Setariae Fructus Germinatus
versus
Oryzae Fructus Germinatus

Source

Setariae Fructus Germinatus
is the dried and processed product of geminated ripe fruit of *Setaria italica* (L.) Beauv. in the family Gramineae

Oryzae Fructus Germinatus
is the dried and processed product of geminated ripe fruit of *Oryza sativa* L. in the family Gramineae

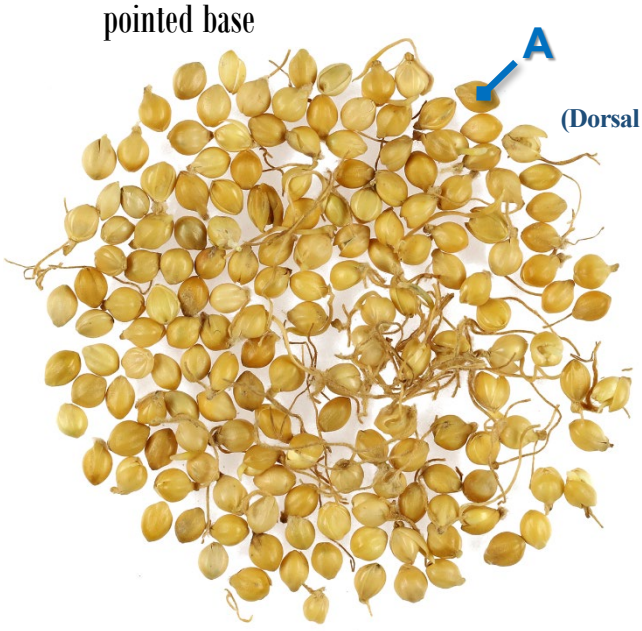
Overview

Both Setariae Fructus Germinatus and Oryzae Fructus Germinatus are Chinese Materia Medica (CMM) listed in the Chinese Pharmacopoeia (2020). They belong to the Gramineae family and are produced by drying of caryopsis after germination. According to the research by the *Herbalogy Research, Review and Identification of Chinese Medicinal Materials, the non-Authorization Species in Guangdong, Guangxi, Hong Kong and Macau*, the Setariae Fructus Germinatus recorded in the Materia Medica literatures was mainly originated from the germinated *Setaria italica*, thus also named as *"Su ya"*; while Oryzae Fructus Germinatus was originated from germinated *Oryza sativa*, and as people of the Southern region call the fruit of *Oryza sativa* as *"Gu"*, thus it is also called *"Gu ya"*. Although both CMM have the properties of promoting digestion and harmonizing the middle, fortifying the spleen and increasing the appetite, each CMM has its own particular application. Setariae Fructus Germinatus is better in promoting digestion and harmonizing the middle, while Oryzae Fructus Germinatus is partial to fortifying the spleen and increasing the appetite. Furthermore, the origin of these two CMM varies, they should be used accordingly.

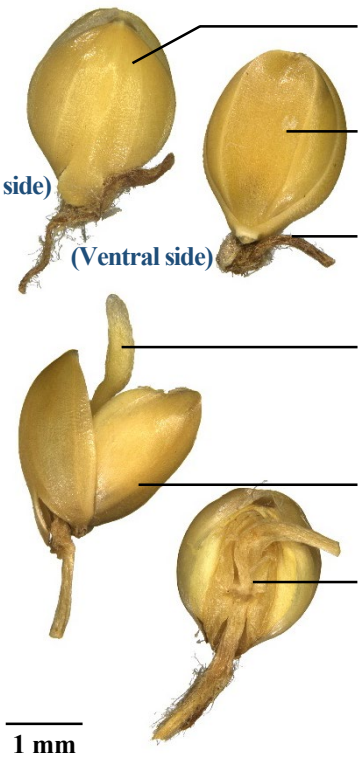
Key identification features

Macroscopic features of Setariae Fructus Germinatus

- Relatively small
- Sub-spherical, with obtuse apex and slightly pointed base



5 mm



1 mm

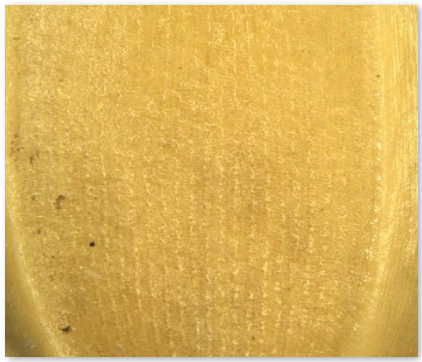
- Light yellow or yellow lemma and palea, whereas the lemma embraces the palea
- Palea is located at the ventral side, which is usually slightly flat
- With a few yellowish-white or yellowish-brown, tenuous and curved fibrous roots which are usually broken
- Some with observable yellowish-brown or yellowish-white sprout that mostly extends from the apex and is usually broken
- Some lemma and palea are splitted
- Sprout and fibrous root grow from the radicle on ventral side of the caryopsis and become observable after removing lemma

Micro-morphological feature

A: Lemma and palea mostly have fine wrinkles and some are relatively smooth. Both are glabrous

(Outer surface of the lemma)

