



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



# Fructus Torilis

## Source

The dried ripe fruit of *Torilis japonica* (Houttuyn) de Candolle in the family Umbelliferae

## Property and flavour

Neutral; bitter and pungent; slightly toxic

## Meridian affinity

Spleen and large intestine meridians

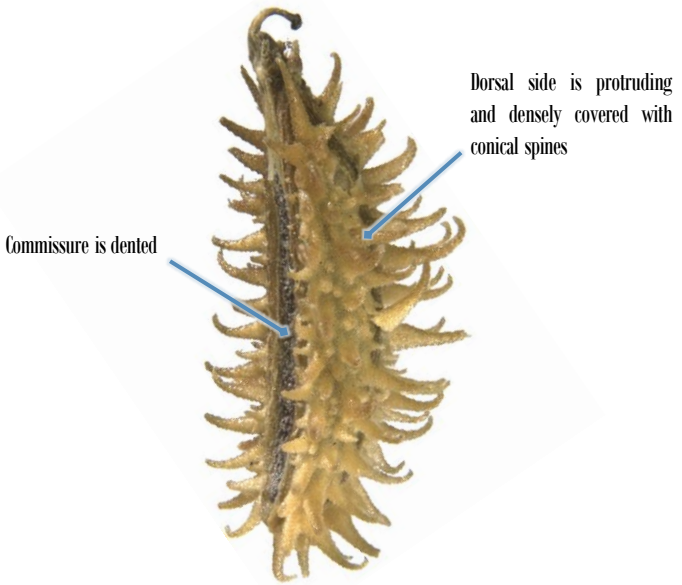
## Actions

To kill parasitic worms and stop diarrhoea; to eliminate dampness and relieve itch

## Micro-morphological features

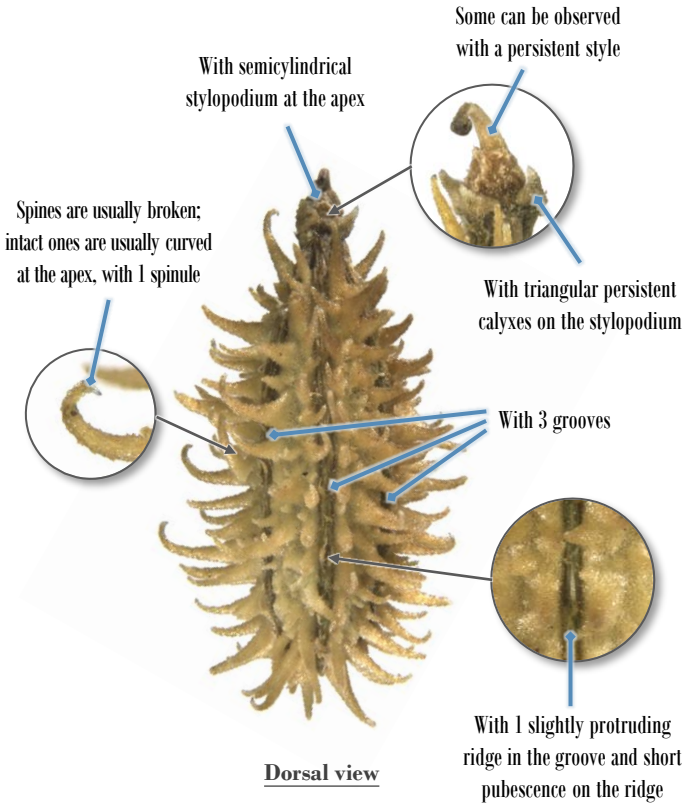
### Shape

**Mericaip appears flattened oblong**



Lateral view

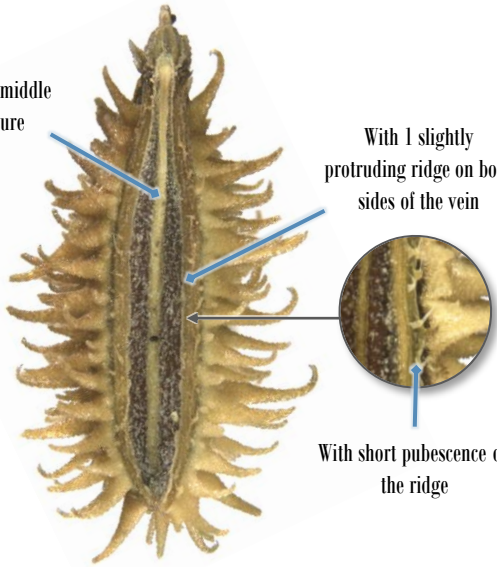
0.5 mm



0.5 mm

With 1 vein in the middle  
of the commissure

With 1 slightly  
protruding ridge on both  
sides of the vein



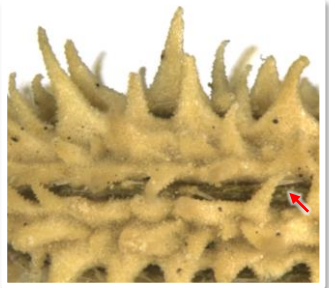
With short pubescence on  
the ridge

Commissural view

0.5 mm

**Surface**

Dorsal side is yellowish-brown or light yellowish-brown, granular; groove is brown or blackish-brown, ridge (→) is yellowish-brown or yellowish-green



