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# Plantago Seed

**Change to read:**

## DEFINITION

▲ Plantago Seed consists of the cleaned, dried, ripe seed of *Plantago afra* L. (formerly *P. cynops* L.) known in commerce as black psyllium; of *Plantago arenaria* Waldst. & Kit. (formerly *Plantago indica* L. or *P. psyllium* L.) known in commerce as Spanish, French, or another source of black psyllium; or of *Plantago ovata* Forssk. (formerly *Plantago ispaghula* Roxb.), known in commerce as ispaghula seed, blond psyllium, or Indian plantago seed (Family Plantaginaceae). ▲ (USP 1-May-2022)

## CONTAMINANTS

• [ARTICLES OF BOTANICAL ORIGIN \(561\)](#), [Pesticide Residue Analysis](#): Meets the requirements

## SPECIFIC TESTS

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### • BOTANICAL CHARACTERISTICS

#### Macroscopic

▲ **Plantago afra whole seed:** Ovate to narrowly ovate-elongated to oblong, concavo-convex; mostly from 1.3–2.7 mm in length, rarely up to 3 mm, and from 600 µm to 1.1 mm in width, "boat-shaped". It is light brown to moderate brown, darker along the margin, and glossy; the convex dorsal surface exhibits a lighter-colored longitudinal area extending nearly the length of the seed and represents the embryo lying beneath the seed coat, and shows a sometimes indistinct transverse groove nearer the broader end. The concave ventral surface has a deep cavity, in the center of the base of which is an oval, yellowish-white circular hilum.

**Plantago arenaria whole seed:** Ovate-oblong to elliptical, concavo-convex, "boat-shaped"; measures 1.6–3 mm in length and 1–1.5 mm in width. Externally it is dark reddish brown to moderate yellowish brown, irregular, glossy to dull, rough, and reticulate; the convex dorsal surface has a longitudinal lighter-colored area extending lengthwise along the center and beneath the seed coat, and a median transverse groove, dent, or fissure. The ventral surface has a deep concavity, the edges somewhat flattened and frequently forming a sharp indented angle with the base of the cavity, the latter showing a light-colored oval hilum.

**Plantago ovata whole seed:** Broadly elliptical to ovate, "boat-shaped", from 2–3.5 mm in length and from 1–1.5 mm in width. It is pale brown to moderate brown with a dull surface; the convex surface has a small, elongated, glossy brown spot. The concave surface forms a deep cavity, in the center of the base of which is a hilum covered with a thin membrane. ▲ (USP 1-May-2022)

**Odor and taste:** All varieties of *Plantago* seed are nearly odorless, ▲ taste weak, and are mucilaginous. ▲ (USP 1-May-2022)

**Microscopic:** *Plantago* seed is reniform in median transverse sections. Its seed coat has a colorless epidermis of mucilaginous cells whose radial and outer walls break down to form layers of mucilage when brought into contact with water, and a reddish-brown to yellow pigment layer in the seeds of ▲ *P. arenaria*, ▲ (USP 1-May-2022) a broad endosperm with thick-walled outer palisade cells, and irregular inner endosperm cells; and a straight embryo extending lengthwise through the center. The endosperm and embryo cells contain fixed oil and aleurone grains, the latter are round, oval, pyriform, or irregularly shaped, measuring 2–8 µm in diameter.

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### • WATER ABSORPTION

**Sample:** 1 g of Plantago Seed

**Analysis:** Place the *Sample* in a 25-mL graduated cylinder, add water to the 20-mL mark, and shake the cylinder at intervals during 24 h. Allow the seeds to settle for 12 h, and note the total volume occupied by the swollen seeds.

**Acceptance criteria:** ▲ ▲ (USP 1-May-2022) NLT 8 mL

- [ARTICLES OF BOTANICAL ORIGIN \(561\)](#), [Methods of Analysis, Foreign Organic Matter](#): NMT 0.50%
- [ARTICLES OF BOTANICAL ORIGIN \(561\)](#), [Methods of Analysis, Total Ash](#): NMT 4.0%
- [ARTICLES OF BOTANICAL ORIGIN \(561\)](#), [Methods of Analysis, Acid-Insoluble Ash](#): NMT 1.0%

**ADDITIONAL REQUIREMENTS**

- **PACKAGING AND STORAGE:** Preserve in well-closed containers, and secure against insect attack.

**Auxiliary Information** - Please [check for your question in the FAQs](#) before contacting USP.

Topic/Question	Contact	Expert Committee
PLANTAGO SEED	<a href="#">Nam-Cheol Kim</a> Scientific Liaison	BDSHM2020 Botanical Dietary Supplements and Herbal Medicines
REFERENCE STANDARD SUPPORT	RS Technical Services <a href="mailto:RSTECH@usp.org">RSTECH@usp.org</a>	BDSHM2020 Botanical Dietary Supplements and Herbal Medicines

**Chromatographic Database Information:** [Chromatographic Database](#)

**Most Recently Appeared In:**

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