

Hordei Fructus Germinatus versus Oryzae Fructus Germinatus



Source

Hordei Fructus Germinatus

is the dried and processed product of
germinated ripe fruit of
Hordeum vulgare L.
in the family Gramineae

Oryzae Fructus Germinatus

is the dried and processed product of
germinated ripe fruit of
Oryza sativa L.
in the family Gramineae

Overview

Hordei Fructus Germinatus and Oryzae Fructus Germinatus are both listed in the Chinese Pharmacopoeia (2020) but not under the Chinese Medicine Ordinance. Both of these two Chinese Materia Medica (CMM) belong to the Gramineae family and are produced by drying of caryopsis after germination. The appearance and source of the CMM are similar, where the dried fruit possesses fibrous roots and sprout, and has a yellowish-white colour. According to the Chinese Pharmacopoeia, both CMM possess the functions as a digestant, and can fortify the spleen and increase the appetite. Furthermore, Hordei Fructus Germinatus can move qi, terminate lactation and relieve distention; while Oryzae Fructus Germinatus can harmonise the middle but cannot terminate lactation. Due to variation in the functions of these two CMM, they should be used accordingly.

Key identification features

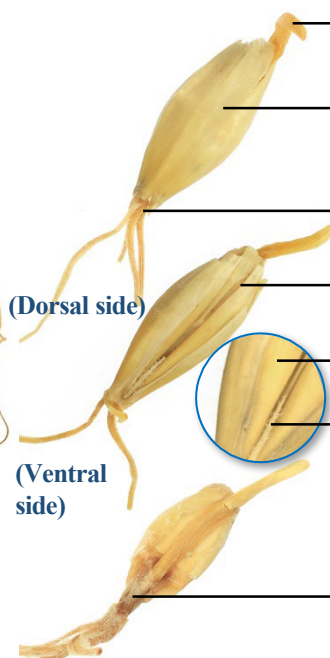
Macroscopic features of Hordei Fructus Germinatus



◆ Fusiform



1 cm



(Dorsal side)

(Ventral side)

Yellowish-brown linear sprout extends from the apex and is usually broken

Light yellow lemma and palea, whereas the lemma embraces the palea

With a few yellowish-white or yellowish-brown, tenuous and curved fibrous roots

With 1 longitudinal groove on the ventral side

Palea is located at the ventral side

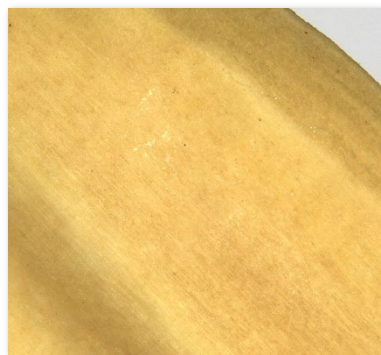
Some with small, white and linear rachilla with long hairs on the surface observable and located at the base of the ventral side

Sprout and fibrous root grow from the base of radicle and become observable after removing lemma

5 mm

Micro-morphological features

A: Both lemma and palea are smooth or slightly granular and with non-glandular hairs occasionally observable(→)



(Outer surface of the lemma)

500 μ m



(Outer surface of the palea)

200 μ m

B: With numerous long hairs(→) near the radicle



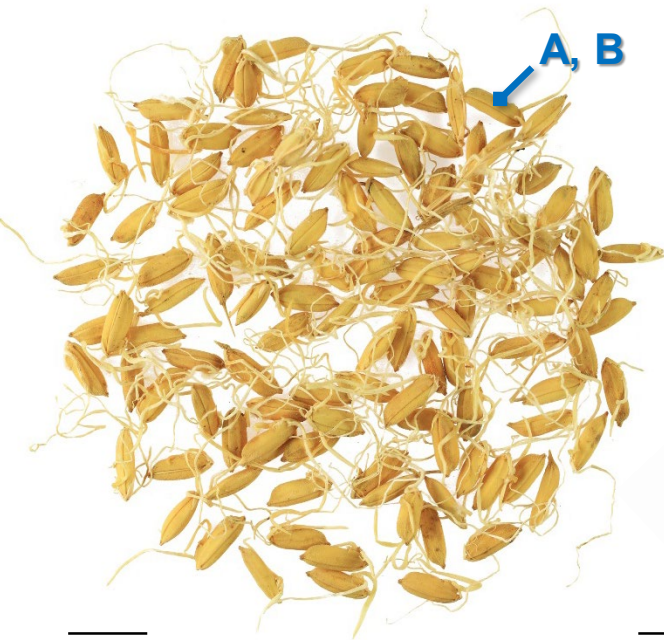
(Surface of the caryopsis)

500 μ m

Macroscopic features of Oryzae Fructus Germinatus



◆ Oblong, slightly pointed on both ends



1 cm



5 mm

Yellow lemma and palea, whereas the lemma embraces the palea

Some with observable yellowish-white or white linear sprouts that extend from one side of the lodicule

