

Radix Curcumae versus Rhizoma Curcumae



Source

*Radix Curcumae

is the dried root tuber of

Curcuma wenyujin Y. H. Chen et C. Ling,

C. longa L.,

C. kwangsiensis S. G. Lee et C. F. Liang or

C. phaeocalis Val.

in the family Zingiberaceae

#Rhizoma Curcumae

is the dried rhizome of

Curcuma phaeocalis Valetton,

C. kwangsiensis S. G. Lee et C. F. Liang or

C. wenyujin Y. H. Chen et C. Ling

in the family Zingiberaceae

Overview

Both Radix Curcumae and Rhizoma Curcumae are Chinese Materia Medica (CMM) listed in Schedule 2 of the Chinese Medicine Ordinance and the Chinese Pharmacopoeia (2020). According to the *Species Systematization and Quality Evaluation of Commonly Used Chinese Traditional Drugs*, in ancient times, the medicinal part of Radix Curcumae was rhizome rather than the root tuber, which is being used nowadays. Furthermore, according to *Zhong hua ben cao*, in ancient times, Rhizoma Curcumae, Radix Curcumae and other CMM with fat and thick rhizomes are called “*Shu*”: where Rhizoma Curcumae is “*Shu yao*”, while Radix Curcumae is “*Ma shu*”, therefore, at that time, there was substitution of Rhizoma Curcumae as Radix Curcumae. According to Chinese Pharmacopoeia, Radix Curcumae activates blood and relieves pain, moves qi and relieves depression, clears heart fire and cools the blood, and drains the bile and is anti-icteric; while Rhizoma Curcumae moves qi and breaks blood, clears accumulation and relieves pain. Due to differences in functions, they should be used accordingly.

Note:

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

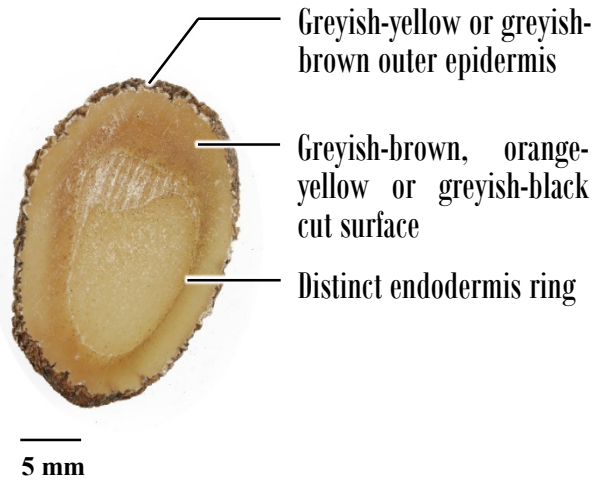
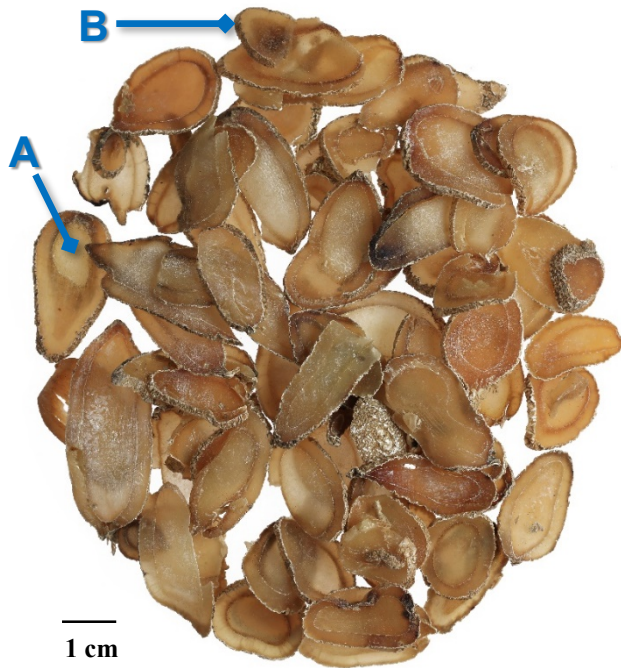
#Its name in the Chinese Pharmacopoeia (2020) is “Curcumae Rhizoma”.

