

Panax ginseng C. A. Mey.; *P. quinquefolius* L.

Standardized Common Name: Asian Ginseng; American Ginseng

Other Common Names: Ginseng; Korean Ginseng, Oriental Ginseng (*P. ginseng*); Seng (in English meaning *P. quinquefolius*, in Chinese a general term for tonic roots)

Family: Araliaceae

Taxonomy: *Panax* includes about 11 species of perennial herbs with medicinal roots. Most are native to eastern Asia, including *P. ginseng*; two, including *P. quinquefolius*, are native to eastern North America. (These two regions have relatively similar climates, and there are a surprising number of genera that share this distribution.) *Panax ginseng* and *P. quinquefolius* are very closely related and are similar in appearance. Their root morphology is variable and overlapping, so that isolated roots of the two plants cannot be reliably distinguished by morphology alone. The most frequently encountered synonym for *P. ginseng* is *P. schinseng* Nees.

Description: Perennial herb with short vertical rhizome and long taproot. Taproot tapering or cylindrical, 0.5–2.5(–5) cm in diameter, often branching, yellowish, with slender secondary roots; adventitious roots often arise from rhizome. Stem erect, to 60 cm high, unbranching. Leaves 1–6, increasing in number in older plants, whorled, long-petioled, palmately compound; leaflets 5, the 2 basal leaflets 2–4 cm long and elliptic to ovate, the 3 central leaflets 4–15 cm long and oblong to elliptical or slightly obovate; leaflet apices acuminate, bases cuneate to oblique; margins coarsely serrate with few small hairs (*P. quinquefolius*) or finely serrate and hairless (*P. ginseng*). Inflorescence a simple umbel, hemispherical, terminal, borne on peduncle 7–20 cm long. Flowers 2–3 mm in diameter, hermaphroditic; calyx 5-toothed, green; petals 5, creamy, ovate; stamens 5; ovary inferior, styles 2. Fruit a head of fleshy drupes, each 5–9 mm in diameter, subspherical, bright red, containing 2 seeds; seeds creamy, reniform, 5–6.5 mm long.

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Parts in Commerce: Root with rhizome

Identification:

- Tapering or cylindrical taproot, 2.5–15(–25) cm long, 0.5–2(–2.5) cm in diameter
- Often curved; usually with 1–several large branches in lower part, branches forked or curving outward or parallel and downward-pointing; “classic” form has 2 major branches making root “man-shaped”
- Bearing long slender rootlets, often numerous if not removed in processing; rootlet surface bears inconspicuous tubercles or sometimes noticeable warts
- Upper end is vertical rhizome, 1–4 cm long, usually 0.3–1.5 cm in diameter, curved, with few stem scars and adventitious rootlets if not removed; uppermost stem scars circular, the lower often compressed
- Outer surface yellowish, with numerous shallow circular wrinkles and with fine longitudinal wrinkles and root scars on lower portion, except in processed product (typically of lesser quality) that has bark removed, in that case white with longitudinal striations
- Fracture hard, starchy; fractured surface yellowish white with brownish cambium layer
- In cross-section, shows several rows of cork cells; narrow cortex containing yellow to yellowish-brown or orange resin canals, numerous small patches of phloem along cambium opposite xylem rays; brownish yellow cambium; central xylem occupying most of diameter, radiate, with numerous xylem rays, containing few large vessels, separated by broader, paler rays of parenchyma
- Odor fragrant, often weak
- Taste weak, both sweetish and bitter, mucilaginous

If the geographic origin of a given root is not known with certainty, it may not be possible to determine which species it belongs to except by chemical fingerprinting, as the ginsenosides and other constituents of the two species differ. *P. quinquefolius* is typically smaller than *P. ginseng* and unprocessed root material has paler yellow outer cork, but there is considerable overlap. Small rootlets are reliably few in number in *P. quinquefolius*, whereas in *P. ginseng* there may be few or many present.

Ginseng grown under natural conditions has a more contorted appearance than cultivated ginseng and is preferred by traditional Chinese users, who consider it to be more potent. The evidence for this belief is minimal to nonexistent, and the preference for wild ginseng threatens native populations with extinction. Several processed forms exist, including “red ginseng,” which is (or should be) made only from *P. ginseng*. Roots are steamed or soaked in a mixture of alcohol and herbs, resulting in a translucent appearance and red-brown pigmentation throughout. According to tradition, the roots should be at least 5 years old, and there is some evidence that roots do become more potent

at that age, so very small roots should be avoided. One stem scar appears for every year of growth after the first, so a 5-year-old root should have 4 stem scars; stem scars are not always easy to count.

Adulteration: As ginseng is expensive and increasingly scarce, deliberate adulteration is fairly common. Other species of *Panax* are morphologically distinct; ginseng has also been found to be adulterated with the roots of numerous unrelated plants. All of these, if sufficiently intact, should be easily distinguishable from ginseng. (Powdered ginseng has been adulterated with almost everything.)

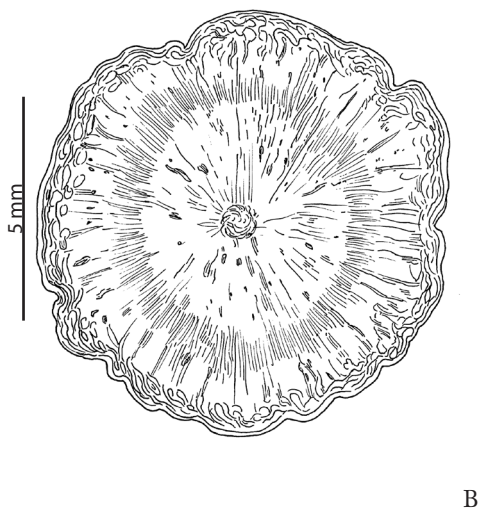


Figure 50: b, *P. quinquefolius* root cross-section.



Figure 50: a, *Panax quinquefolius* whole root.