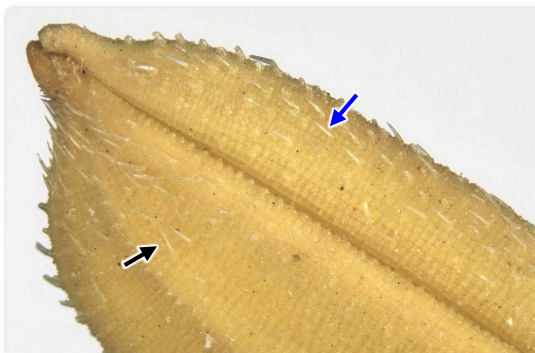
With 1-3 yellowish-white or white, tenuous and curved fibrous roots extend from one side of the lodicule

2 white linear lodicules located at the base

Sprout and fibrous root grow from the radicle on one side of the base and become observable after removing lemma and palea

Micro-morphological features

A: Both lemma(→) and palea(→) are rough and with numerous non-glandular hairs



(Outer surface of lemma and palea)

1 cm

B: Glabrous

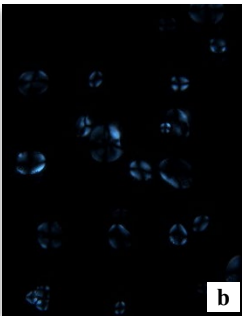
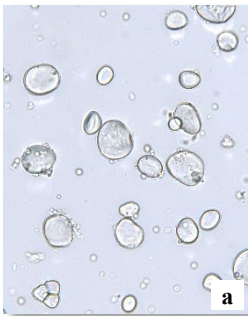
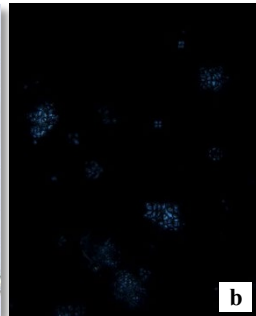

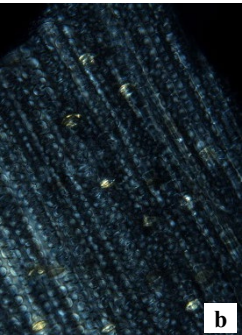
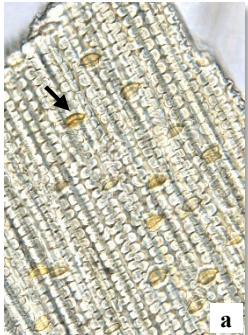
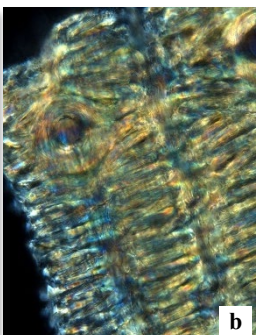

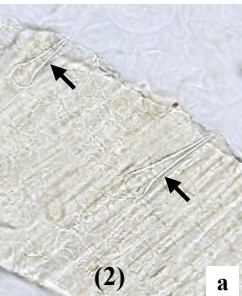
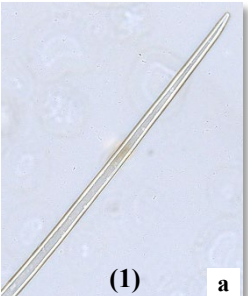



(Surface of the caryopsis)

1 cm

Microscopic feature comparison of Hordei Fructus Germinatus and Oryzae Fructus Germinatus powder



	Hordei Fructus Germinatus	Oryzae Fructus Germinatus
Starch granule	<div></div> <p>Numerous, mainly simple granule, sub-rounded, ovate, elliptical or reniform; black and cruciate-shaped under the polarized light microscope</p>	<div></div> <p>Numerous, mainly compound granule; simple granule barely found, fine, sub-rounded; mostly darker and black and cruciate-shaped under the polarized light microscope</p>
Outer epidermal cell of the lemma and the palea	<div></div> <p>Long cell and 2 short cells (suberified cell and silica cell) (→) arranged in alternative pattern in surface view, long cell long strip-shaped, deeply sinuous wall, suberified cell crescentic, silica cell relatively small and elliptical; bright white or orange-yellow under the polarized light microscope</p>	<div></div> <p>The cell appears to be large and rectangular in surface view, deeply sinuous wall, with sub-rounded non-glandular hair scars (→) visible between cells; polychromatic under the polarized light microscope</p>
Non-glandular hair	<div></div> <p>With 2 forms. The first form slender and mostly broken, slightly thick or thick wall(1); the other form conic (→), slightly thick wall(2)</p>	<div></div> <p>Conic, thick wall, distinct striations</p>

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

50 μm

Summary

Major differences in the features between Hordei Fructus Germinatus and Oryzae Fructus Germinatus:

		Hordei Fructus Germinatus	Oryzae Fructus Germinatus
Macroscopic and micro-morphological features	Appearance	Fusiform, with 1 longitudinal groove on ventral side	Oblong, slightly pointed on both ends
	Outer surface of the lemma and the palea	Non-glandular hair occasionally found	With numerous non-glandular hairs
	Surface of caryopsis	With long hairs near the radicle	Glabrous
Microscopic features	Starch granule	Mainly simple granule	Mainly compound granule
	Outer epidermal cell of the lemma and the palea	Smaller	Larger
	Non-glandular hair	With 2 forms	With 1 form only



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