



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

Fructus Malvae*

1 cm

Source

The dried ripe fruit of *Malva verticillata* L. in the family Malvaceae

Property and flavour

Cool; sweet and astringent

Meridian affinity

Large intestine, small intestine and bladder meridians

Actions

To clear heat and disinhibit urine; to resolve swelling

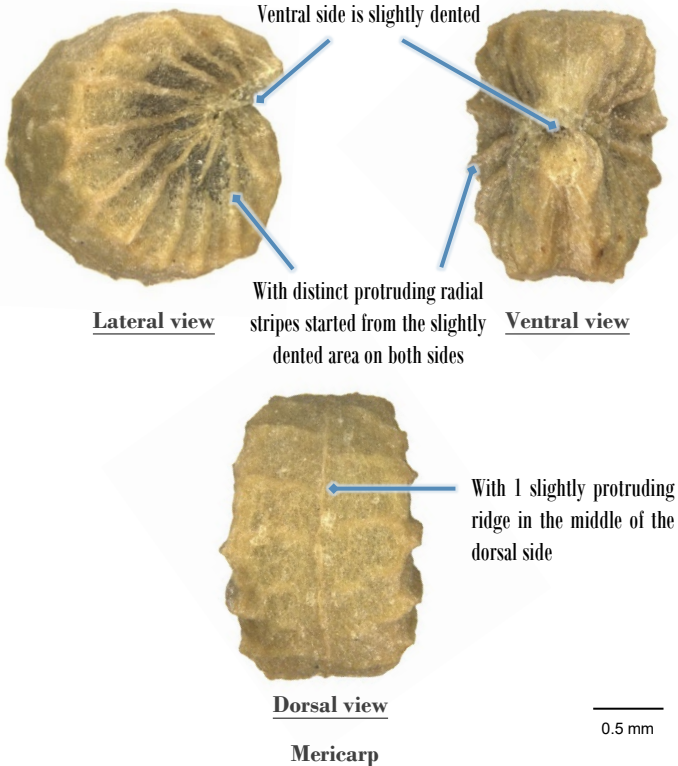
Note:

* Its name in Chinese Pharmacopoeia (2020 Edition) is “Malvae Fructus”.

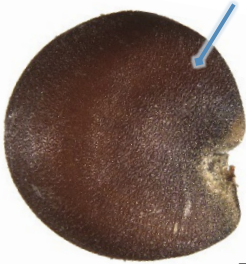
Micro-morphological features

Shape

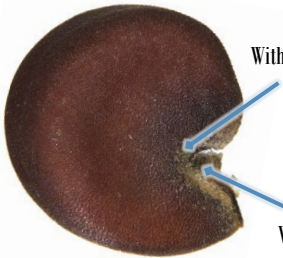
Citrus segment-shaped mericarp



1 seed in the shape of citrus-segment reniform or reniform is visible after removing the pericarp



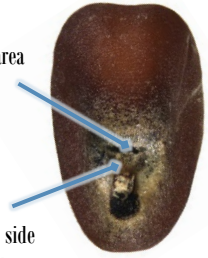
Lateral view



With hilum at the dented area

With strophiole on one side of the hilum, partially covering the hilum

Lateral view



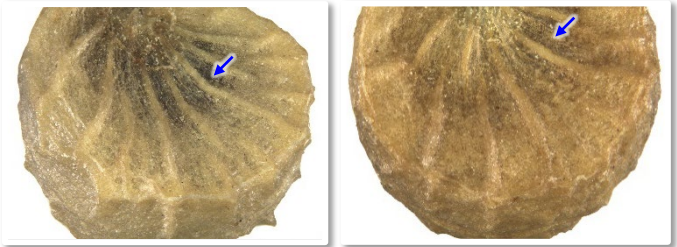
Ventral view

Seed

0.5 mm

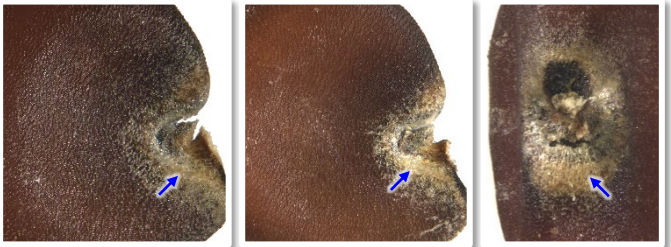
Surface

Mericaip is yellowish-white or light yellowish-brown, pericarp near the centre is usually relatively thin (→)



