

Radix Stellariae versus Gypsophilae Radix

Transverse slices



Longitudinal slices



1 cm



1 cm

Source

*Radix Stellariae

is the dried root of
Stellaria dichotoma L. var. *lanceolata* Bge.
in the family Caryophyllaceae

Gypsophilae Radix

is the dried root of
Gypsophila oldhamiana Miq.
in the family Caryophyllaceae

Overview

Radix Stellariae is a Chinese Materia Medica (CMM) listed in Schedule 2 of the Chinese Medicine Ordinance and the Chinese Pharmacopoeia (2020), while Gypsophilae Radix has not yet been recorded. According to research of the *Species Systematization and Quality Evaluation of Commonly Used Chinese Traditional Drugs*, Radix Stellariae was not listed individually in Materia Medica literatures until Qing dynasty. In recent years, the wild source of Radix Stellariae has been exhausted, while cultivated products have not been widely used due to the large differences in appearance, thus, different plants have been adopted as regional and customary products, and Gypsophilae Radix is among one of them. According to the Chinese Pharmacopoeia, Radix Stellariae can clear deficiency heat and relieve malnutrition fever, while according to the *Chinese Materia Medica Standards in Shandong Province*, Gypsophilae Radix can cool blood and clear deficiency heat. As the efficacy of the two CMM differs, they should be used accordingly.

Note:

*Its name in the Chinese Pharmacopoeia (2020) is “Stellariae Radix”.

Key identification features

Macroscopic features of Radix Stellariae decoction pieces



Transverse slices

- ◆ Rounded, elliptical or sub-rounded slices



Transverse slices



Surface is light brownish-yellow or light brown and has slightly twisted longitudinal wrinkles. Some with lateral root scars observable

Slices of area around the apex of root have densely grown warty protuberances observable, which are customarily called "Zhenzhupan" (pearl disk)

Cut surface is slightly loose and has fissures. Bark is very thin and wood has alternately arranged yellow and white radial striations

Longitudinal slices

- ◆ Long strip-shaped slices are straight or slightly curved. Some with branches observable



Longitudinal slices



Wood has alternately arranged yellow and white irregular striations

Micro-morphological features

Transverse slices

A1: Usually has scattered bright white dots(→) observable. Area near the outer side of the wood usually has distinct and densely arranged duct holes(→) observable

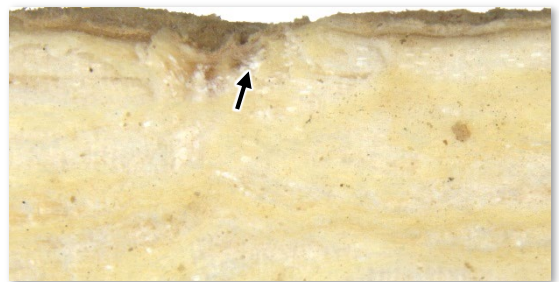


(Cut surface)

1 mm

Longitudinal slices

A2: Usually has scattered bright white dots observable



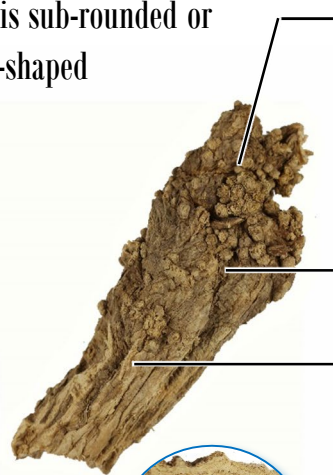
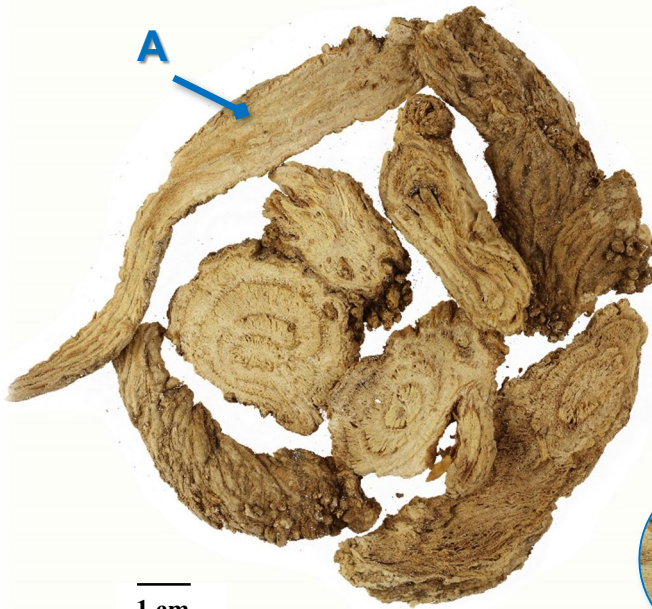
(Cut surface)

2 mm

Macroscopic features of Gypsophilae Radix decoction pieces



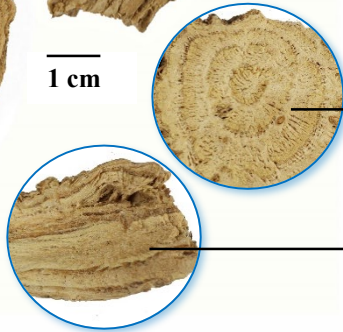
- ◆ Irregular slices mainly have 2 shapes. One type is sub-rounded or sub-elliptical, while the other type is long strip-shaped



