Identification of Easily Confused Species of Chinese Materia Medica in Hong Kong by Macroscopic and Microscopic Characteristics Project

Radix Cynanchi Paniculati versus Herba Cynanchi Paniculati





Source

*Radix Cynanchi Paniculati is the dried root or rhizome of Cynanchum paniculatum (Bge.) Kitag. in the family Asclepiadaceae

Herba Cynanchi Paniculati

is the dried whole part of Cynanchum paniculatum (Bge.) Kitag. in the family Asclepiadaceae

Overview

Radix Cynanchi Paniculati is listed in Schedule 2 of the Chinese Medicine Ordinance and the Chinese Pharmacopoeia (2020) while Herba Cynanchi Paniculati is documented in the Chinese Materia Medica Standards in Guangdong Province. According to Zhong hua ben cao, Cynanchum paniculatum was also known as "Gui du yao". Subsequently people pronounced the two characters "Du yao" in combination and gave a sound like "Diao" whereas when pronounced them backwards gave the sound "Liao diao". Moreover, the herb has unbending stems and long internodes resembling bamboo ("Zhu"), thus also known as "Liao diao zhu". According to the Chinese Materia Medica Standards in Guangdong Province, Cynanchum paniculatum with roots was customarily used in Guangdong province with "Liao diao zhu" as the name of the Chinese Materia Medica (CMM), resulting in confusion with Radix Cynanchi Paniculati documented in the Chinese Pharmacopoeia. In addition, taking into account the higher content of paeonol in the subterraneous part versus the aerial part of Cynanchum paniculatum, the two CMM should be used accordingly.

Note:

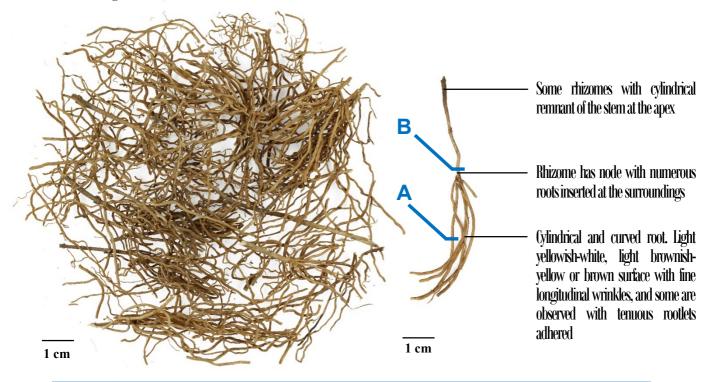
^{*}Its name in Chinese Pharmacopoeia (2020) is "Cynanchi Paniculati Radix et Rhizoma".

Key identification features

Macroscopic features of Radix Cynanchi Paniculati decoction pieces

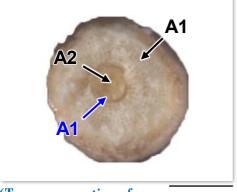


◆ Irregular sections



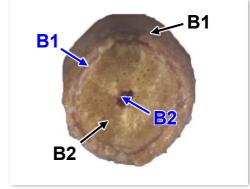


A1: Whitish or yellowish-white bark(→) with light brown cambium ring(→)
A2: Small wood(→)



(Transverse section of the root) 500 μm

B1: Brown narrow bark (\longrightarrow) with light brown cambium ring (\longrightarrow) B2: Broad wood (\longrightarrow) with hollow pith (\longrightarrow)



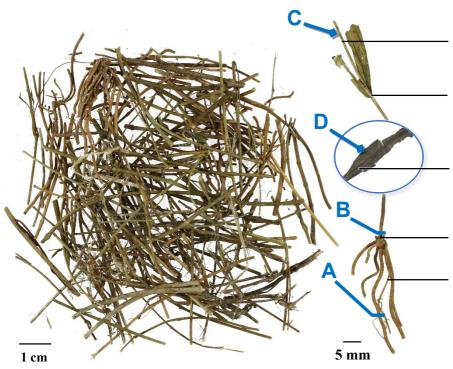
(Transverse section of the rhizome)

500 μm

Macroscopic features of Herba Cynanchi Paniculati decoction pieces



◆ Irregular sections, mainly are aerial parts



Cylindrical stem has fine longitudinal ridge and appears greyish-green

Leaf is opposite at the stem node and light green or greyish-green blade is mostly broken

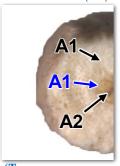
A few relatively intact leaves appear as linear lanceolate and glabrous or sparsely covered with pubescences

Rhizome has node and with numerous roots inserted at the surroundings

Cylindrical and curved root. Light yellowishwhite, light brownish-yellow or brown surface with fine longitudinal wrinkles, and some observed with tenuous rootlets adhered

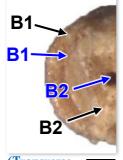
Micro-morphological features

A1: Whitish or yellowish-white bark(→) with light brown cambium ring(→)
A2: Small wood(→)



