

Lab 1

Pharmacognosy

PHG112



The background is a dark blue gradient. On the left side, there are several overlapping, curved bands of varying shades of green, creating a sense of depth and movement. On the right side, there is a stylized, light-colored outline of a leafy branch, with several leaves of varying sizes and shapes extending upwards and to the right.

Faculty of **Pharmacy**

Vision

The Faculty of Pharmacy of October University for Modern Sciences and Arts is a pioneer in tutelage, scientific research, and community service at the local and regional levels, and holds an advanced position among its counterparts in international Pharmacy subject ranking

الرؤية

- كلية الصيدلة جامعة أكتوبر للعلوم الحديثة و الآداب كلية رائدة فى مجال التعليم و البحث العلمى و المشاركة المجتمعية على المستوى القومى و الإقليمى و لها ترتيب متقدم فى التصنيف العالمى لكليات الصيدلة.

Mission

•The Faculty of Pharmacy of October University for Modern Sciences and Arts is nationally accredited, has British partnership, and is committed to producing graduates who are able to compete in national and international job markets and entrepreneurship, and to be an effective member of the medical team providing best medical care, while heeding professional ethics, through an outstanding academic programme and proficient academic staff. The faculty is devoted also to provide effective community services, and exceptional applied scientific research.

الرسالة

• كلية الصيدلة جامعة أكتوبر للعلوم الحديثة والآداب معتمدة محليا، بشراكة بريطانية، تلتزم بتخريج صيدلى قادر على المنافسة فى أسواق العمل المحلية و الدولية و قيادة الأعمال، و أن يكون عضو فعال فى الفريق الطبى بتقديم أفضل رعاية صحية، مراعيأ أخلاقيات المهنة، من خلال برنامج تعليمى متميز و أعضاء هيئة تدريس أكفاء، وكذلك تلتزم الكليه بتقديم خدمات مجتمعية فعالة و أبحاث علمية تطبيقية متميزة.

Pharmacognosy PHG112

Items	Marks
Quizzes	5 Marks
Assignment	15 Marks (10+5)
Practical Exam(s)	40 Marks (15+15+10)
Mid Term Exam	30 Marks
Final Exam	60 Marks
TOTAL	150 Marks



Pharmacognosy PHG112

RULES

- **Lab evaluation** –10 marks
- **Attendance**
 - (only 15 min late is allowed)
 - (sign for yourself).
- **Lab coat:**
 - (not allowed to be in the lab without it).
 - (take it on and off before and after you get to the lab).
- **Drawing:**
 - (during the lab time).
 - (in a specific note using pencil).



Pharmacognosy PHG112 RULES

- **Lab evaluation --10 marks**
- **Work place and tools:**



- (waste disposal → don't throw anything in the **Sink**).
- (microscope → **switch it OFF**).

- **Behavior:**

- (may get you to loose the whole 5 marks).



Pharmacognosy

PHG112

Organs:

