



MSA UNIVERSITY
معة أكتوبر للعلوم الحديثة والآداب

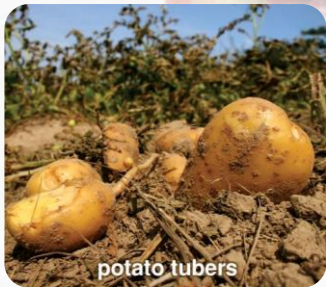
Pharmacognosy

PHG 112

Spring 2026

Pharmacognosy

PHG 112



potato tubers



ginger rhizome

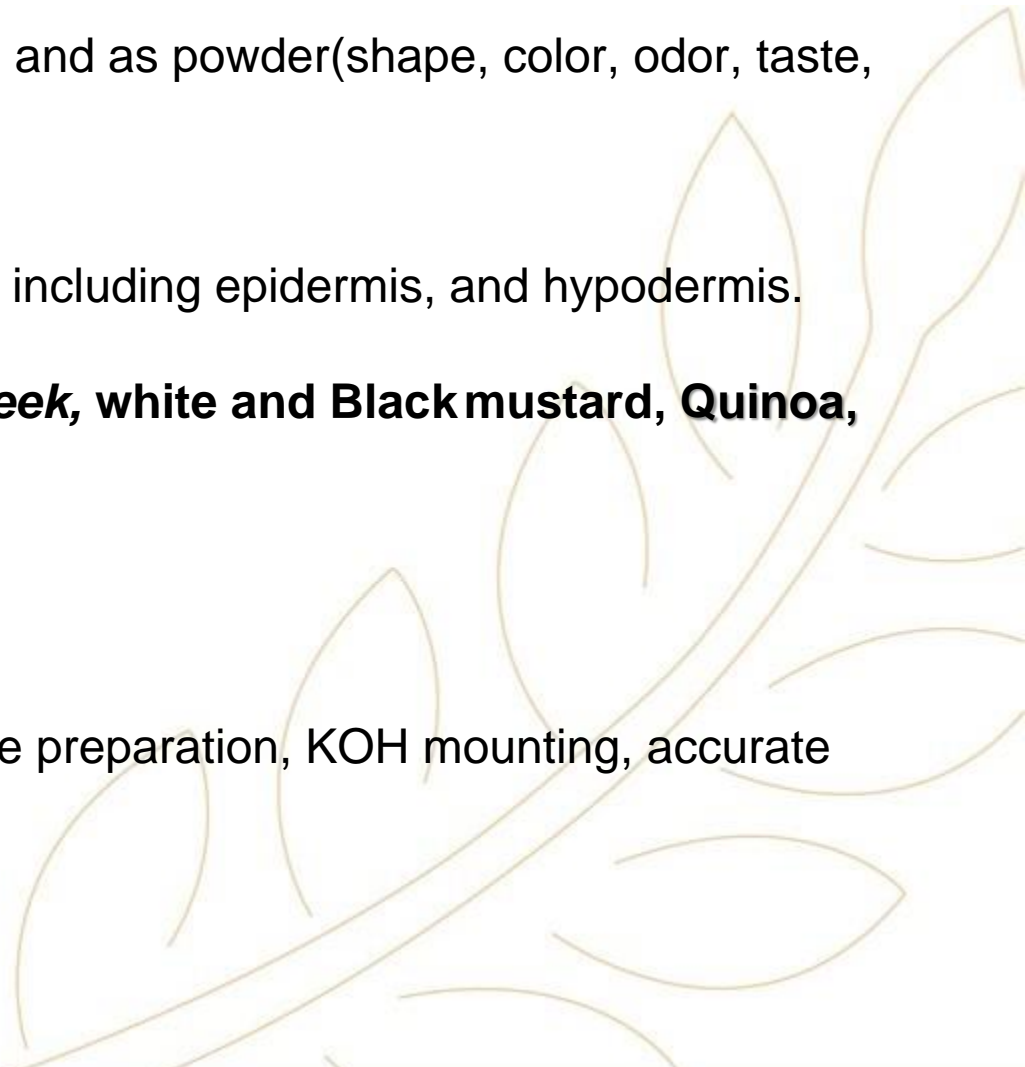
Spring 2026

Lab 2



Intended Learning Outcomes (ILOs)

By the end of this laboratory session, students will be able to:

1. **Describe the macroscopic morphology of *Foenugreek*** entire and as powder(shape, color, odor, taste, surface characters, and scars).
 2. **Identify the microscopic diagnostic features of *Foenugreek***, including epidermis, and hypodermis.
 3. **Differentiate the shape of different seeds**, including *Foenugreek*, white and Blackmustard, Quinoa, Chia, Pumpkin and *Nigella sativa* seeds.
 4. **Recognize the uses of different seeds.**
 5. **Apply proper laboratory skills and safety rules**, including slide preparation, KOH mounting, accurate drawings, waste disposal, and lab conduct.
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FOENUGREEK



ORIGIN:

Dried ripe seeds of *Trigonella foenum-graecum*, Linn. (Family Leguminosae).



MORPHOLOGY:

Surface: leathery.

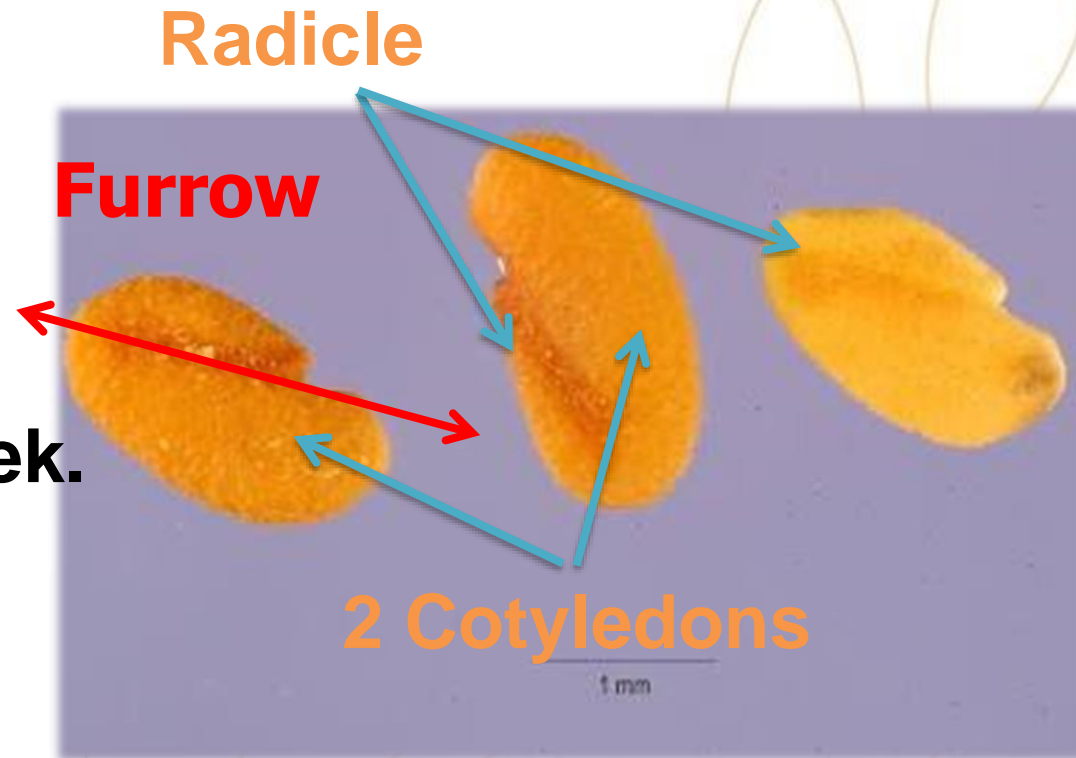
Testa scars: A furrow runs diagonally to divide the seed into 2 unequal parts (radicle and cotyledons).