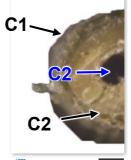
(Transverse section of the root) 250 μm

B1: Brown narrow bark(→) with light brown cambium ring(→)
B2: Broad wood(→) with hollow pith(→)



(Transverse section of the rhizome) 250 μm

C1: Greyish-green narrow bark with rugged margin(→)
C2: Broad wood(→) is relatively large and with hollow pith(→)



(Transverse section of the stem) $25\overline{0 \mu m}$

D: Entire and slightly revolute margin with short hairs(→)



(Leaf margin)

2 mm

Microscopic feature comparison of Radix Cynanchi Paniculati decoction pieces and Herba Cynanchi Paniculati decoction pieces powder



	Radix Cynanchi Paniculati decoction pieces	Herba Cynanchi Paniculati decoction pieces	
Lower epidermal cell of the leaf	Absent	Thin wall, with numerous paracytic stomata	
Fibre	with 2 types. Xylem fibres(1) are frequently found, colourless or light yellow, mostly in bundles, with thick wall, pits, broad and distinct lumen; bright white under the polarized light microscope. Pericyclic fibres(2) are occasionally found, colourless, slender, mostly broken, with narrow lumen; polychromatic under the polarized light microscope	With 2 types. Xylem fibres(1) are frequently found, colourless or light yellow, mostly in bundles, with thick wall, pits, broad and distinct lumen; bright white under the polarized light microscope. Pericyclic fibres(2) are frequently found, colourless, slender, mostly broken, with narrow lumen; polychromatic under the polarized light microscope	
Non-glandular hair	Absent	Multicallular, with wanty protuberances on the curfees	
	Absent	Multicellular, with warty protuberances on the surface	

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

 $50 \, \mu m$

Summary

Major differences in the features between Radix Cynanchi Paniculati decoction pieces and Herba Cynanchi Paniculati decoction pieces:

		Radix Cynanchi Paniculati decoction pieces	Herba Cynanchi Paniculati decoction pieces
nd Features	Appearance	Irregular sections	Irregular sections, mainly are aerial parts
Macroscopic and micro-morphological features	Transverse section	Can be divided into root and rhizome	Can be divided into root, rhizome and aerial stem
Ma micro-mo	Leaf margin	Absent	Entire and slightly revolute margin with short hairs
ures	Lower epidermal cell of the leaf	Absent	Present
Microscopic features	Fibre	Mainly xylem fibres	Both xylem fibres and pericyclic fibres are frequently found
Micr	Non-glandular hair	Absent	Present

For more information, please refer to the <u>Hong Kong Chinese Materia Medica</u> Standards website:



Cynanchi Paniculati Radix et Rhizoma - Hong Kong Chinese Materia Medica Standards (Volume 6)

Additional information

Photo of crude Radix Cynanchi Paniculati



Irregular cylindrical rhizome. With node, 0.5-3.5 cm long, 2-4 mm in diameter. Some with fine cylindrical remnant of stem at the apex, about 2 cm long, 1-2 mm in diameter and hollow fracture

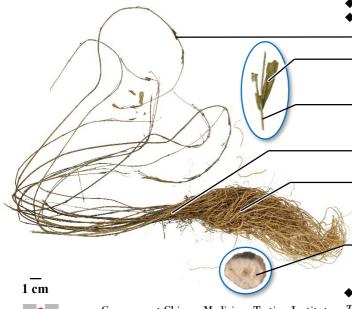
Numerous roots are inserted at the surrounding of the node of the rhizome

Slender, cylindrical and curved root, 10-16 cm long, 1-1.5 mm in diameter. Light yellowish-white to light brownish-yellow or brown surface with fine longitudinal wrinkles and tenuous rootlets

Starchy fracture with whitish or yellowishwhite bark, light brown cambium ring and small wood

- ◆ Fragile, easily broken
- With aroma and slightly pungent and cool taste

Photo of crude Herba Cynanchi Paniculati



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30-80 cm long, usually bent and wound tens of aerial stems into a small bunch
 Terminal inflorescence is barely observable

Leaf is opposite at the stem node and distantly apart

Green and linear lanceolate blade, 4-10 cm long, 0.3-1.5 cm wide, glabrous or sparsely covered with pubescences, entire and slightly revolute margin with short hairs

Cylindrical aerial stem is single and barely branched, usually 20-40 cm long, sometimes up to 70 cm long, 2-3 mm in diameter, barely 5 mm, with fine longitudinal ridge, greyish-green; hard and fragile, hollow fracture

Irregular cylindrical rhizome, with node, 0.5-3.5 cm long, 2-4 mm in diameter

Beard-like fascicled roots are inserted at the surroundings of the rhizome, appear slender cylindrical and curved, 10-16 cm long, 1-1.5 mm in diameter. Greyish-yellow, brownish-yellow to light brown surface with fine longitudinal wrinkles and usually with tenuous rootlets grown on the side; fragile

Starchy fracture with whitish or yellowish-white bark, light brown ring near the cambium and small yellow wood in the centre. Shiny small crystals are precipitated and observable after storage

◆ With aroma, particularly in root. Taste slightly pungent and cool

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