 0.5 mm

Seed is slightly rough, blackish-brown or brown, area near the hilum and the strophiole (→) is yellowish-brown



Surface view

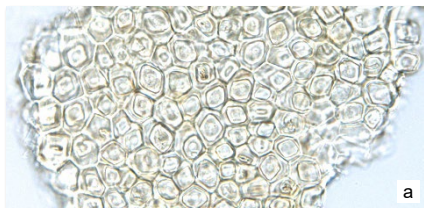
Ventral view

 0.5 mm

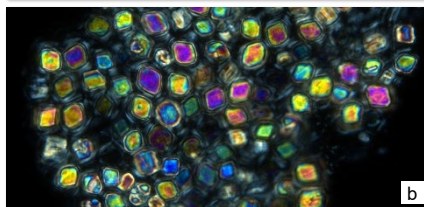
Powder microscopic features

Crystal

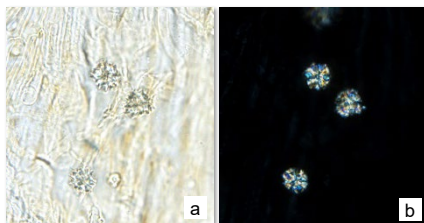
Prism of calcium oxalate



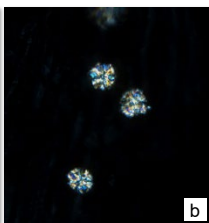
Usually present in groups in mesocarp cell; polychromatic under polarized light microscope



Cluster of calcium oxalate



Barely found, scattered or present in parenchymatous cell; polychromatic under polarized light microscope

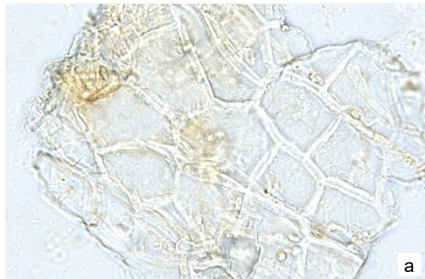


a. features under bright field; b. features under polarized light

50 μ m

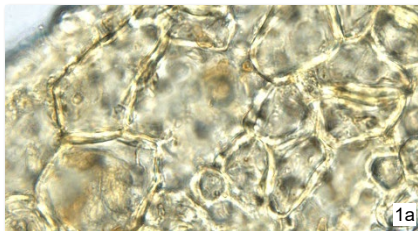
Pericarp

Exocarp cell

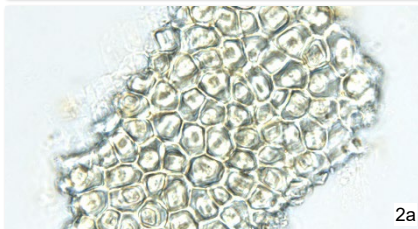


Appears polygonal or sub-polygonal in surface view, with slightly thick wall

Mesocarp cell



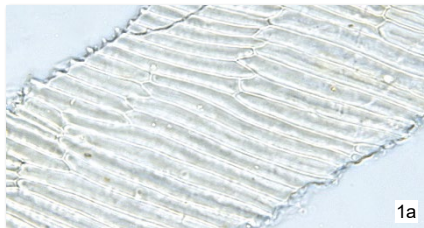
With slightly thick wall; cells at the outer side (1) are relatively large, appear sub-rounded, sub-polygonal or irregular in surface view, loosely arranged; cells at the innermost layer are (2) relatively small, appear polygonal in surface view, tightly arranged, contain 1 prism of calcium oxalate