Shape: Oblong, flattened & rhomboidal.

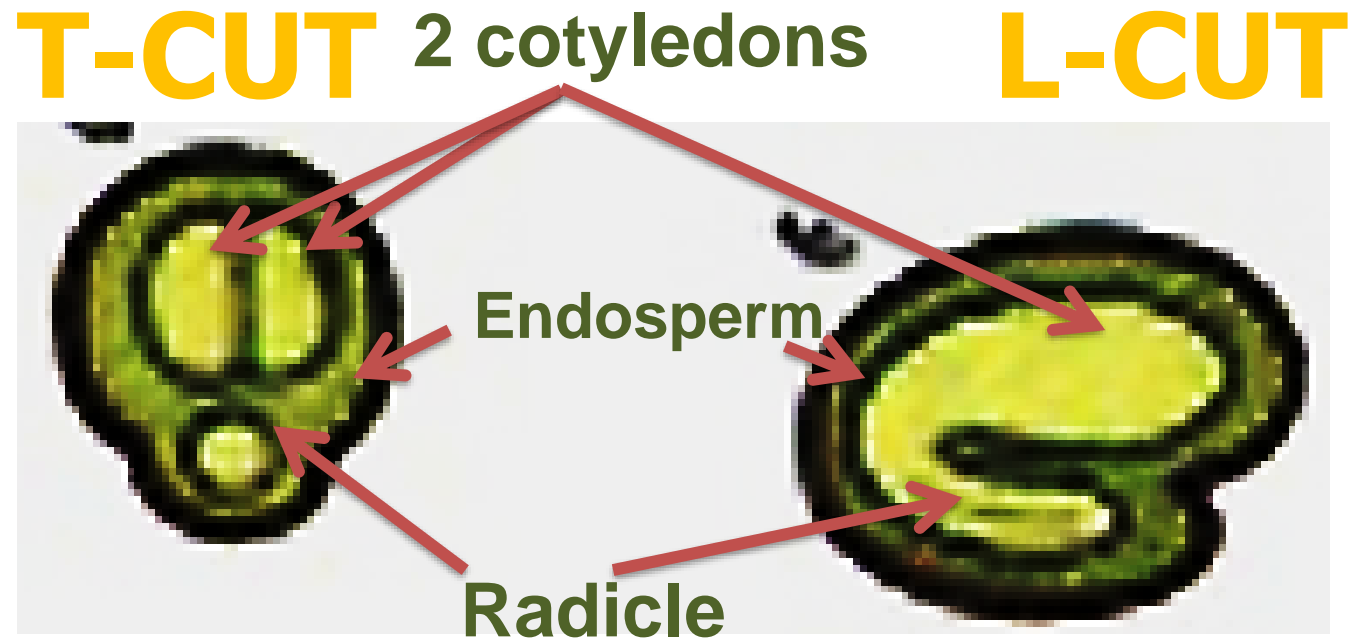
Color: yellowish-green.

Odour: Characteristic odour of foenugreek.

Taste: Mucillagenous & slightly bitter.



MORPHOLOGY:

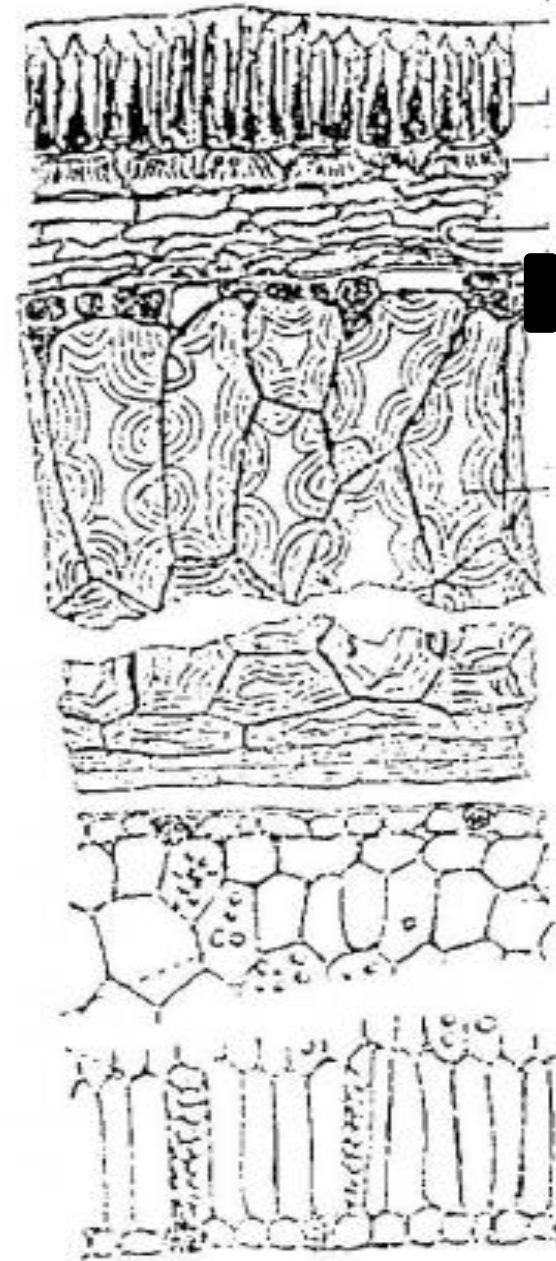


Kernel: Albuminous.

Embryo: Accumbent.



T.S.



