

**Loss on drying** Not more than 14.0% (6 hours).

**Total ash** Not more than 3.5%.

## Plantago Herb

*Plantaginis Herba*

シャゼンソウ

Plantago Herb is the entire plant of *Plantago asiatica* Linné (*Plantaginaceae*), collected during the flowering season.

**Description** Usually wrinkled and contracted leaf and spike, grayish green to dark yellow-green in color; when soaked in water and smoothed out, the lamina is ovate to orbicular-ovate, 4–15 cm in length, 3–8 cm in width; apex acute, and base sharply narrowed; margin slightly wavy, with distinct parallel veins; glabrous or nearly glabrous; petiole is rather longer than the lamina, and its base is slightly expanded with thin-walled leaf-sheath; scape is 10–50 cm in length, one-third to one-half of the upper part forming the spike, with dense florets; the lower part of inflorescence often shows pyxidialia; roots usually removed, but, if any, fine roots are closely packed. Odor, slight; tasteless.

**Identification** To 2.0 g of pulverized Plantago Herb add 10 mL of methanol, warm on a water bath for 3 minutes, cool, filter, and use the filtrate as the sample solution. Perform the test with this solution as directed under the Thin-layer Chromatography. Spot 10  $\mu$ L of the sample solution on a plate of silica gel for thin-layer chromatography. Develop the plate with a mixture of 1-butanol, water and acetic acid (100) (7:2:1) to a distance of about 10 cm, and air-dry the plate. Spray evenly iron (III) chloride TS on the plate: a dark blue spot appears at the *R<sub>f</sub>* value about 0.5.

**Total ash** Not more than 15.0%.

**Acid-insoluble ash** Not more than 4.0%.

**Extract content** Dilute ethanol-soluble extract: not less than 14.0%.

## Plantago Seed

*Plantaginis Semen*

シャゼンシ

Plantago Seed is the seed of *Plantago asiatica* Linné (*Plantaginaceae*).

**Description** Flattened ellipsoidal seed, 2–2.5 mm in length, 0.7–1 mm in width, 0.3–0.5 mm in thickness; externally brown to yellow-brown and lustrous. Under a magnifying glass, the surface of the seed is practically smooth, with the dorsal side protruding like a bow, and with the ventral side somewhat dented; micropyle and raphe not observable. 100 seeds weigh about 0.05 g. Odorless; taste, slightly bitter and mucous.

Under a microscope, a transverse section reveals a seed coat consisting of three layers of epidermis composed of cells containing mucilage, a vegetative layer, and a pigment layer of approximately equidiameter cells; in the interior, endosperm thicker than seed coat, enclosing two cotyledons.

**Identification (1)** To 1 g of Plantago Seed add 2 mL of warm water, and allow the mixture to stand for 10 minutes: the seed coat swells to discharge mucilage.

**(2)** Boil gently 1 g of Plantago Seed with 10 mL of dilute hydrochloric acid for 2 minutes, and filter. Neutralize the filtrate with sodium hydroxide TS, to 3 mL of this solution add 1 mL of Fehling's TS, and warm the mixture: a red precipitate is produced.

**Purity** Foreign matter—The amount of foreign matter contained in Plantago Seed does not exceed 2.0%.

**Total ash** Not more than 5.5%.

**Acid-insoluble ash** Not more than 2.0%.

## Platycodon Fluidextract

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**Method of preparation** Take coarse powder of platycodon, and prepare the fluidextract as directed under Fluidextracts using 25 vol% ethanol. An appropriate quantity of Ethanol and Purified Water may be used in place of 25 vol% ethanol.

**Description** Platycodon Fluidextract is a red-brown liquid. It is miscible with water, producing slight turbidity. It has a mild taste at first, followed by an acrid and bitter taste.

**Identification (1)** Shake vigorously 0.5 mL of Platycodon Fluidextract with 10 mL of water: a lasting fine foam is produced.

**(2)** Dissolve 1 drop of Platycodon Fluidextract in 2 mL of acetic anhydride, and add gently 0.5 mL of sulfuric acid: a red to red-brown color develops at the zone of contact.

**Purity** Starch—Mix 1 mL of Platycodon Fluidextract with 4 mL of water, and add 1 drop of dilute iodine TS: no purple or blue color develops.

**Content of the active principle** Transfer 5 mL of Platycodon Fluidextract, accurately measured, to a tared beaker, evaporate to dryness on a water bath, and dry at 105°C for 5 hours: the mass of the residue is not less than 0.50 g.

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

Storage—Light-resistant.

## Platycodon Root

*Platycodi Radix*

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Platycodon Root is the root of *Platycodon grandiflorum* A. De Candolle (*Campanulaceae*).