

Radix Achyranthis Bidentatae versus Radix Cyathulae



1 cm



1 cm

Source

***Radix Achyranthis Bidentatae**
is the dried root of
Achyranthes bidentata Bl.
in the family Amaranthaceae

Radix Cyathulae[#]
is the dried root of
Cyathula officinalis Kuan
in the family Amaranthaceae

Overview

Radix Achyranthis Bidentatae and Radix Cyathulae are both Chinese Materia Medica (CMM) listed in Schedule 2 of the Chinese Medicine Ordinance and the Chinese Pharmacopoeia (2020). According to the research by *Species Systematization and Quality Evaluation of Commonly Used Chinese Traditional Drugs*, multiple species of “Niu xi” have been recorded in ancient literatures, however, only Radix Achyranthis Bidentatae of the *Achyranthes* genus is considered to be authentic since ancient times, and records on the introduction and cultivation of Radix Achyranthis Bidentatae were found back to the Song Dynasty. On the other hand, Radix Cyathulae, which belongs to the *Cyathula* genus, is presumed to be a type of newly developed CMM. It is generally believed that Radix Achyranthis Bidentatae is better at tonifying the liver and kidney, and strengthening of the sinew and bone; while Radix Cyathulae are stronger on freeing the joints and activating blood to unblock the meridian. Due to differences in functions, these two CMM shall be used accordingly.

Note:

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

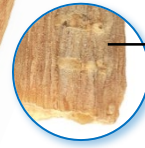
[#]Its name in the Chinese Pharmacopoeia (2020) is “Cyathulae Radix”.

Key identification features

Macroscopic features of Radix Achyranthis Bidentatae decoction pieces



Surface is greyish-yellow or light brown and has fine longitudinal wrinkles



Some with rootlet scars and long horizontal lenticels observable



Cut surface is light brown or brown, slightly horny, moist and oily. Dotted yellowish-white vascular bundles interruptedly arranged in 2-4 whorls, with a relatively large vascular bundle in the centre

1 cm

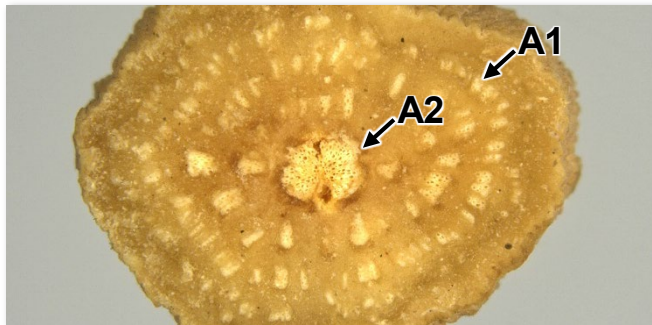
0.5 cm

◆ Hard and fragile, easily broken, becomes soft after absorbing moisture

Micro-morphological features

A1: Dotted vascular bundles interruptedly arranged in 2-4 whorls. The vascular bundles on the outside are frequently smaller

A2: With a relatively large wood in the centre, some divided into 2 bundles



(Cut surface)

1 mm

Macroscopic features of Radix Cyathulae decoction pieces



1 cm



Surface is greyish-brown or yellowish-brown and some has rootlet scars and long horizontal lenticels observable



Cut surface is light yellow or brownish-yellow and slightly rough. Dotted yellowish-white vascular bundles arranged in several concentric rings

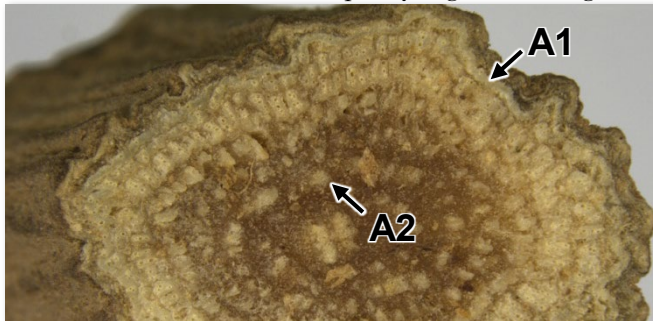
0.5 cm

◆ Tough, not easily broken

Micro-morphological features

A1: Dotted vascular bundles arranged in several concentric rings. The vascular bundles on the outside frequently are smaller, arranged in nearly connected or connected rings

A2: The vascular bundles on the inside are frequently larger and arranged in interrupted rings