Cuticle

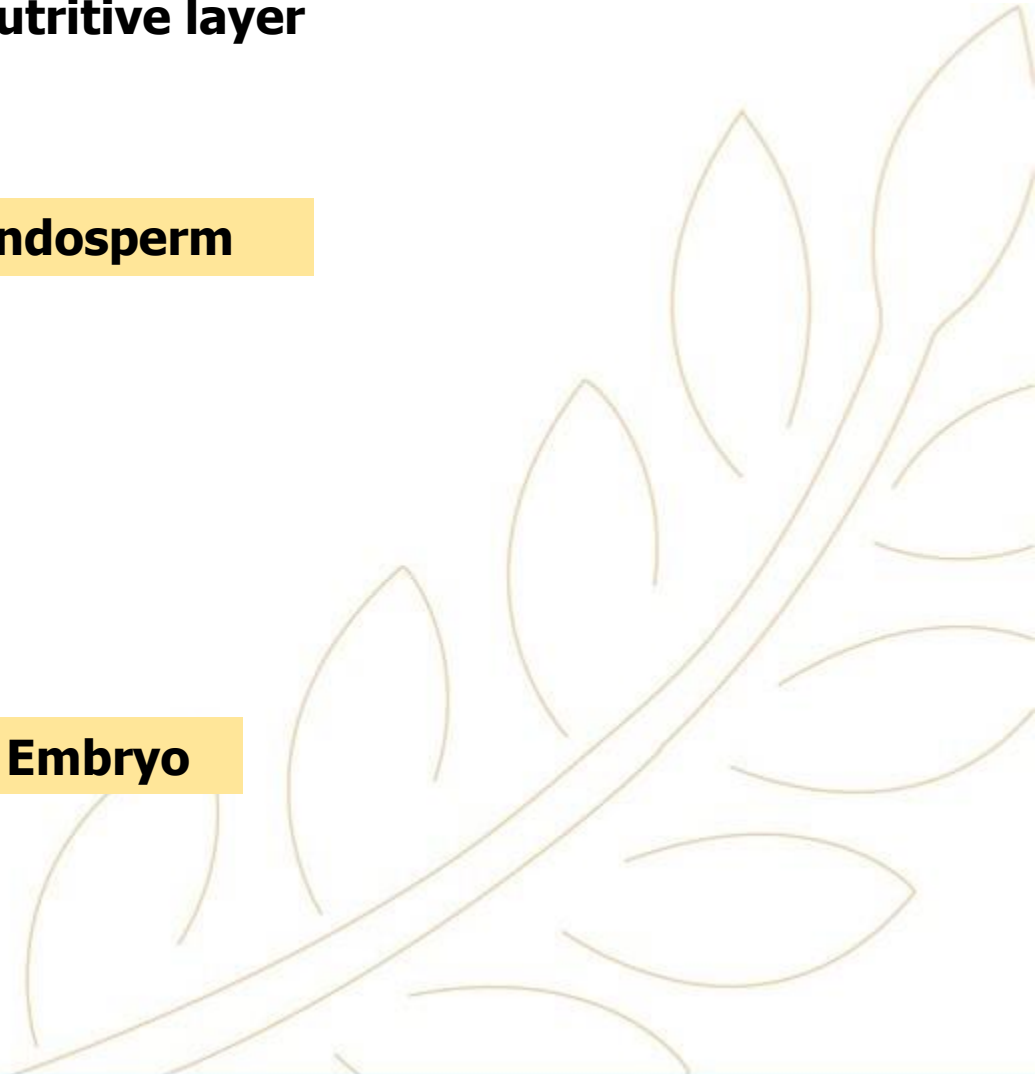
Epidermis

Hypodermis

Nutritive layer

Endosperm

Embryo



Physical characters

POWDER:

Condition: Homogenous fine powder.

Color: Yellowish-buff color.

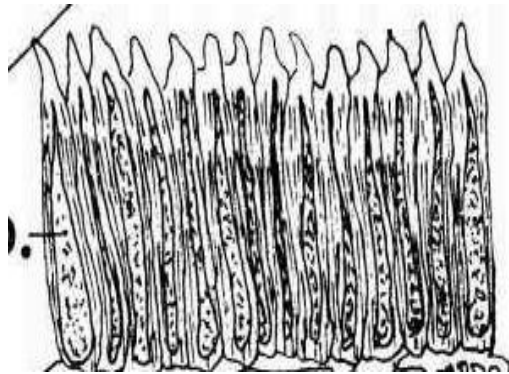
Odor: Characteristic odor of fenugreek.

Taste: mucilaginous, slightly bitter.

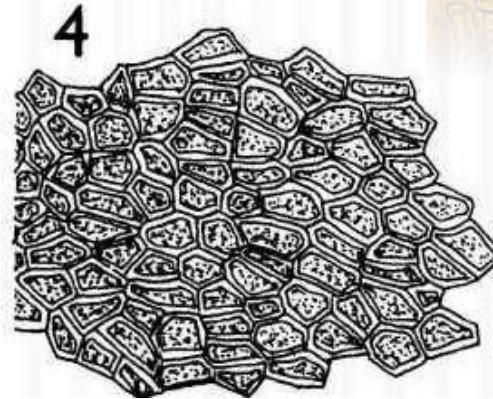


POWDER:

1- Palisade-like epidermal cells.



Side view



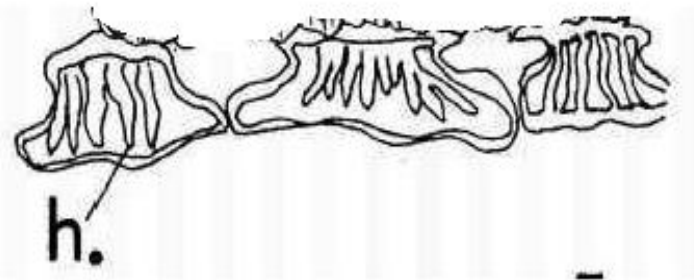
Bottom view



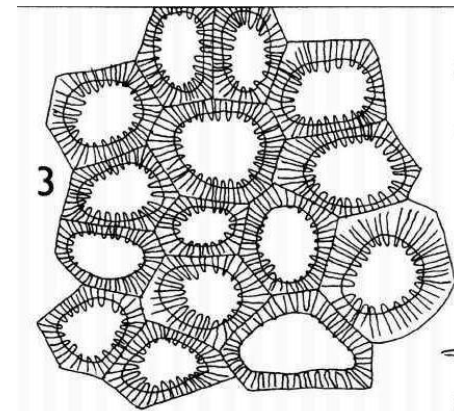
Top view

POWDER:

2- Basket-like hypodermal cells.