Seeds

Herbs

Fruits

Subterranean

Unorganized





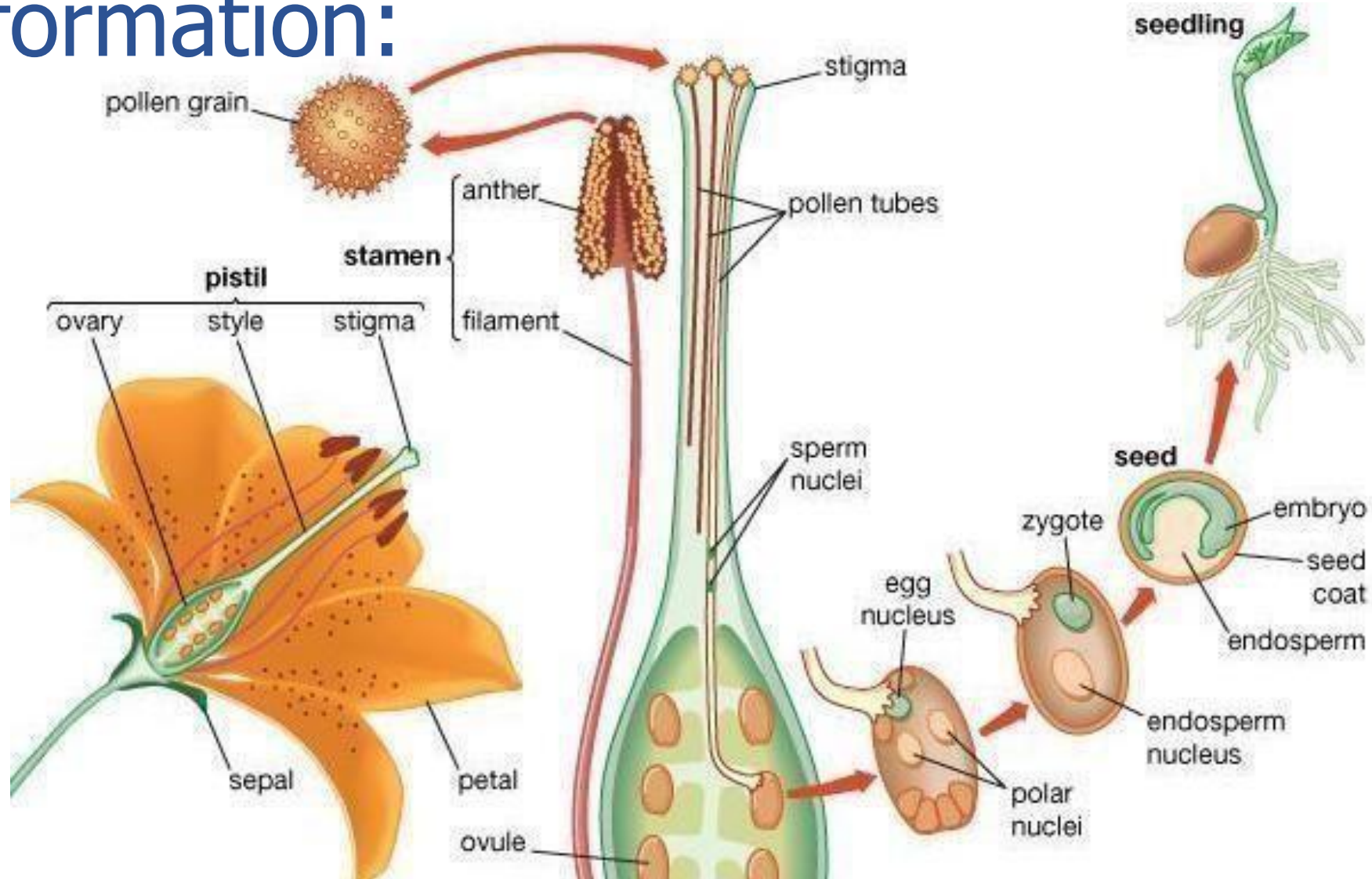
Definition:

Mature fertilized ovule that contains an embryo.

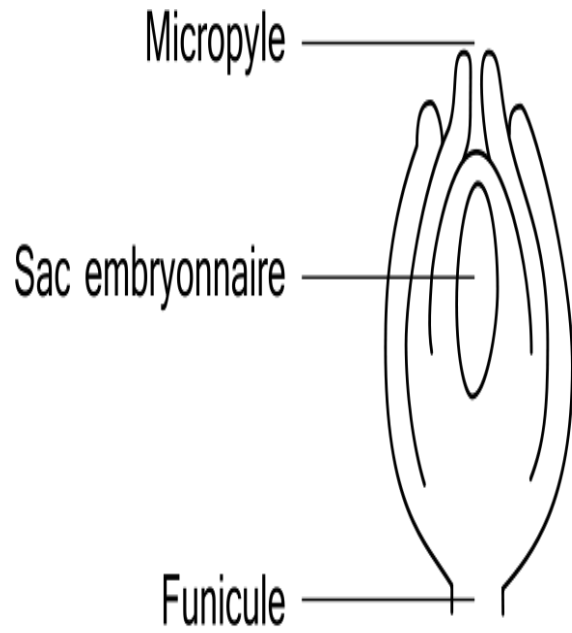
Its function is to facilitate transportation and to ensure continuation and distribution of the plant.



