

hairs; furthermore, multicellular glandular hairs, epidermis with stomata, fragments of palisade tissue, rosette aggregates of calcium oxalate, and starch grains. Fiber is thick-walled, with somewhat distinct pits; unicellular hair shows small point-like protrusions on the surface; palisade tissue consisting of circular parenchyma cells in surface view, each cell containing one rosette aggregate of calcium oxalate which is about 20  $\mu\text{m}$  in diameter. Starch grains consisting of simple grains but rarely of 2-compound grains, ovoid to spherical, 5 – 30  $\mu\text{m}$  in diameter, with distinct hilum.

**Identification** Boil 0.1 g of Powdered Geranium Herb with 10 mL of water, filter, and to the filtrate add 1 drop of iron (III) chloride TS: a dark blue color develops.

**Purity** Foreign matter—Under a microscope, Powdered Geranium Herb reveals no stone cells.

**Total ash** Not more than 10.0%.

**Acid-insoluble ash** Not more than 1.5%.

**Extract content** Dilute ethanol-soluble extract: not less than 15.0%.

## Ginger

### *Zingiberis Rhizoma*

シヨウキョウ

Ginger is the rhizome of *Zingiber officinale* Roscoe (*Zingiberaceae*).

**Description** Irregularly compressed and often branched massive rhizome or a part of it; the branched parts are slightly curved ovoid or oblong-ovoid, 2 – 4 cm in length, and 1 – 2 cm in diameter; external surface grayish white to light grayish brown, and often with white powder; fractured surface is somewhat fibrous, powdery, light yellowish brown; under a magnifying glass, a transverse section reveals cortex and stele distinctly divided; vascular bundles and secretes scattered all over the surface as small dark brown dots. Odor, characteristic; taste, extremely pungent.

**Identification** To 2 g of pulverized Ginger add 5 mL of acetone, shake for 3 minutes, filter, and use the filtrate as the sample solution. Separately, dissolve 1 mg of [6]-gingerol for thin-layer chromatography in 1 mL of acetone, and use this solution as the standard solution. Perform the test with these solutions as directed under the Thin-layer Chromatography. Spot 10  $\mu\text{L}$  of the sample solution on a plate of silica gel for thin-layer chromatography. Develop the plate with a mixture of hexane, acetone and acetic acid (100) (10:7:1) to a distance of about 10 cm, and air-dry the plate. Spray evenly the plate with 2,4-dinitrophenylhydrazine TS, and heat at 105°C for 10 minutes: one of the spots from the sample solution and a brown spot from the standard solution shows the same color tone and *R<sub>f</sub>* value.

**Total ash** Not more than 8.0%

## Powdered Ginger

### *Zingiberis Rhizoma Pulveratum*

シヨウキョウ末

Powdered Ginger is the powder of Ginger.

**Description** Powdered Ginger occurs as a light grayish brown to light grayish yellow powder. It has a characteristic odor and an extremely pungent taste.

Under a microscope, Powdered Ginger reveals mainly starch grains and parenchyma cells containing them; also, parenchyma cells containing yellow-brown to dark brown resinous substances or single crystals of calcium oxalate; fragments of fibers with distinct pits; fragments of spiral, ring and reticulate vessels, and rarely fragments of cork tissue; starch grains composed of simple, compound or half-compound grains, spherical, ovoid or globular, with abaxial hilum, usually 20 – 30  $\mu\text{m}$  in long axis.

**Identification** To 2 g of Powdered Ginger add 5 mL of acetone, shake for 3 minutes, filter, and use the filtrate as the sample solution. Separately, dissolve 1 mg of [6]-gingerol for thin-layer chromatography in 1 mL of acetone, and use this solution as the standard solution. Perform the test with these solutions as directed under the Thin-layer Chromatography. Spot 10  $\mu\text{L}$  of the sample solution on a plate of silica gel for thin-layer chromatography. Develop the plate with a mixture of hexane, acetone and acetic acid (100) (10:7:1) to a distance of about 10 cm, and air-dry the plate. Spray evenly the plate with 2,4-dinitrophenylhydrazine TS, and heat at 105°C for 10 minutes: one of the spots from the sample solution and a brown spot from the standard solution shows the same color tone and *R<sub>f</sub>* value.

**Purity** Foreign matter—Under a microscope, Powdered Ginger does not show stone cells, lignified parenchyma cells and other foreign matter.

**Total ash** Not more than 8.0%.

**Containers and storage** Containers—Tight containers.

## Ginseng

### *Ginseng Radix*

ニンジン

Ginseng is the root of *Panax ginseng* C. A. Meyer (*Panax schinseng* Nees) (*Araliaceae*), from which rootlets have been removed, or the root has been quickly passed through hot water.

**Description** Thin and long cylindrical to fusiform root, often branching 2 to 5 lateral roots from the middle; 5 – 20 cm in length, main root 0.5 – 3 cm in diameter; externally light yellow-brown to light grayish brown, with longitudinal wrinkles and scars of rootlets; sometimes crown somewhat constricted and with short remains of rhizome; fractured surface practically flat, light yellow-brown in color, and brown