Key identification features

Macroscopic features of Radix Curcumae decoction pieces



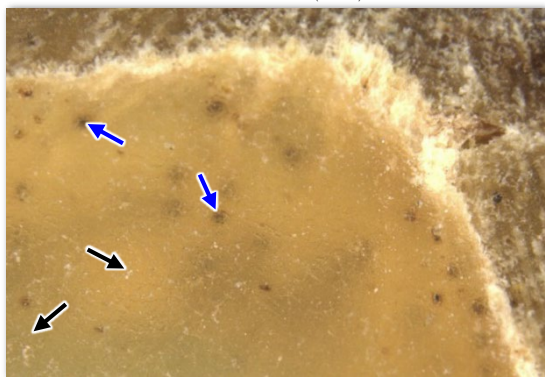
- ◆ Elliptical or oblong slices



- ◆ Fragile, easily broken

Micro-morphological features

A: Horny, with scattered white scratches(→) and black dots(→)



(Cut surface)

500 μm

B: With irregular wrinkles



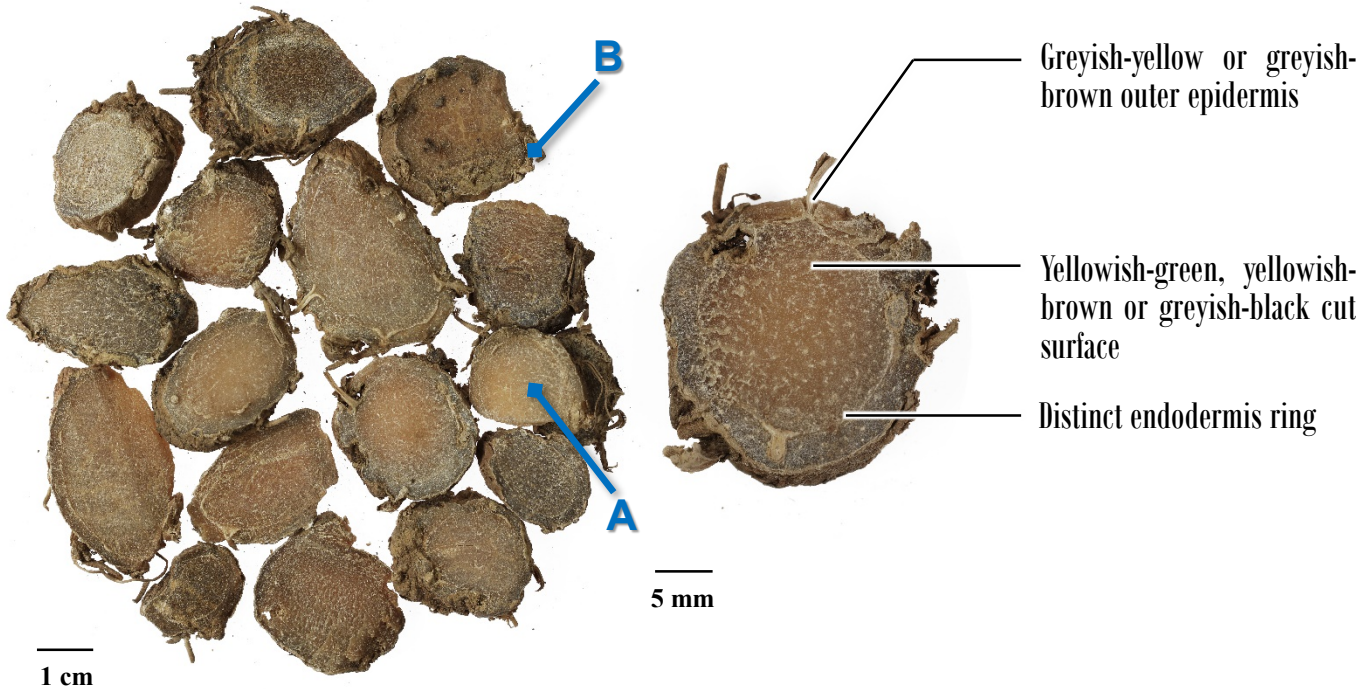
(Outer epidermis)