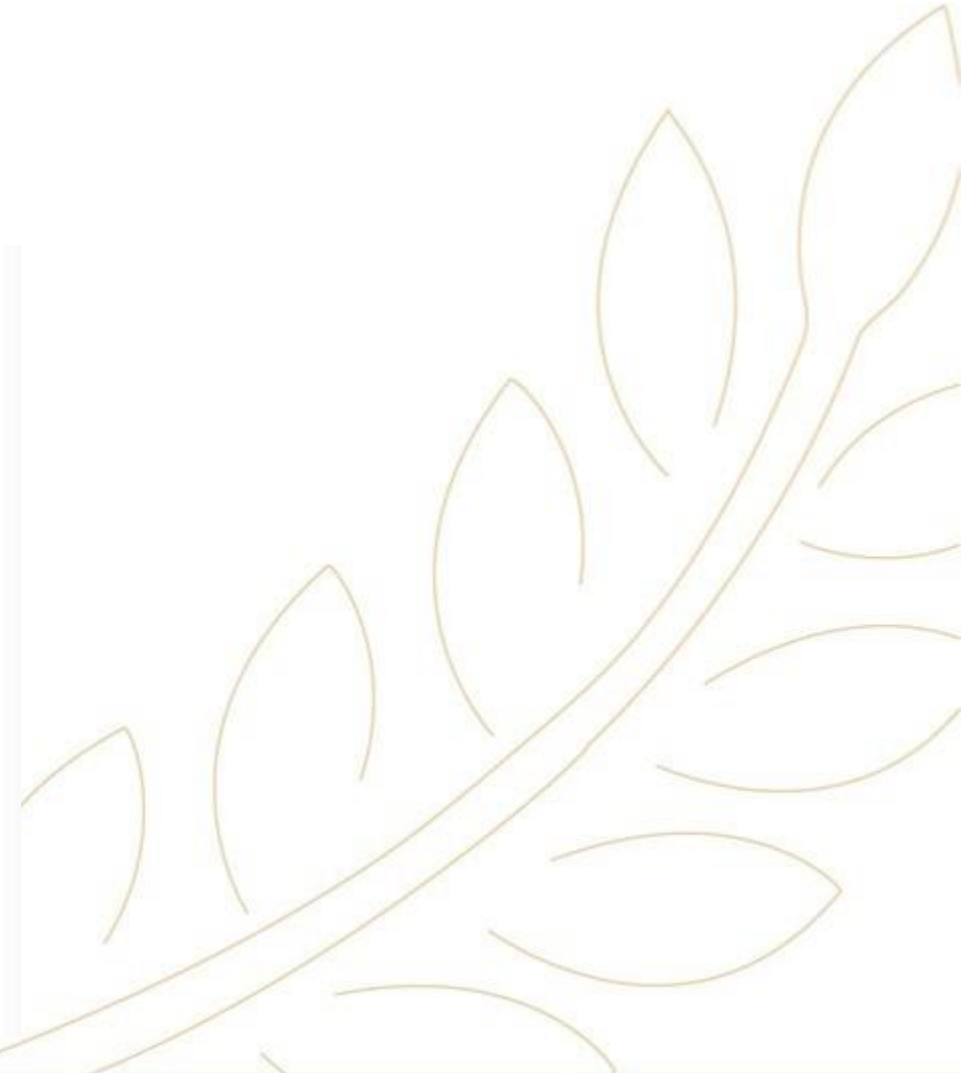
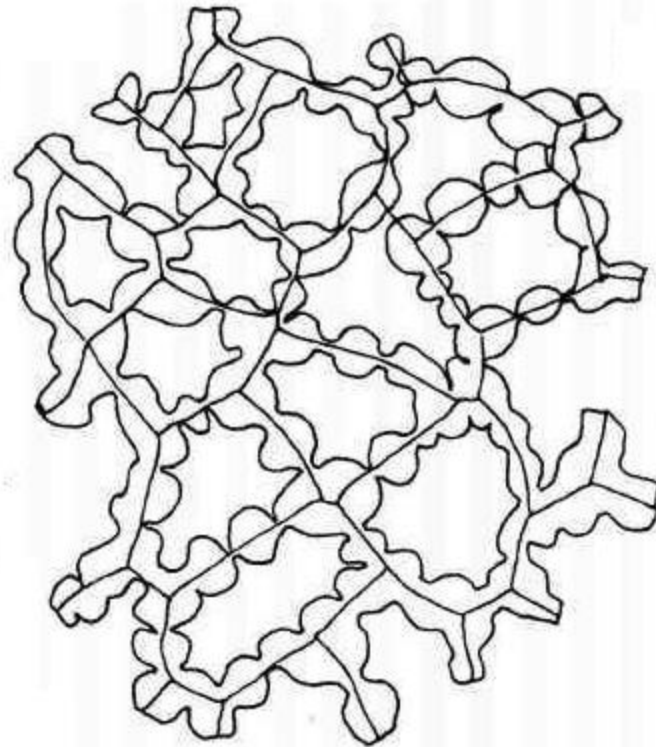
Side-view



Bottom-view

POWDER:

3- Stratified mucilaginous endosperm.

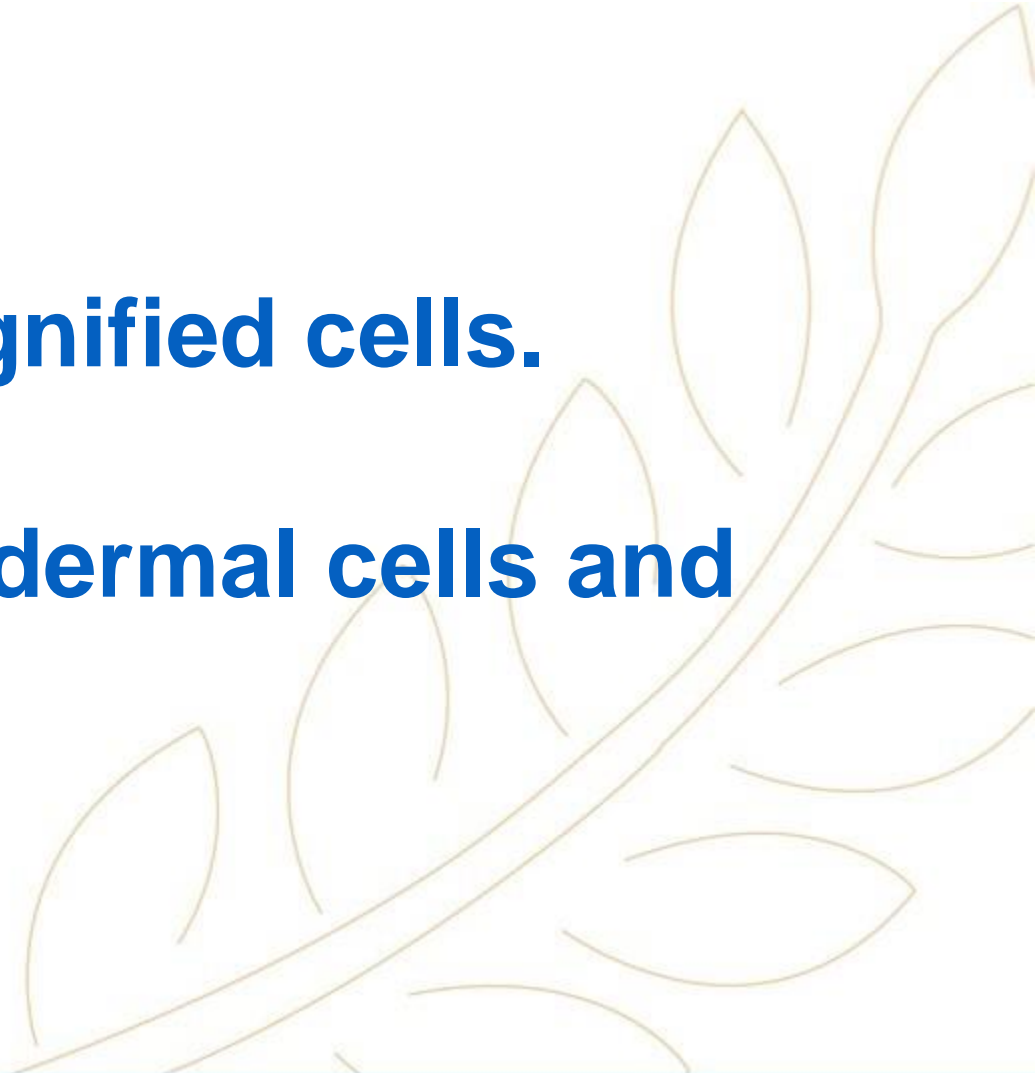


Microscopical Characters

Mount in Water: Not applied.

Mount in Phlouroglucinol: No lignified cells.

Mount in KOH: Palisade-like epidermal cells and Basket-like hypodermal cells.