200 μm

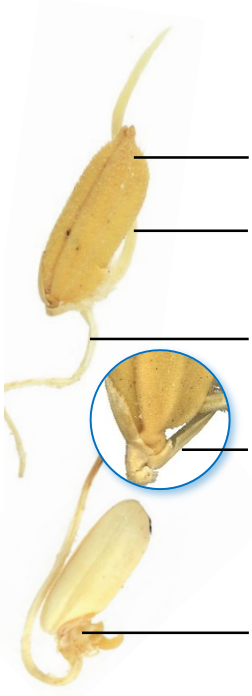


(Outer surface of the palea)

200 μm

Macroscopic features of Oryzae Fructus Germinatus

- Relatively large
- Oblong, slightly pointed on both ends



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

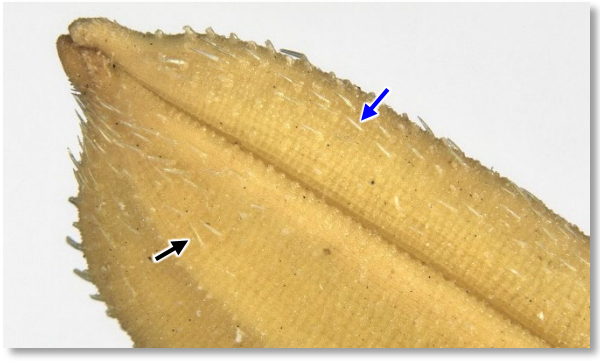
With 1-3 yellowish-white or white, tenuous and curved fibrous roots extend from one side of the lodicule

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

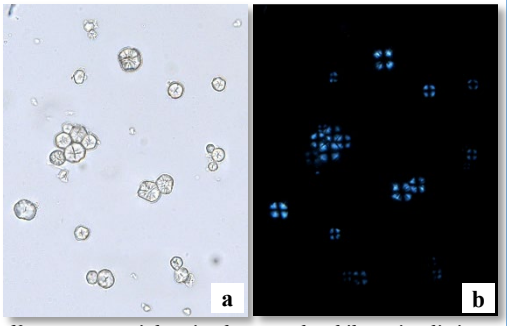
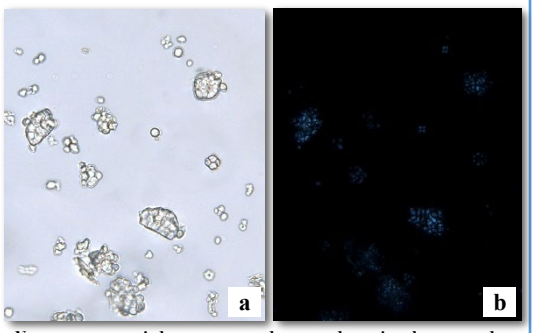
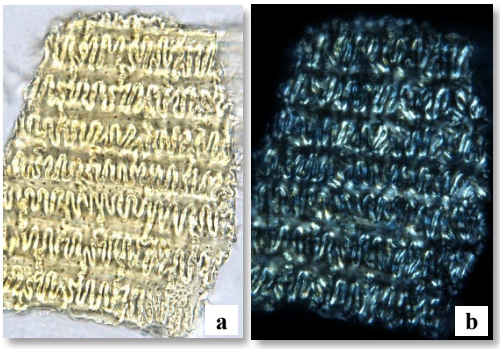
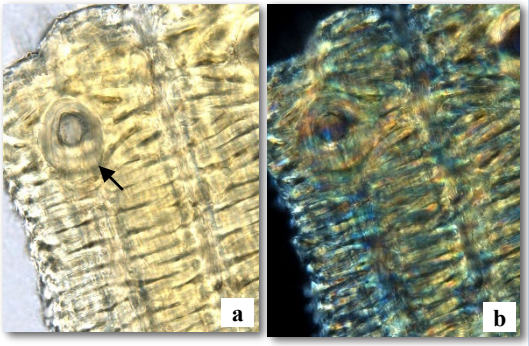
Micro-morphological feature

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



(Outer surface of lemma and palea)

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

	Setariae Fructus Germinatus	Oryzae Fructus Germinatus
Starch granule	 Numerous, mainly simple granule, hilum is distinct usually, appears slit-shaped, "Y"-shaped or dotted, some with radial slits; black and cruciate-shaped under the polarized light microscope	 Numerous, mainly compound granule; simple granule barely found, fine, sub-rounded, hilum is usually indistinct; mostly darker and black and cruciate-shaped under the polarized light microscope
Outer epidermal cell of the lemma and the palea	 Rectangular or square in surface view, deeply sinuous wall, with dotted pits observable; bright white, orange-yellow or polychromatic under the polarized light microscope	 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
Non-glandular hair	Absent	 Conic, thick wall, distinct striations

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

50 µm

Summary

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

		Setariae Fructus Germinatus	Oryzae Fructus Germinatus
Macroscopic and micro-morphological features	**Appearance**	Sub-spherical, with obtuse apex and slightly pointed base	Oblong, slightly pointed on both ends
	Size	Relatively small	Relatively large
	Outer surface of lemma and palea	Glabrous	With numerous non-glandular hairs
Microscopic features	**Starch granule**	Mainly simple granule	Mainly compound granule
	Outer epidermal cell of the lemma and the palea	Relatively small	Relatively large
	Non-glandular hair	Absent	Present

Department of Health

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