



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

# Fructus Malvae\*



### 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

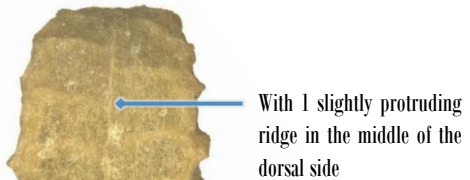
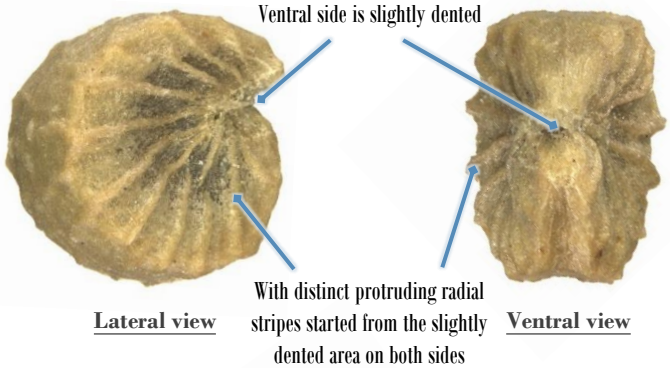
Note:

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

## Micro-morphological features

### Shape

### Citrus segment-shaped mericarp

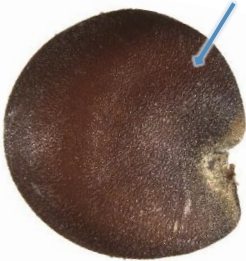


Dorsal view

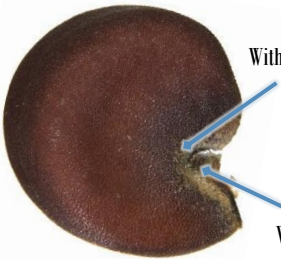
Mericarp

0.5 mm

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



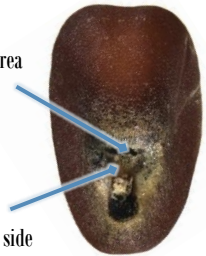
Lateral view



With hilum at the dented area

Lateral view

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



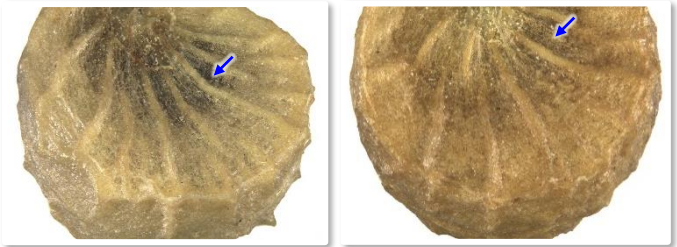
Ventral view

Seed

0.5 mm

**Surface**

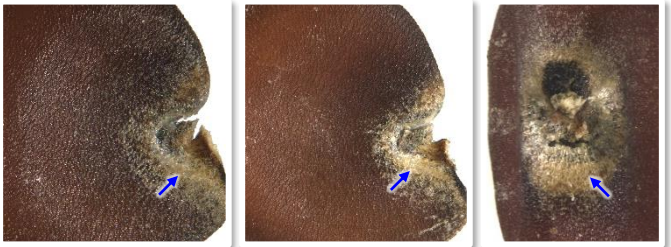
**Mericarp is yellowish-white or light yellowish-brown, pericarp near the centre is usually relatively thin (→)**




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 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

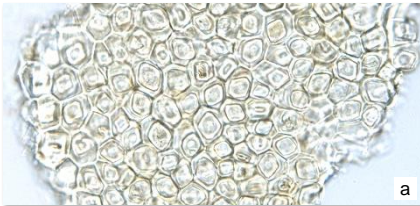
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 0.5 mm