Uses

1. Hypoglycemic in diabetic patients.



2. Lactagogue.



3. Treatment of dyspepsia & gastritis.

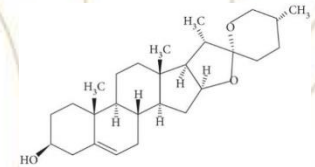


4. Hypocholesterolemic actions in normal and diabetic humans.

5. It has demulcent, laxative and nutritive properties.

6. Used as tonic, in hepatomegaly and splenomegaly.

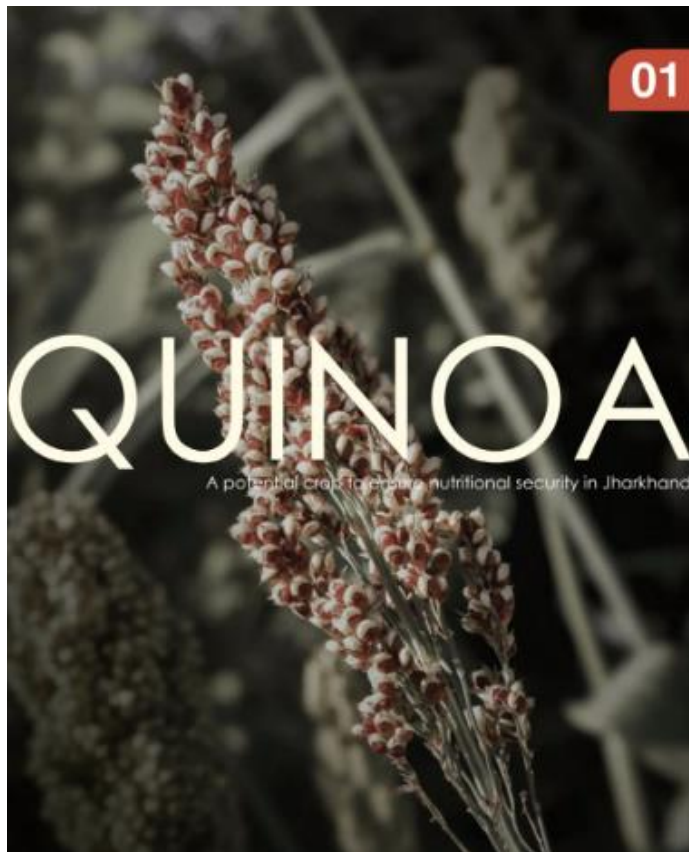
7. Topically for wounds, leg ulcers & to reduce inflammation.



8. Foenugreek seeds are a potential source of diosogenin, a basic compound in the semi-synthesis of steroid drugs such as cortisone and sex hormones.



Quinoa seeds



Dry yellow quinoa



Dry red quinoa



Dry black quinoa



Dry mixed quinoa



Cooked mixed quinoa



Cooked yellow quinoa



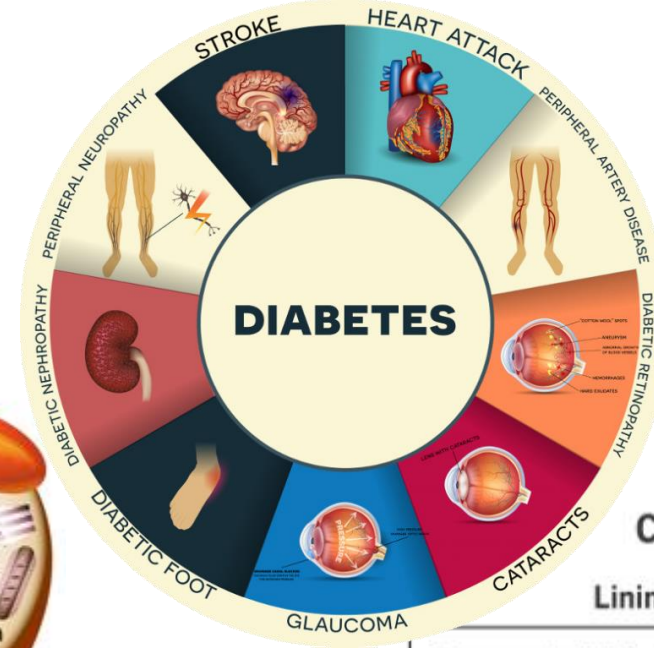
Origin:

Dried ripe seeds of *Chenopodium quinoa*, a flowering plant in the Family “**Chenopodiaceae**”

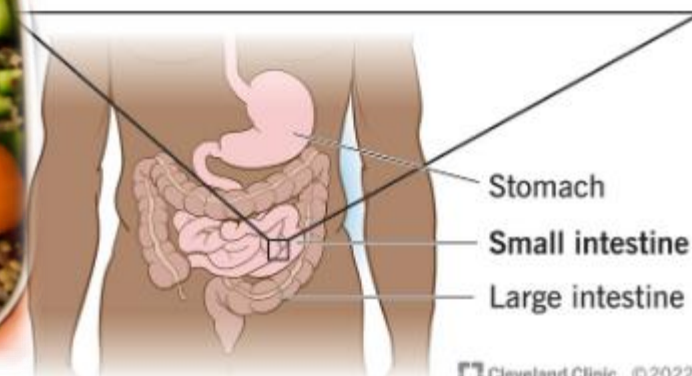
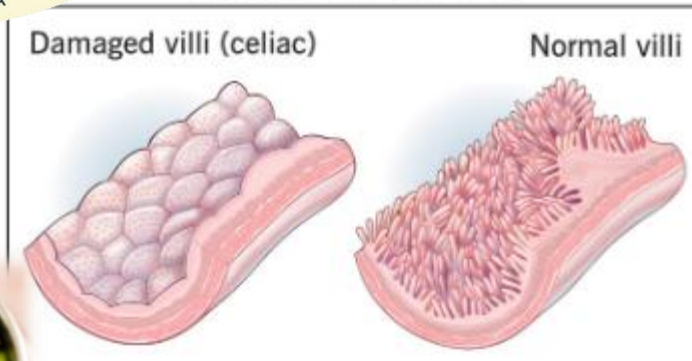


Uses

- Antioxidant.
- Treatment of Celiac disease.
- Treatment of obesity.
- Treatment of Diabetes.



Celiac Disease
Lining of small intestine



Chia seeds



Origin:

Dried ripe seeds of *Salvia hispanica*, a flowering plant in the Family “**Lamiaceae**”