Surface is brownish-yellow or greyish-brown. Slices of area above the middle of the root have numerous irregular warty protuberances and lateral root scars observable

With relatively thick and twisted longitudinal wrinkles

Some periderm has been removed and appears yellowish-white, which forms an alternately arranged brown and yellow pattern



Some with fissures. Sub-rounded slices have 3-4 whorls of alternately arranged brown and yellow annular pattern

Long strip-shaped slices have alternately arranged brown and yellow annulations or longitudinal striations

Micro-morphological features

Sub-rounded slices

Long strip-shaped slices

A: Without densely arranged duct holes and bright white dots observable



(Cut surface)

2 mm

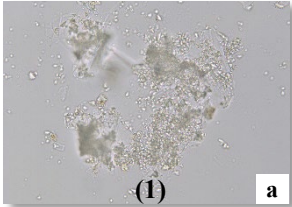
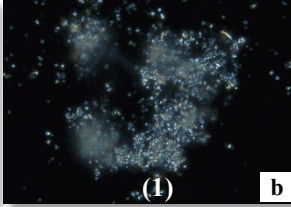
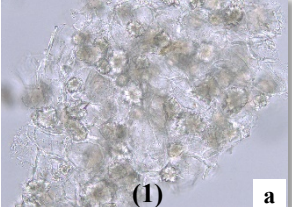
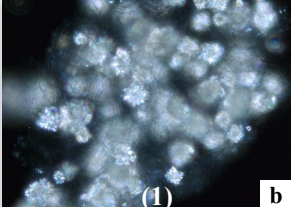
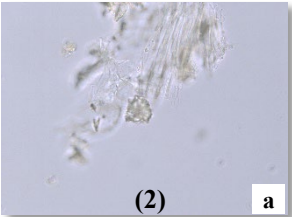
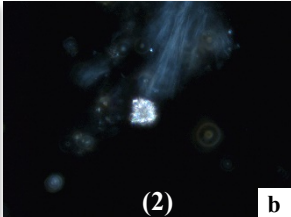
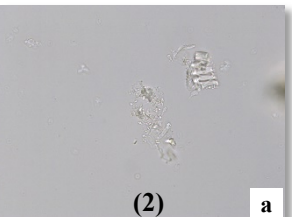
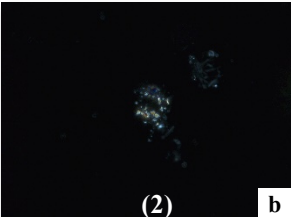


(Cut surface)

2 mm

**Microscopic feature comparison of
Radix Stellariae decoction pieces and
Gypsophilae Radix decoction pieces powder**



	Radix Stellariae decoction pieces	Gypsophilae Radix decoction pieces
Crystal of calcium oxalate	 	 
	  <p>Mainly crystal sand of calcium oxalate(1), numerous, scattered singly or in masses or filled in parenchymatous cell, triangular, sub-square or irregular; polychromatic under the polarized light microscope. Cluster of calcium oxalate(2) is occasionally found, singly scattered; bright white or polychromatic under the polarized light microscope</p>	  <p>Mainly cluster of calcium oxalate(1), numerous, scattered or present in groups in parenchymatous cell; bright white or polychromatic under the polarized light microscope. Crystal sand of calcium oxalate(2) is observable, triangular, sub-square or irregular, scattered or present in groups in parenchymatous cell; polychromatic under the polarized light microscope</p>

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

50 μm

Summary

Major differences in the features between Radix Stellariae decoction pieces and Gypsophilae Radix decoction pieces:

		Radix Stellariae decoction pieces (Transverse slices)	Radix Stellariae decoction pieces (Longitudinal slices)	Gypsophilae Radix decoction pieces
Macroscopic and micro-morphological features	Shape	Sub-rounded transverse slices	Long strip-shaped longitudinal slices	Irregular slices
	Cut surface	With alternately arranged yellow and white radial striations	With alternately arranged yellow and white irregular striations	With alternately arranged brown and yellow annulations or longitudinal striations observable
		Usually with distinct and densely arranged duct holes and bright white dots observable	Usually with scattered bright white dots observable	Without densely arranged duct holes and bright white dots observable
Microscopic feature	Crystal of calcium oxalate	Mainly crystal sand of calcium oxalate, cluster of calcium oxalate is occasionally found		Mainly cluster of calcium oxalate, crystal sand of calcium oxalate is observable

Additional information

Photo of crude Radix Stellariae



◆ Appears sub-cylindrical and has branches. Lower part is mostly twisted, 15-40 cm long, 0.6-1.2 cm in diameter

Apex of root has numerous warty protuberances

Surface is light brownish-yellow to light yellowish-brown and has fine and distinct longitudinal wrinkles. Fine lateral root scar mostly appears dotted depressions. Nearly without “Shayan” (sand hole)

Fracture is denser, nearly without fissures and appears slightly starchy. Radial striations at the bark is indistinct

◆ Slight odour and slightly sweet taste

Photo of crude Gypsophilae Radix



◆ Appears cylindrical or conical and slightly flat, 10-22 cm long, 0.5-4.5 cm in diameter

With numerous protruded rounded lateral root scars and fine annulations near the apex of root

Surface is brownish-yellow or grey brownish-yellow and has twisted longitudinal grooves. Some periderm has been removed and appears yellowish-white, which forms an alternately arranged brown and yellow pattern

Fracture is uneven and has 3-4 layers of alternately arranged yellow and white annular pattern

◆ Hard, not easily broken

◆ Slight odour. Bitter, pungent and irritating taste



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