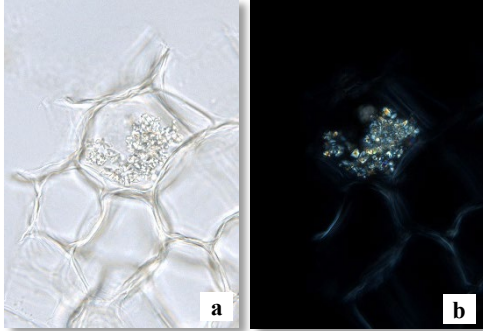
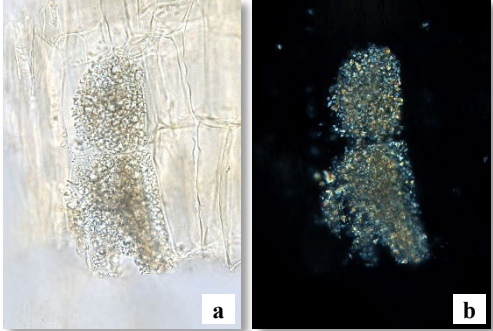
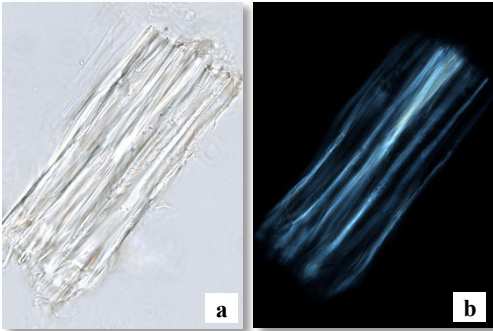
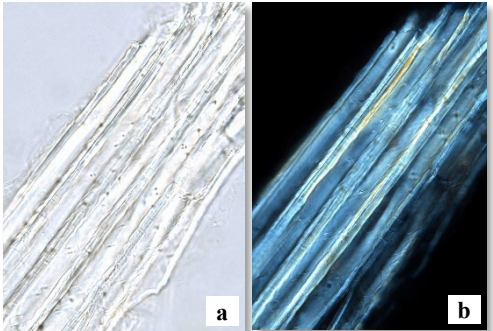


(Cut surface)

1 mm

Microscopic feature comparison of Radix Achyranthis Bidentatae decoction pieces and Radix Cyathulae decoction pieces powder



	Radix Achyranthis Bidentatae decoction pieces	Radix Cyathulae decoction pieces
Crystal sand of calcium oxalate	 <p>Visible, mostly present in the parenchymatous cell; polychromatic under the polarized light microscope</p>	 <p>Frequently found, mostly present in the parenchymatous cell, relatively large crystal is occasionally found, appears square or polygonal; polychromatic under the polarized light microscope</p>
Xylem fibre	 <p>Visible, mostly in bundles, with sparse pits; bright white or orange-yellow under the polarized light microscope</p>	 <p>Frequently found, mostly in bundles, with sparse pits; bright white or orange-yellow 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 Achyranthis Bidentatae decoction pieces and Radix Cyathulae decoction pieces:

		Radix Achyranthis Bidentatae decoction pieces	Radix Cyathulae decoction pieces
Macroscopic and micro-morphological features	Surface	Greyish-yellow or light brown	Greyish-brown or yellowish-brown
	Cut surface	Dotted vascular bundles interruptedly arranged in 2-4 whorls	Dotted vascular bundles arranged in several concentric rings
Microscopic features	Crystal sand of calcium oxalate	Fewer	More
	Xylem fibre	Fewer	More

For more information, please refer to the [Hong Kong Chinese Materia Medica Standards website](#):



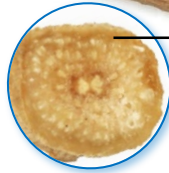
Radix Achyranthis Bidentatae - Hong Kong Chinese Materia Medica Standards (Volume 2)
 Cyathulae Radix - Hong Kong Chinese Materia Medica Standards (Volume 6)

Additional information

Photo of crude Radix Achyranthis Bidentatae



- ◆ Slender, cylindrical, straight or slightly curved, 15-70 cm long, 0.4-1 cm in diameter
- ◆ Surface is greyish-yellow or light brown and has slightly twisted fine longitudinal wrinkles, sparsely arranged lateral root scars and long horizontal lenticel-like protuberances
- ◆ Fracture is smooth, light brown, slightly horny, moist and oily. Wood of vascular bundles in the centre is relatively large, yellowish-white, and has numerous dotted yellowish-white vascular bundles scattered on the outside that interruptedly arranged in 2-4 whorls
- ◆ Hard and fragile, easily broken, becomes soft after absorbing moisture
- ◆ Slight odour, slightly sweetish and slightly bitter and astringent taste



1 cm

Photo of crude Radix Cyathulae



- ◆ Sub-cylindrical, slightly twisted, slightly tapering toward the lower part or with a few branches, 30-60 cm long, 0.5-3 cm in diameter
- ◆ Surface is yellowish-brown or greyish-brown and has longitudinal wrinkles, lateral root scars and numerous long horizontal lenticel-like protuberances
- ◆ Fracture is light yellow or brownish-yellow and has dotted vascular bundles arranged in several concentric rings
- ◆ Tough, not easily broken
- ◆ Slight odour, sweet taste



1 cm



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