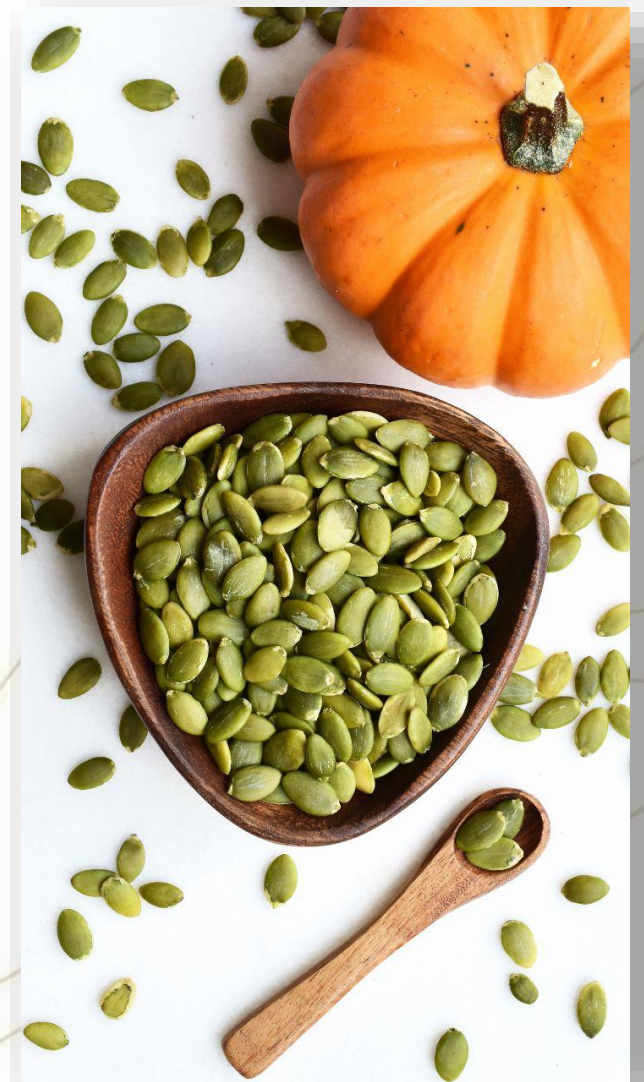


Uses

1. Treatment of obesity
2. Diabetes
3. Hypertension
4. Reducing cholesterol

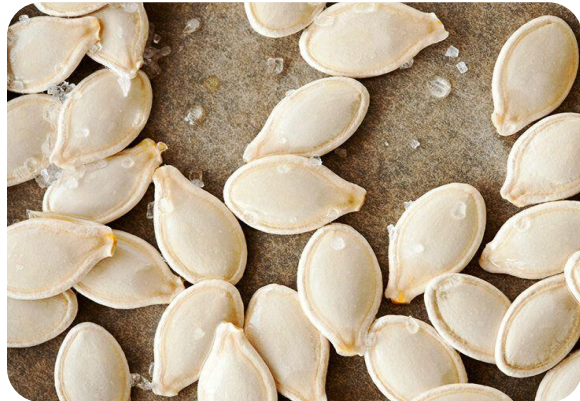


Pumpkin seeds



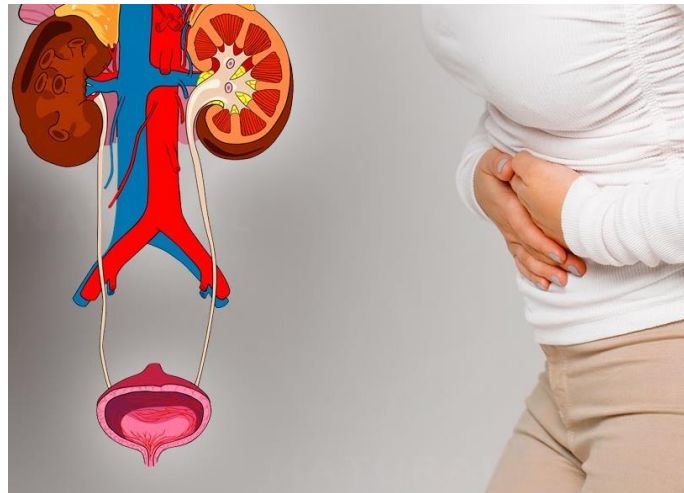
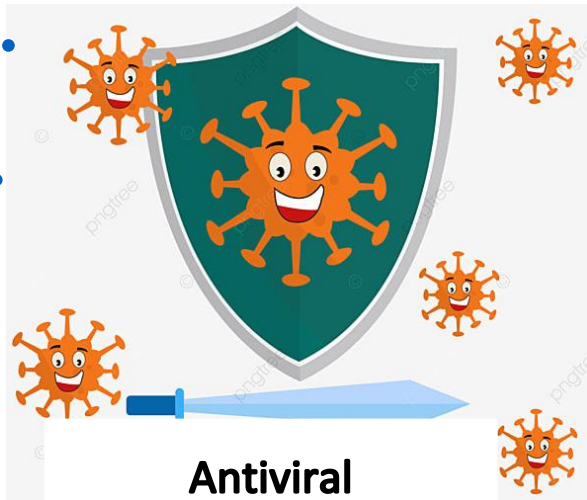
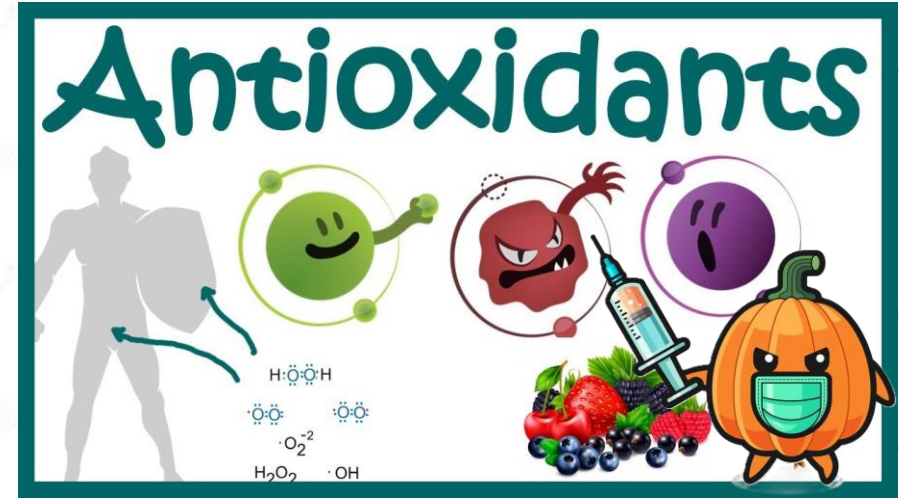
Origin:

Dried ripe seeds of *Cucurbita pepo*, also known as a *pepita* (from the Mexican Spanish: *pepita de calabaza*, 'little seed of squash'), Family “**Cucurbitaceae**”



Uses

- Anti-inflammatory.
- Antiviral.
- Analgesic in urinary disorders.
- Anti-ulcer.
- Antidiabetic.
- Antioxidant.



Nigella sativa



Origin:

Dried ripe seeds of *Nigella sativa*; Family
Ranunculaceae.

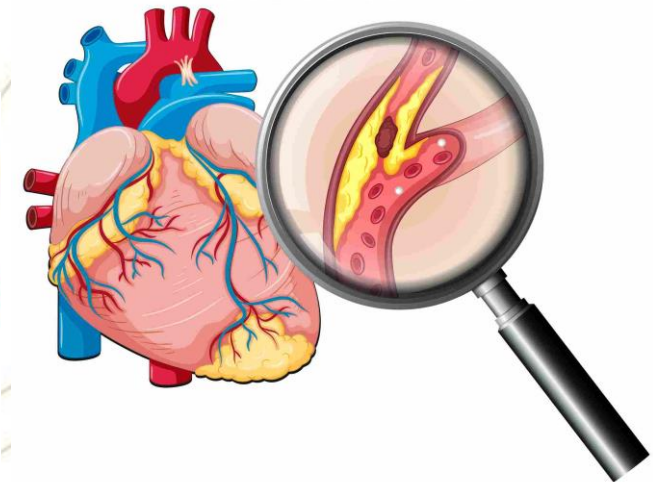
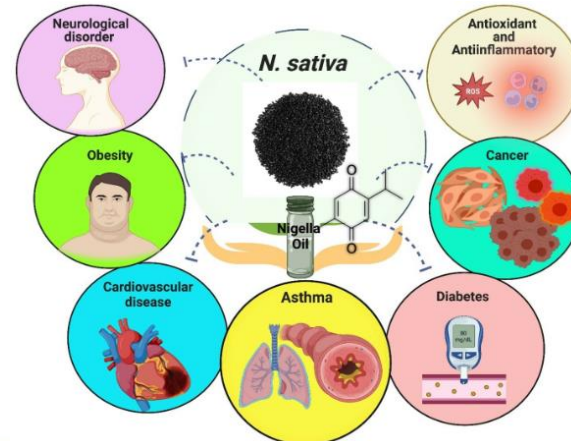


Uses

- Treatment of respiratory tract conditions (allergy, cold, cough, bronchitis, flu and asthma).
- Support circulatory and immune system.
- Decrease the probability of arteriosclerosis and prevent thrombosis (due to the presence of unsaturated fatty acids (omega 3 & 6).