Seed formation:



Types of ovules



Ovule
Orthotrope

Ovule
Campylotrope

Ovule
Amphitrope

Ovule
Anatropous

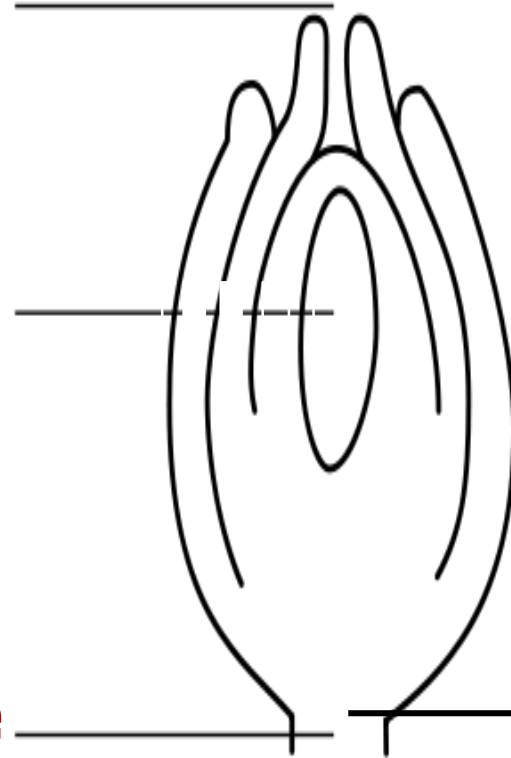
Types of ovule:

1-Atropous ovule(Orthotropous).