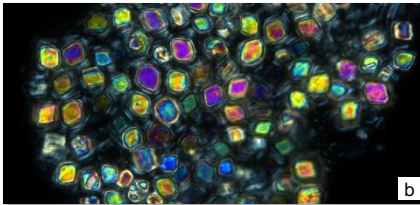
## Powder microscopic features

### Crystal

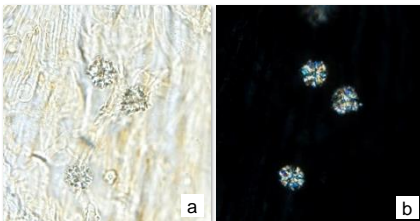
#### Prism of calcium oxalate



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



#### Cluster of calcium oxalate



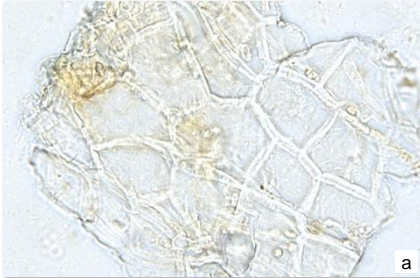
Barely found, scattered or present in parenchymatous cell; polychromatic under polarized light microscope

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

50  $\mu$ m

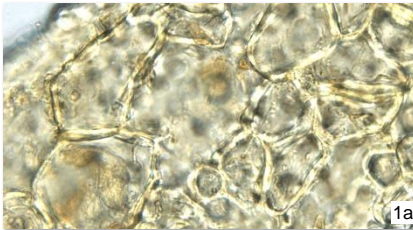
## Pericarp

### 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

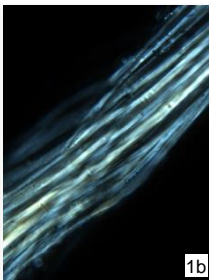


*a. features under bright field; b. features under polarized light*

50  $\mu$ 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**

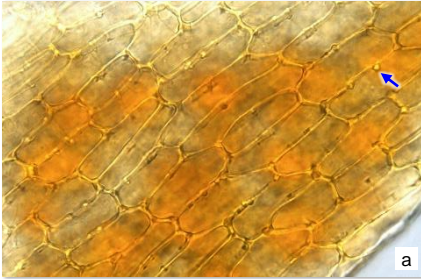
Mostly in bundles, wall is slightly thick, with sparse pits and pit canals; bright white, orange-yellow or polychromatic under polarized light microscope

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

50  $\mu$ m

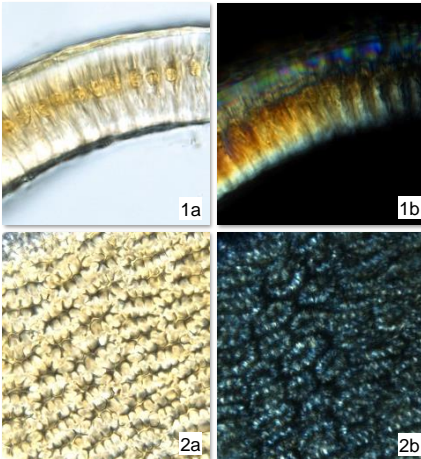
## Testa

### Epidermal cell of testa



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

### Palisade cell of testa

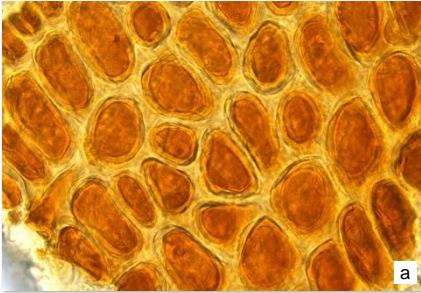


Rectangular cells occur in 1 row in lateral view (1), lumen is located in the centre; polychromatic under polarized light microscope. Appears polygonal or sub-polygonal in surface view (2), irregular lumen is observable; bright white or orange-yellow under polarized light microscope

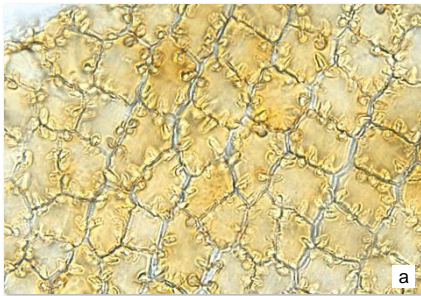
*a. features under bright field; b. features under polarized light*

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 observable after removing the pericarp

### Powder microscopy

- ⊙ Prism of calcium oxalate: mostly 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 observable in surface view

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Department of Health

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