500 μm

Macroscopic features of Rhizoma Curcumae decoction pieces



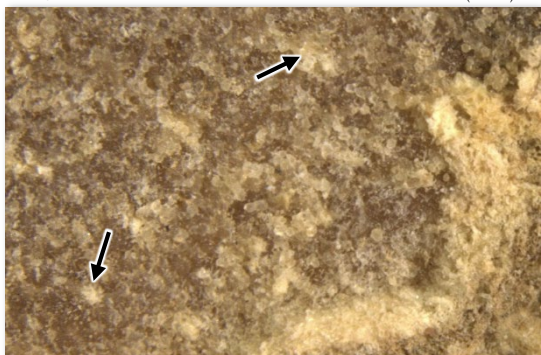
- ◆ Sub-rounded or elliptical slices



- ◆ Hard, not easily broken

Micro-morphological features

A: Granular, with scattered yellow or yellowish-white vascular bundle dots(→)



(Cut surface)

500 μm

B: With annulate nodes(→), rootlets(→) or rootlet scars observable sometimes

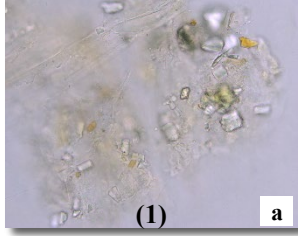
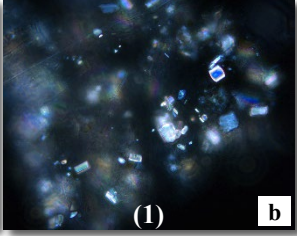
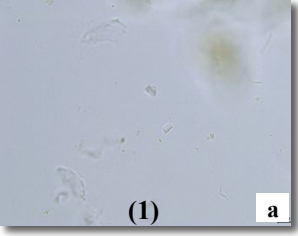
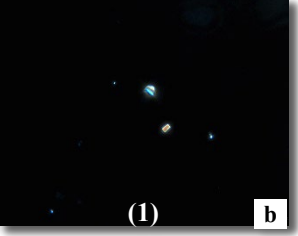
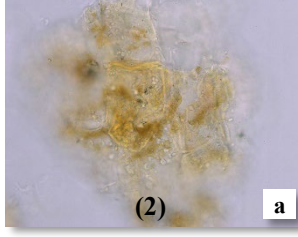
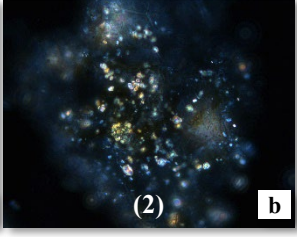
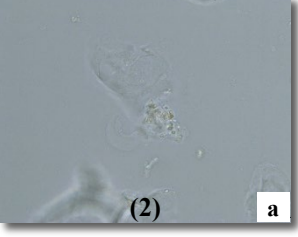
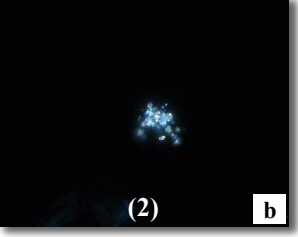




(Outer epidermis)

500 μm

Major differences in the features between Radix Curcumae decoction pieces and Rhizoma Curcumae decoction pieces powder



	Radix Curcumae decoction pieces	Rhizoma Curcumae decoction pieces
Crystal of calcium oxalate	 	 
	 	 
	<p>With prism of calcium oxalate and other fine crystals. Prism of calcium oxalate(1) frequently found, usually present in groups, sub-square, sub-rectangular or irregular, relatively large; bright white or polychromatic under the polarized light microscope. Other fine crystals(2) frequently found, usually present in groups, vary in shape; bright white or polychromatic under the polarized light microscope</p>	
Non-glandular hair	 <p>Absent</p>	
	 <p>Barely found or observable, unicellular, mostly broken, acute apex, slightly thick wall</p>	

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

50 μm

Summary

Major differences in the features between Radix Curcumae decoction pieces and Rhizoma Curcumae decoction pieces:

		Radix Curcumae decoction pieces	Rhizoma Curcumae decoction pieces
Macroscopic and micro-morphological features	Appearance	Elliptical or oblong slices	Sub-rounded or elliptical slices
	Outer epidermis	With irregular wrinkles	With annulate nodes, rootlets or rootlet scars observable sometimes
	Cut surface	Horny, with scattered white scratches and black dots	Granular, with scattered yellow or yellowish-white vascular bundle dots
Microscopic features	Crystal of calcium oxalate	Frequently found, relatively large	Barely found, relatively small
	Non-glandular hair	Absent	Present

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



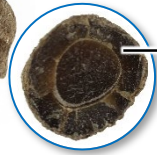
Curcumae Radix - Hong Kong Chinese Materia Medica Standards (Volume 6)

Rhizoma Curcumae - Hong Kong Chinese Materia Medica Standards (Volume 2)

Additional information

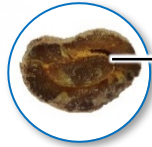
Photo of crude Radix Curcumae

C. wenyujin



- ◆ Oblong or ovoid, slightly flat, and some slightly curved. Both ends acuminate, 3.5-7 cm long, 1.2-2.5 cm in diameter
- ◆ Greyish-brown surface has irregular longitudinal wrinkles, in which the protruded area has lighter colour
- ◆ Fracture is greyish-brown and horny; distinct endodermis ring
- ◆ Hard
- ◆ Slight aroma and slightly bitter taste

C. longa



- ◆ Fusiform. Some slender at one end, 2.5-4.5 cm long, 1-1.5 cm in diameter
- ◆ Surface is brownish-grey or greyish-yellow and has fine wrinkles
- ◆ Fracture is orange-yellow and the peripheral is brownish-yellow to brownish-red
- ◆ Aromatic and pungent taste

C. kwangsiensis



- ◆ Long conic or oblong, 2-6.5 cm long, 1-1.8 cm in diameter
- ◆ With sparse and shallow longitudinal striations or relatively rough reticulate wrinkles on the surface
- ◆ Slight odour and slightly pungent and bitter taste

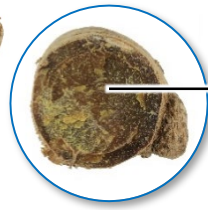
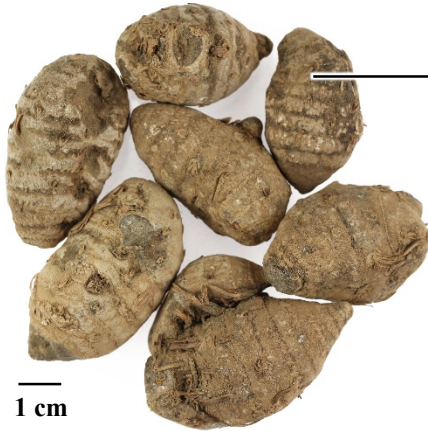
C. phaeocaulis



- ◆ Long elliptical, relatively strong, 1.5-3.5 cm long, 1-1.2 cm in diameter
- ◆ Slight odour and weak taste

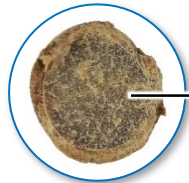
Photo of crude Rhizoma Curcumae

C. phaeocaulis



- ◆ Ovoid, long ovate, conic or long fusiform, mostly obtuse at the apex and rounded at the base, 2-8 cm long, 1.5-4 cm in diameter
- ◆ Greyish-yellow to greyish-brown surface has annulate nodes protruded, rounded and slightly dented rootlet scars or remained rootlets at the upper part. Some has 1 column of dented bud scars and sub-rounded scars of lateral rhizome on both sides each. Some with knife paring marks observable
- ◆ Fracture is greyish-brown to bluish-brown and wax-like. Usually with greyish-brown powder adhered. Cortex and stele are easily separated. Brown endodermis ring
- ◆ Heavy, hard
- ◆ Slight odour and slightly bitter and pungent taste

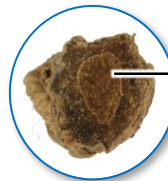
C. kwangsiensis



Slightly protruded annulate nodes

Fracture is yellowish-brown to brown. Usually with light yellow powder adhered. Yellowish-white endodermis ring

C. wenyujin



Fracture is yellowish-brown to brown. Usually with light yellow to yellowish-brown powder adhered.

- ◆ With aroma or slight aroma



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