Micropyle

Funicle

Chalaza

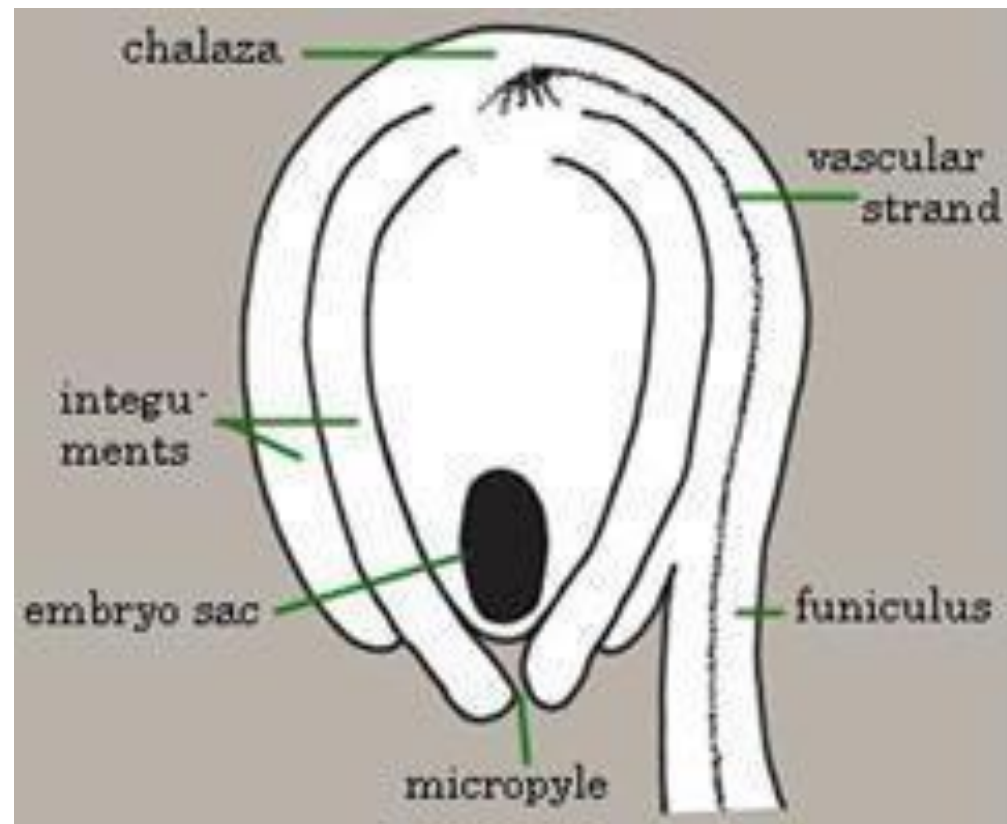


Types of ovule:

2-Anatropous ovule:

Inverted ovule

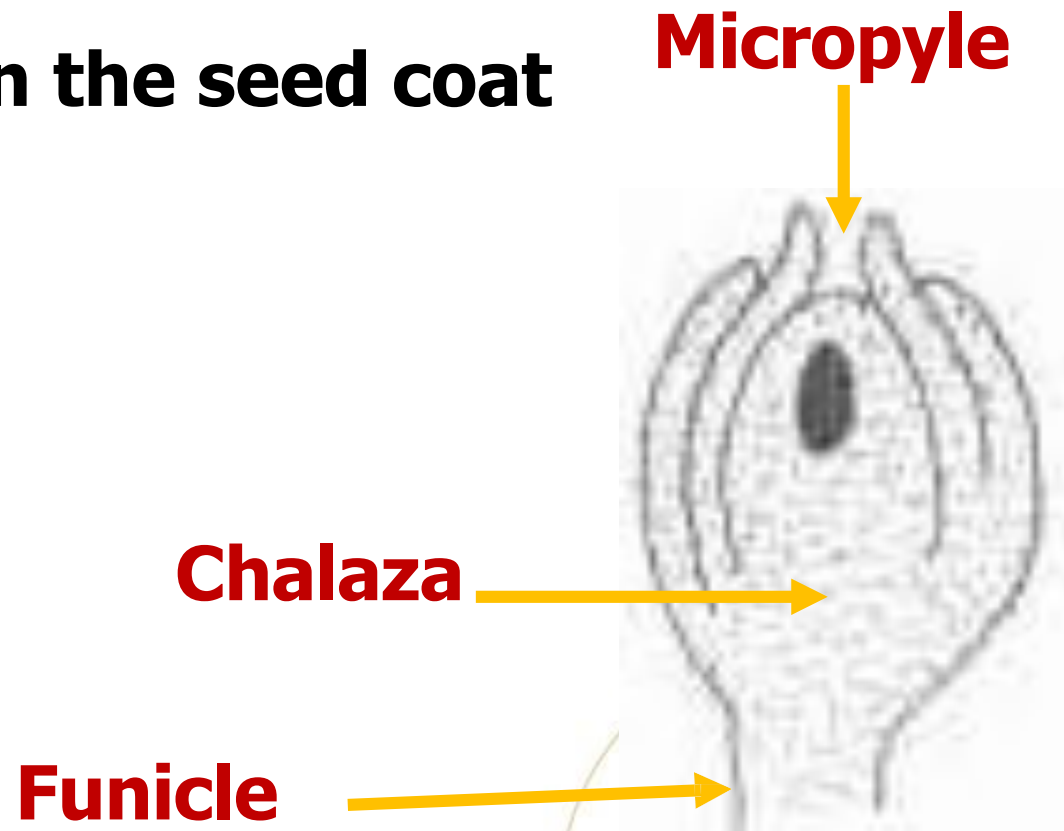
❑ Raphe present half circum (Zingiberaceae, Linaceae).



