

***Panax ginseng* C. A. Mey.**  
**Asian Ginseng Root (Cultivated,  
Unprocessed)**

*Radix Ginseng*

Pinyin: Ren shen, yuan shen, shan shen (wild)

*Araliaceae*

Asian ginseng is one of the most highly regarded of energizing tonics in the entire Chinese materia medica. It has also become one of the most popularly used of all herbal tonifiers in the West and has been incorporated into myriad products from traditional foods to dietary supplements, textiles, and cosmetics. There are various forms and qualities of Asian ginseng, including wild (shan shen), cultivated (yuan shen), woods grown (linxia shen), processed red without sugar (hong shen or hong ren shen; see separate entry), and processed red with sugar (tang ren shen), to name only a few. An initial review of these different types suggests that they are microscopically almost identical. Steaming, however, turns starch granules into gelatinous masses that give the parenchyma cells of red ginseng a swollen appearance. There are also different species of *Panax* (e.g., *P. ginseng*, *P. quinquefolius*, and *P. pseudo ginseng*). These are typically not confused in trade, but a microscopic differentiation of these species is provided (see separate entries).

**Transverse section:** Cork consists of thin-walled, regularly arranged parenchyma cells; thin phelloderm of slightly thickened cells; inside the phelloderm, parenchyma

containing abundant calcium oxalate cluster crystals ~20–40  $\mu\text{m}$  diameter occurs with no medullary rays; secondary phloem is characterized by narrow radial lines of conducting cells alternating with broad medullary rays; sieve and companion cells are smaller and slightly darker than the surrounding parenchyma and often have wavy cell walls; secretory ducts, up to 120  $\mu\text{m}$  diameter, are arranged in concentric lines in the phloem, with the smallest ones near the cambium; epithelial cells of the ducts and parenchyma cells surrounding the larger secretory ducts are filled with yellow-brown masses; secondary xylem of narrow strands of vessels separated by broad medullary rays that contain frequent calcium oxalate cluster crystals; vessels up to 45  $\mu\text{m}$  diameter; primary xylem of small vessels occurs in the center of the root; fibers and sclereids are lacking throughout.

**Longitudinal section:** Secretory ducts with yellow-brown oil droplets and vessels that are solitary or in small groups are found in a matrix of parenchyma; most vessel members have scalariform or reticulate wall thickenings.

**Starch:** Abundant in all parenchyma cells; simple or compound granules, with individual granules roundish or slightly angular in outline and up to 15  $\mu\text{m}$  diameter.

**Powder:** Fragments of cork in surface view; parenchyma cells, some with yellow-brown contents or calcium oxalate cluster crystals; secretory ducts in longitudinal section; vessels with scalariform or reticulate wall thickenings; starch.