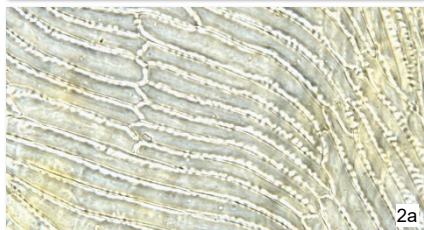
a. features under bright field; b. features under polarized light

50 μ m

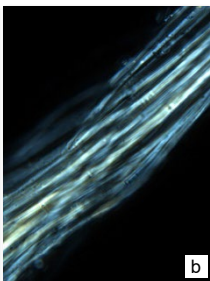
Endocarp cell



Appears long strip-shaped or sub-rectangular in surface view, with thin or slightly thick wall, anticlinal wall is straight (1) or beaded (2)



Fibre



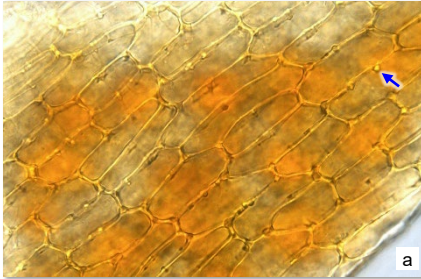
Usually in bundles, wall is slightly thick, with sparse pits and pit canals; bright white, orange-yellow or polychromatic under polarized light microscope

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

50 μ m

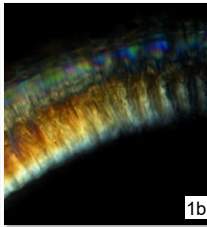
Testa

Epidermal cell of testa

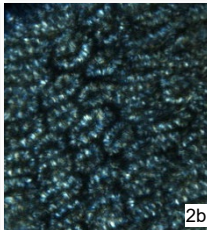
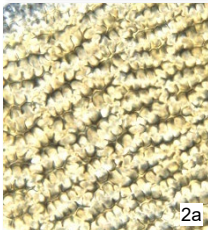


Appears sub-rectangular or sub-polygonal in surface view, some anticlinal walls have dotted thickening (→)

Palisade cell of testa

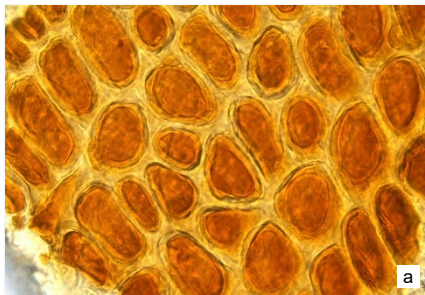


Rectangular cells occur in 1 row in lateral view (1), lumen is located in the centre; polychromatic under polarized light microscope. Appears polygonal or sub-polygonal in surface view (2), irregular lumen is visible; bright white or orange-yellow under polarized light microscope

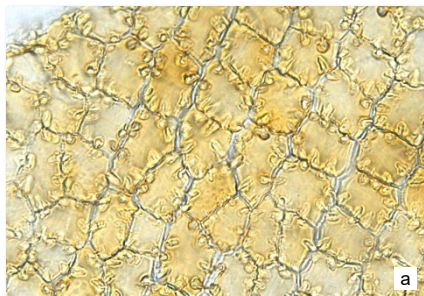


a. features under bright field; b. features under polarized light

50 µm

Pigment cell

With slightly thick wall and indistinct cell boundary, contains yellowish-brown or reddish-brown masses

Endotesta cell

Appears sub-polygonal in surface view, with irregularly thickened anticlinal wall, contains yellowish-brown substances

Key identification features

Micro-morphology

- ⊙ Citrus segment-shaped mericarp, with radial stripes on both sides
- ⊙ 1 seed in the shape of citrus-segment reniform or reniform is visible after removing the pericarp

Powder microscopy

- ⊙ Prism of calcium oxalate: usually present in groups in mesocarp cell
- ⊙ Endocarp cell: appears long strip-shaped or sub-rectangular in surface view, anticlinal wall is straight or beaded
- ⊙ Palisade cell of testa: cells occur in 1 row in lateral view, irregular lumen is visible in surface view

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