



**Identification of
Tiny Seed and Fruit
Types of Chinese
Materia Medica**

Foeniculi Fructus

1 cm

Source

The dried ripe fruit of *Foeniculum vulgare* Mill. in the family Umbelliferae

Property and flavour

Warm; pungent

Meridian affinity

Liver, kidney, spleen and stomach meridians

Actions

To dissipate cold and alleviate pain; to regulate qi and strengthen the stomach

Micro-morphological features

Shape

Cremocarp appears sub-elliptical in surface view, sometimes slightly curved



2 mm

With yellowish-brown persistent stylopodia at the apex



Sometimes with fruit stalk at the base

Surface view

Cremocarp

1 mm

Mericaip appears semielliptical in lateral view



Lateral view

With 5 longitudinal ridges on the dorsal side



Dorsal view

Commissure is flat



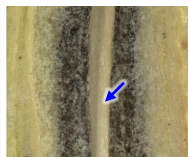
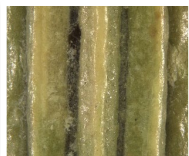
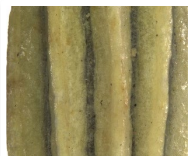
Commissural view

Mericaip

2 mm

Surface

Light yellow, yellowish-brown or yellowish-green; usually with darker longitudinal lines between the longitudinal ridges on the dorsal side; commissure of mericaip usually has 2 blackish-brown or brown vittae, sometimes with linear carpopore (→)



0.5 mm

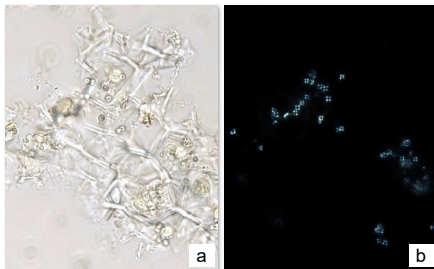
Odour

With characteristic aroma

Powder microscopic features

Crystal

Cluster of calcium oxalate



Small, usually present in endosperm cell; bright white under polarized light microscope

Secretory tissue

Fragment of vitta



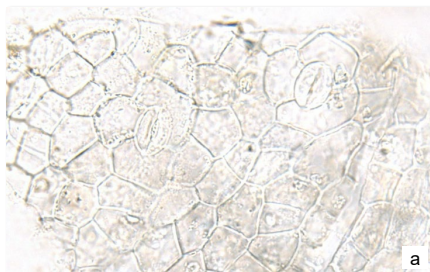
Yellowish-brown, usually with secretory cell which appears sub-polygonal or polygonal in surface view

a. features under bright field; b. features under polarized light

50 μ m

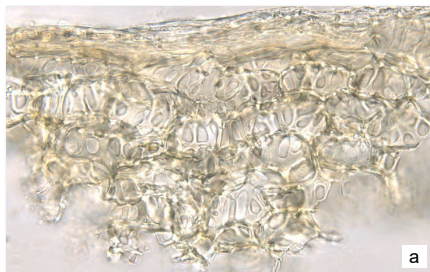
Pericarp

Exocarp cell



Barely found, appears sub-polygonal or polygonal in surface view, with slightly thick wall, sometimes with anomocytic stoma

Reticulated cell



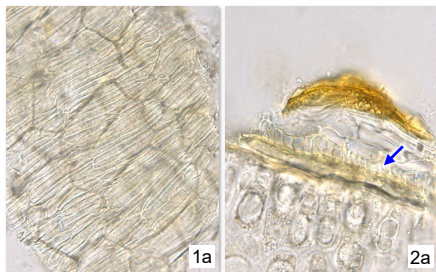
Appears sub-rectangular or sub-oblong in surface view, with slightly thick wall and reticulate pits

Mesocarp cell



Appears sub-polygonal or polygonal in surface view, with slightly thick wall, usually adheres to endocarp cell with relatively smaller lumen

Endocarp cell



Appears sub-rectangular, strip-shaped or long strip-shaped in surface view (1), with thin wall; cells occur in 1 row (→) in lateral view (2), straight on one side, wavy on another side

Key identification features

Micro-morphology

- ⊙ Cremocarp appears sub-elliptical in surface view, sometimes slightly curved; mericarp appears semielliptical in lateral view
- ⊙ With yellowish-brown persistent stylopodia at the apex; mericarp has 5 longitudinal ridges on the dorsal side
- ⊙ Commissure of mericarp usually has 2 blackish-brown or brown vittae

Powder microscopy

- ⊙ Cluster of calcium oxalate: small, usually present in endosperm cell
- ⊙ Reticulated cell: with slightly thick wall and reticulate pits
- ⊙ Endocarp cell: appears sub-rectangular, strip-shaped or long strip-shaped in surface view

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