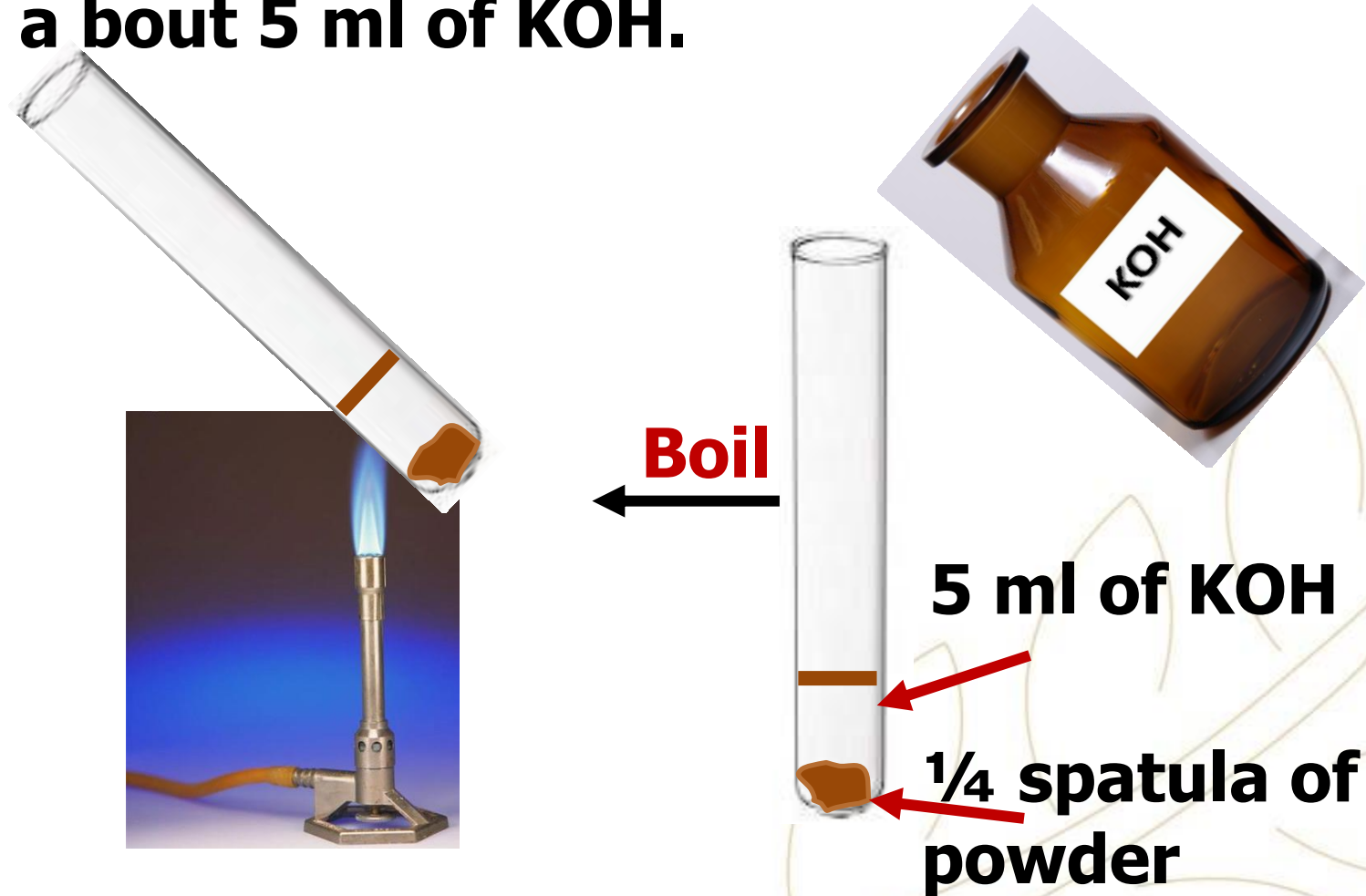


Arteriosclerosis



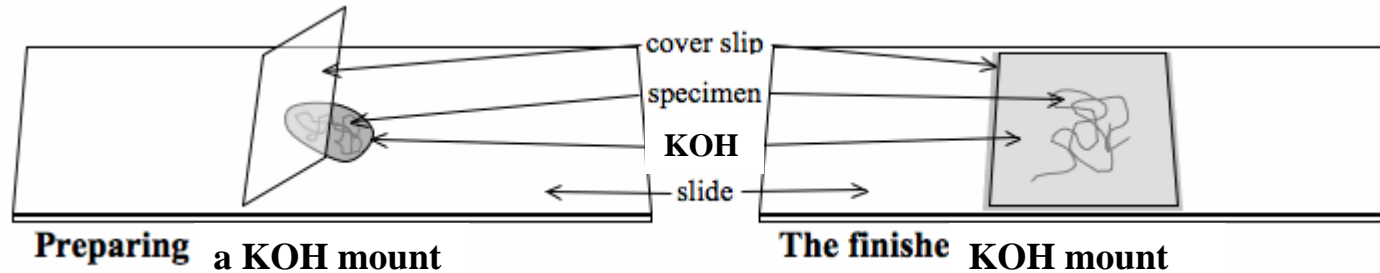
Practical work:

1- Boil a quarter spatula of the powdered seed in a bout 5 ml of KOH.



Practical work:

2- Prepare your slide and check the key elements.



3- Complete your drawings.

P.S.



Keep your work place and tools clean.

Dispose the left KOH in the container not in the sink.