Types of scars:

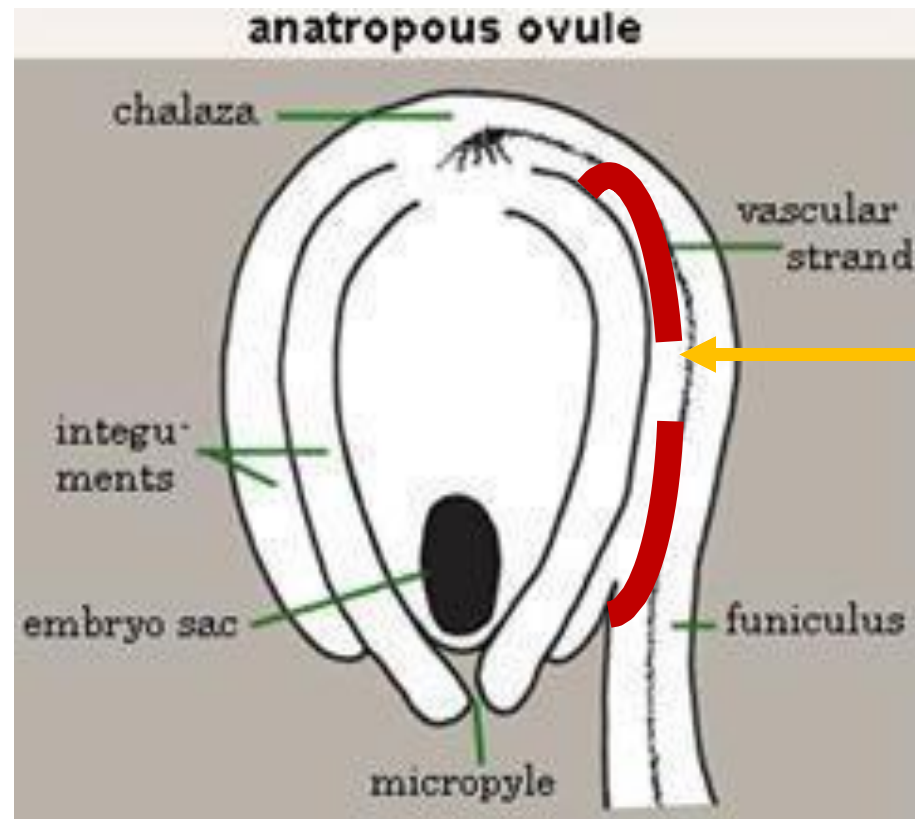
1 Hilum: Scar left after removal of seeds from its funicle

2 Micropyle: Pore in the seed coat for gas exchange



Types of scars:

3-Raphe: Ridge of vascular tissue on the seed coat **or** line running from hilum to chalaza.



Raphe

Typical layers of seed:

1 **Testa (seed coat)**

2 **Perisperm**

3 **Endosperm**

4 **Embryo**

Kernel



Types of seeds:

Kernel

Typical albuminous seed



endosperm perisperm embryo

Albuminous seed

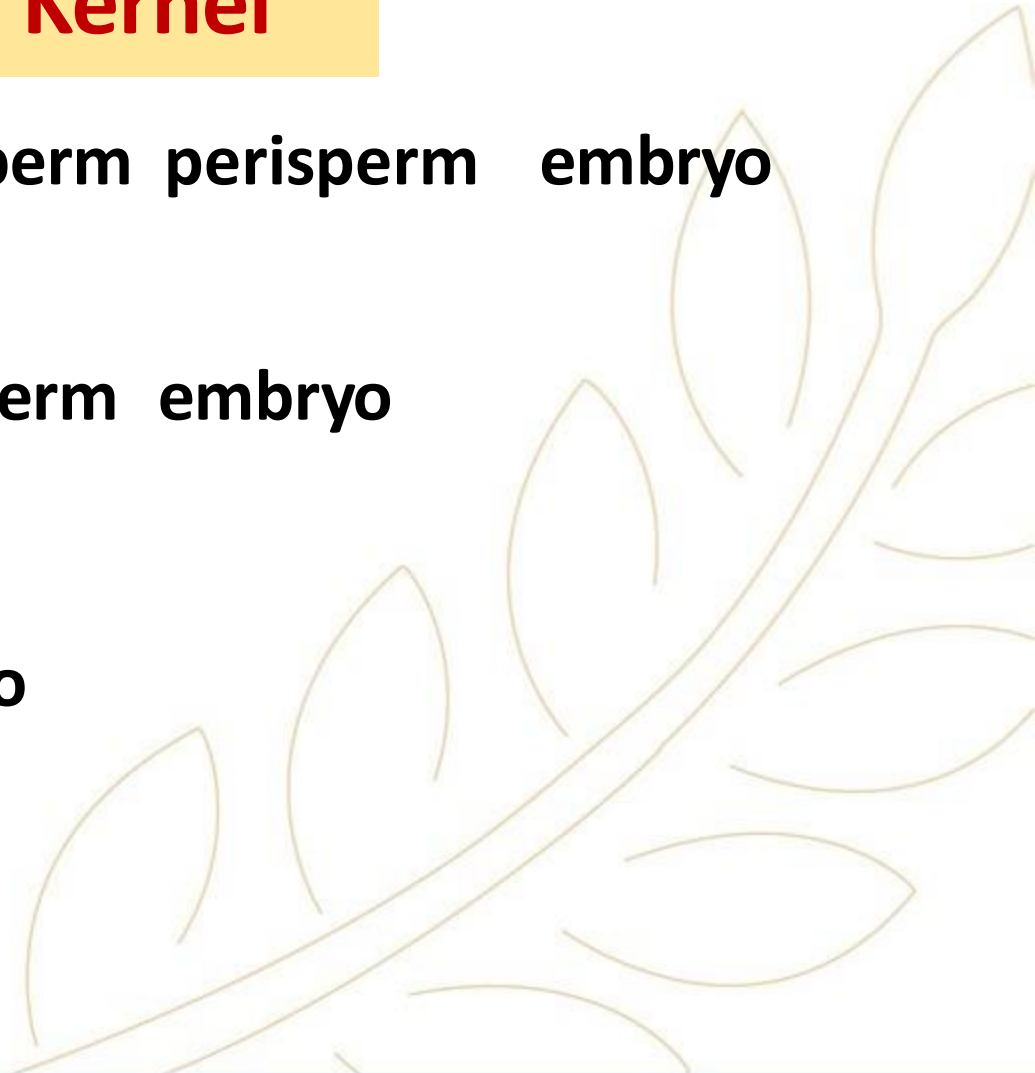


endosperm embryo

Exalbuminous seed

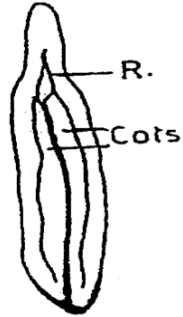


embryo

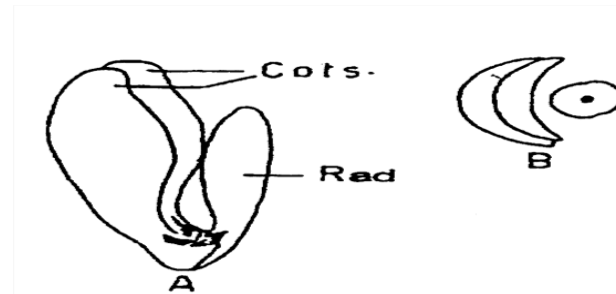


Types of Embryo

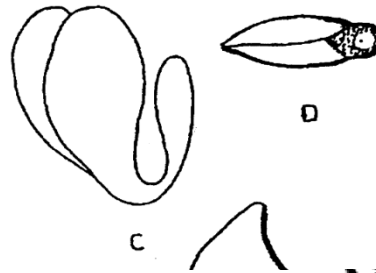
- **Straight**



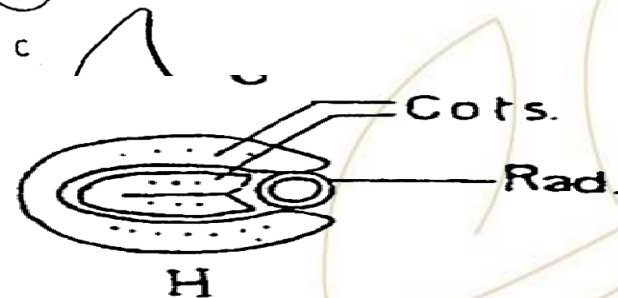
- **In accumbent**



- **Accumbent**



- **Orthoplocous**



Morphology of the seed

1-Shape

2-Color