0.5 mm

Commissure is blackish-brown and has white granular substances



0.5 mm

**Odour**

With characteristic aroma when broken by rubbing

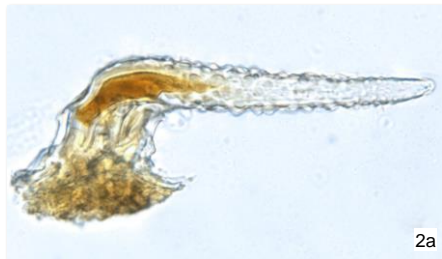
## Powder microscopic features

### Trichome

#### Non-glandular hair



Frequently found, unicellular, with thick (1) or extremely thick (2) wall, surface usually has warty protuberances, base is usually surrounded by several cells which are usually curved at an obtuse or a nearly right angle to the non-glandular hair

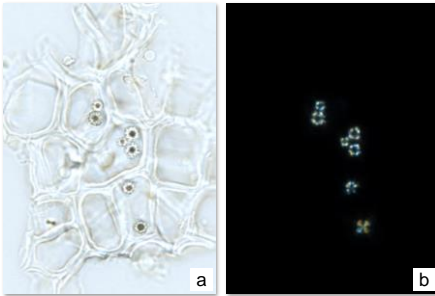


*a. features under bright field; b. features under polarized light*

50  $\mu\text{m}$

## Crystal

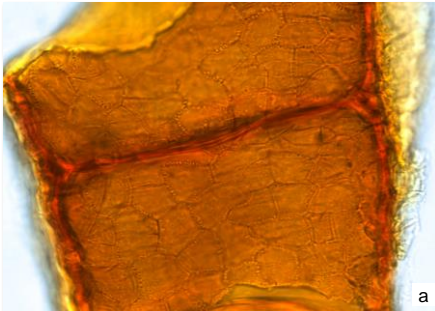
### Cluster of calcium oxalate



Frequently found, fine, usually present in endosperm cell; orange-yellow or polychromatic under polarized light microscope

## Secretory tissue

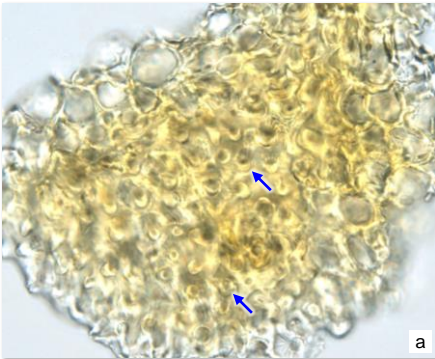
### Vitta



Frequently found, yellowish-brown or reddish-brown, secretory cell appears polygonal or sub-polygonal in surface view, septum is sometimes observable

## Pericarp

### Exocarp cell



Yellowish-brown or colourless, appears sub-polygonal or sub-rounded in surface view, cell boundary is usually indistinct; covered with thick cuticle, with tubercular protuberances (→)

### Endocarp cell



Yellowish-brown, appears long strip-shaped in surface view, usually adheres to vitta or testa cell

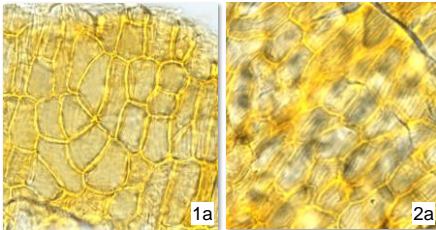
*a. features under bright field; b. features under polarized light*

50  $\mu$ m



## Testa

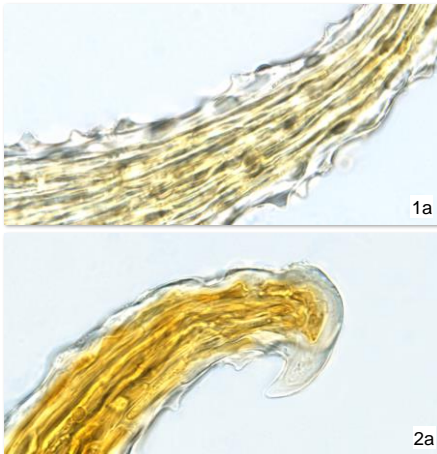
### Testa cell



Yellowish-brown, appears sub-polygonal or sub-rectangular in surface view (1), some have linear striations on the surface (2)

## Others

### Fragment of spine



Frequently found, yellowish-brown, consists of multiple columns of narrow and long sclerenchymatous cells, with thick cuticle and numerous tubercular protuberances on the surface (1), some with non-glandular hair at the apex (2)

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

50  $\mu$ m

## Key identification features

### Micro-morphology

- ⊙ Mericarp appears flattened oblong
- ⊙ Dorsal side is protruding and densely covered with conical spines; commissure is dented
- ⊙ Dorsal side is yellowish-brown or light yellowish-brown, granular; commissure is blackish-brown and has white granular substances

### Powder microscopy

- ⊙ Non-glandular hair: unicellular, surface usually has warty protuberances, base is usually surrounded by several cells
- ⊙ Vitta: frequently found, secretory cell appears polygonal or sub-polygonal in surface view
- ⊙ Fragment of spine: frequently found, consists of multiple columns of narrow and long sclerenchymatous cells, with tubercular protuberances on the surface

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