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# Caraway

## DEFINITION

Caraway is the dried, ripe fruit of *Carum carvi* L. (Fam. Apiaceae).

## CONTAMINANTS

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

## SPECIFIC TESTS

### BOTANICAL CHARACTERISTICS

#### Macroscopic

**Unground Caraway:** Separate mericarps about 4–7 mm in length and 1–2 mm in diameter. The mericarp is oblong, curved, and tapers toward the base and apex, to which half of the stylopodium is attached. Externally, it is dark brown to weak brown and shows five lighter-colored, filiform, primary ribs, between each pair of which a secondary rib occurs on the dorsal surface.

**Powdered Caraway:** Moderate yellowish brown to light olive brown

#### Microscopic

**Unground Caraway:** The mericarp is nearly equilaterally pentagonal in transverse section and shows a fibrovascular bundle in each primary rib. The epicarp consists of tabular polygonal epidermal cells with thick outer walls possessing a striated cuticle and with occasional stomata. The mesocarp, located between primary rib regions, is composed of collapsed, thin-walled parenchyma normally bearing four dorsal vittae in the intervals and two commissural vittae and sometimes one or more additional vittae. The endocarp consists of broad, slightly undulate, inner epidermal cross cells that are coherent with the collapsed cells of the spermoderm. The endosperm consists of thick-walled reserve parenchyma containing fixed oil and aleurone grains up to 10 µm in diameter, the latter with embedded rosette aggregates of calcium oxalate up to 4 µm in diameter. An embryo is embedded in the upper end of the endosperm.

**Powdered Caraway:** It shows fragments of the epicarp with striped cuticle, numerous polyhedral endosperm cells containing aleurone grains with embedded rosette aggregates of calcium oxalate, few fragments of slightly lignified fibers and spiral vessels, fragments of cross cells of endocarp, orange to yellow fragments of vittae, and no reticulate parenchyma.

- ARTICLES OF BOTANICAL ORIGIN (561), [Methods of Analysis, Foreign Organic Matter](#): NMT 3.0%
- ARTICLES OF BOTANICAL ORIGIN (561), [Methods of Analysis, Acid-Insoluble Ash](#): NMT 1.5%

## ADDITIONAL REQUIREMENTS

- PACKAGING AND STORAGE:** Preserve in well-closed containers. Preserve against attack by insects.
- LABELING:** The label states the Latin binomial and, following the official name, the part(s) of the plant contained in the article.

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

Topic/Question	Contact	Expert Committee
CARAWAY	<a href="#">Nam-Cheol Kim</a> Scientific Liaison	BDSHM2020 Botanical Dietary Supplements and Herbal Medicines

Chromatographic Database Information: [Chromatographic Database](#)

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