Main Key Elements Drawings:

Palisade-like epidermal cells:

1



Side view



Top view



Bottom view

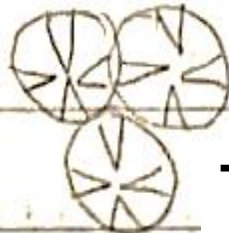


Basket-like hypodermal cells:

2



Side view



Top view



Bottom view

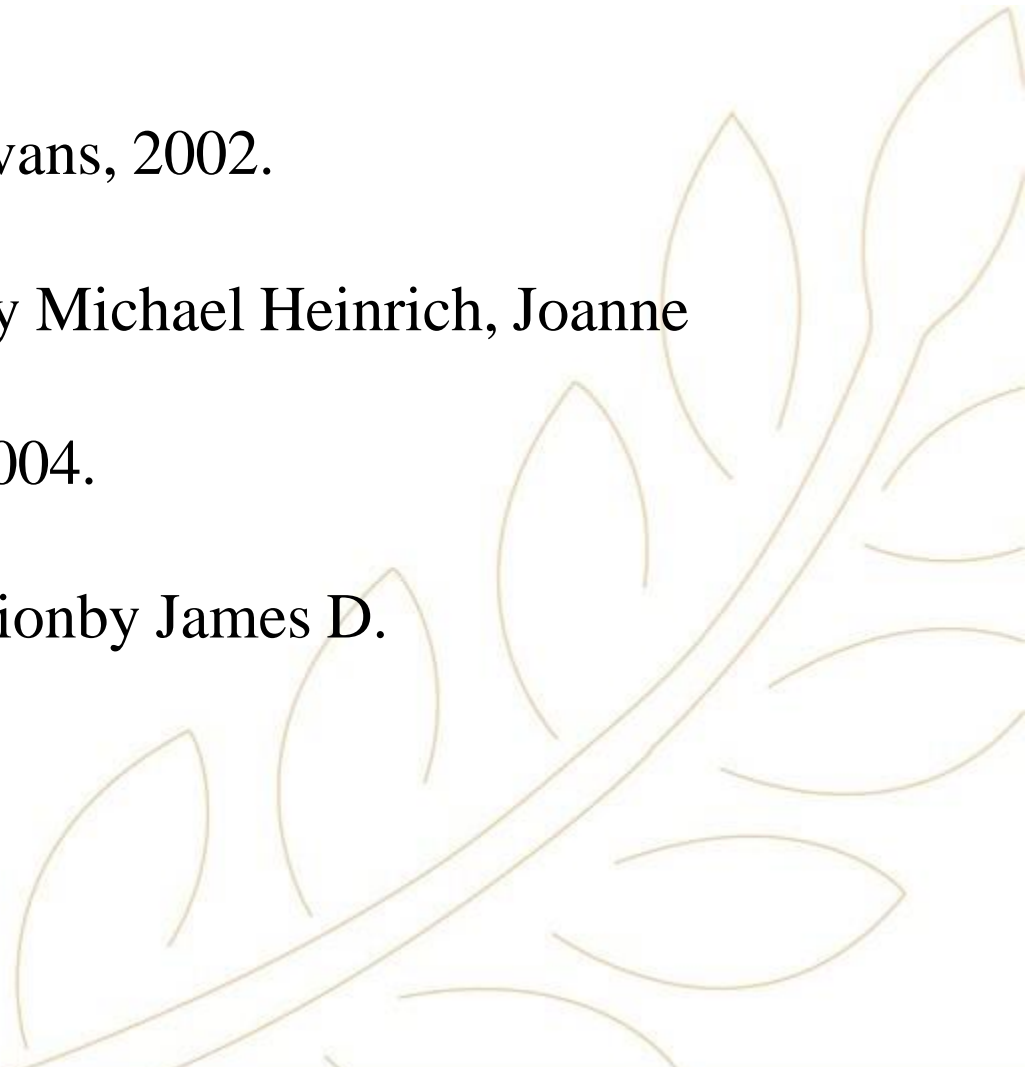


Stratified mucilaginous endosperm:

3



References:

1. Trease & Evans' Pharmacognosy by William Charles Evans, 2002.
 2. Fundamentals of Pharmacognosy and Phytotherapy by Michael Heinrich, Joanne Barnes, Simon Gibbons, and Elizabeth M. Williamson, 2004.
 3. Botany :An introduction to Plant Biology, Third edition by James D. Mauseth, 2008.
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Useful links:

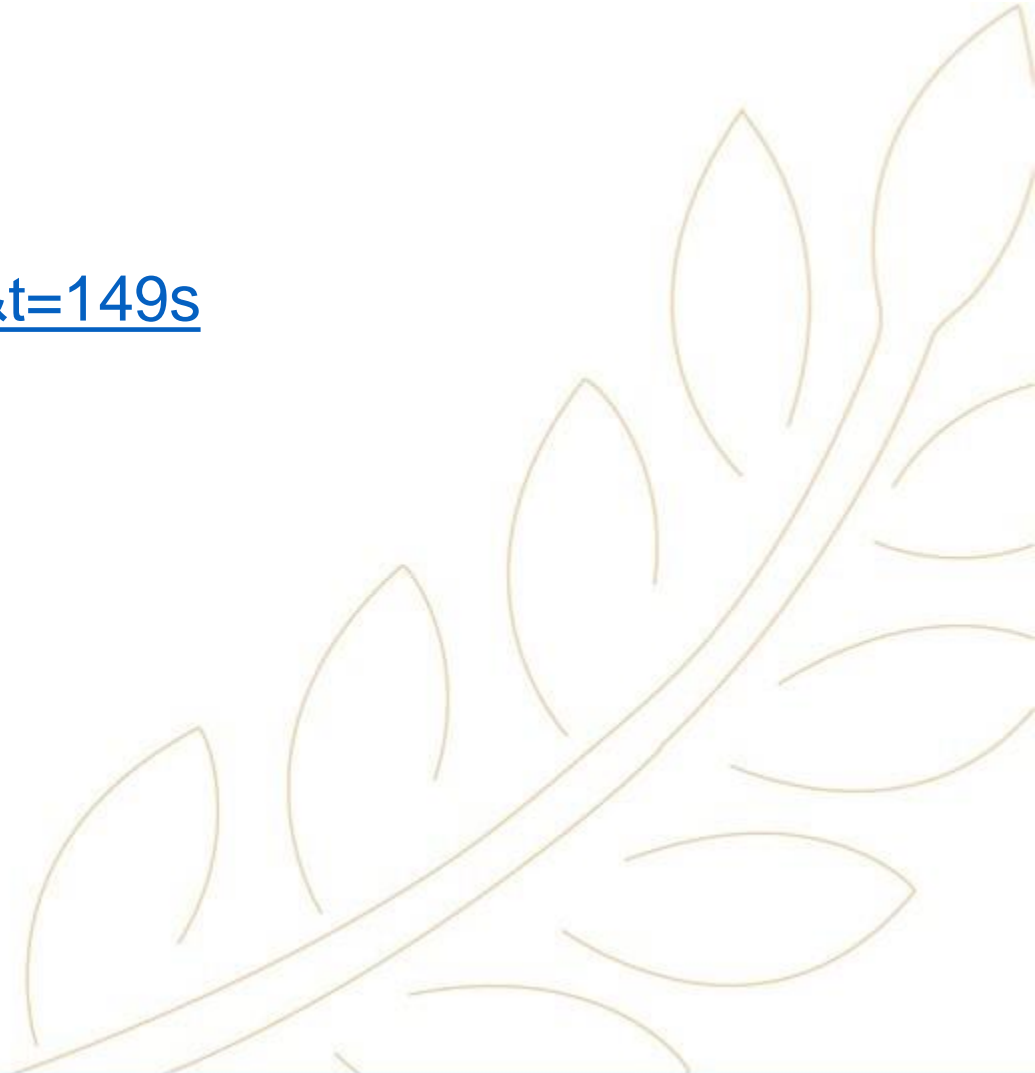
<http://www.herbmed.org/>

https://www.youtube.com/watch?v=un_RdpAi8U8&t=149s

<https://www.youtube.com/watch?v=5pdXfKt1rzY>

<http://www.botanical.com/>

https://www.youtube.com/shorts/CZyMP0_EBOw



THANK YOU!