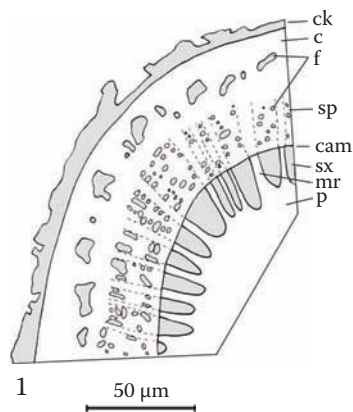
Sanskrit: Yastimadhu

*Fabaceae*

Licorice root is one of the most commonly used botanicals in the herbal materia medica of many cultures. In Western herbal tradition, it is predominantly used for its demulcent properties and in Chinese tradition it is used for its actions as a strengthening tonic. The Chinese pharmacopoeia accepts the root and rhizome of *Glycyrrhiza uralensis* Fisch. ex DC., *Glycyrrhiza inflata* Batalin, and *Glycyrrhiza glabra* L. as licorice root, or gan cao. In the West, *G. glabra* is primarily used. The microscopic characterizations of these species are identical with standard light microscopy.

**A. Stolon**

**Transverse section:** Cork composed of polygonal cells arranged in regular rows; cortex contains large bundles of fibers; secondary phloem with smaller bundles of fibers and medullary rays three to five cells wide; outside the cambial region, sieve cells are compressed; secondary xylem radiate, consisting of strands of large vessels (up to 120  $\mu\text{m}$  diameter) mixed with parenchyma and groups of



fibers ensheathed by calcium oxalate prisms up to 20  $\mu\text{m}$  long; these strands alternate with medullary rays three to five cells wide; large central pith.

**Longitudinal section:** Vessels are generally bordered pitted, but may be reticulate or scalariform.

**B. Root**

**Transverse section:** Secondary roots are similar in structure to stolon, except that primary xylem rather than pith occurs in the center.

**Starch:** Abundant in parenchyma cells of stolon and root; simple granules, spherical, elliptical, or ovoid, 3–15  $\mu\text{m}$  diameter.

**Powder:** Fragments of parenchyma cells containing starch; fiber bundles with prism crystals of calcium oxalate in a crystal sheath; bordered-pitted, reticulate, or scalariform vessels; cork; starch.