3-Odour

4-Taste

5-Scars left on the seed



Seeds

1-Linseed



- **Origin:** It is the dried ripe seeds of *Linum usitatisimum*
Family: Linaceae.



Linum “linear” → Linin
usitatisimum “the most useful”



Morphology:

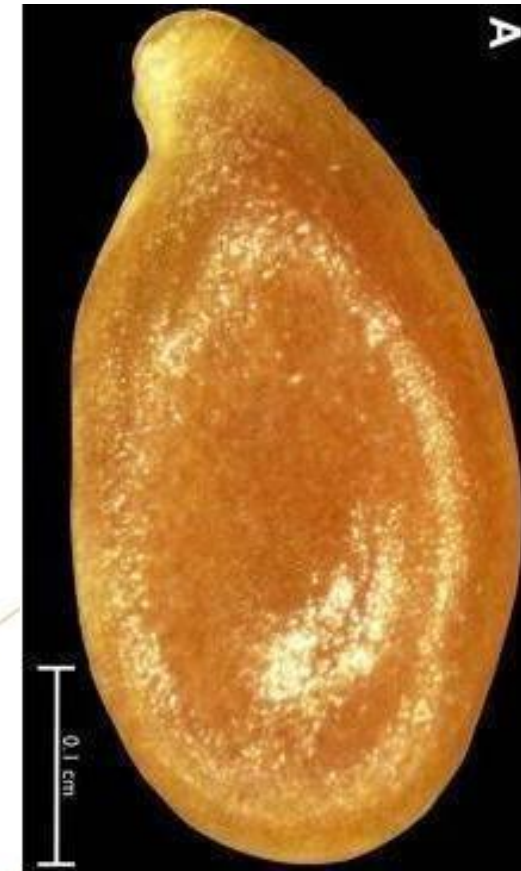
Shape: Elongated ovate nearly flate, rounded at one end, pointed at the other end.

Odor: Very slight, characteristic when crushed.

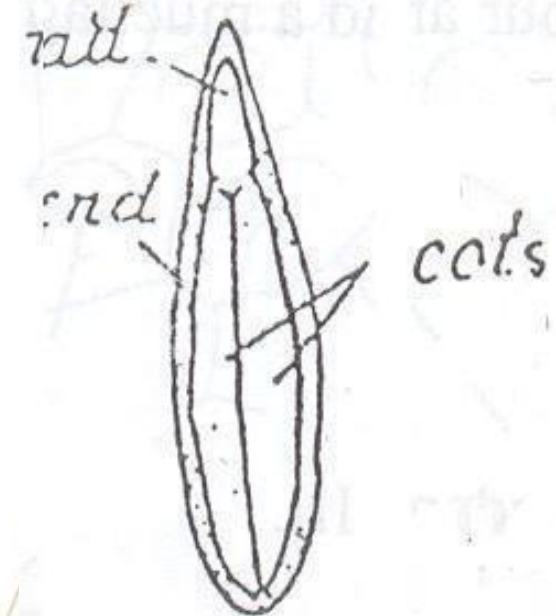
Surface: Flattened

Color: Glossy brown

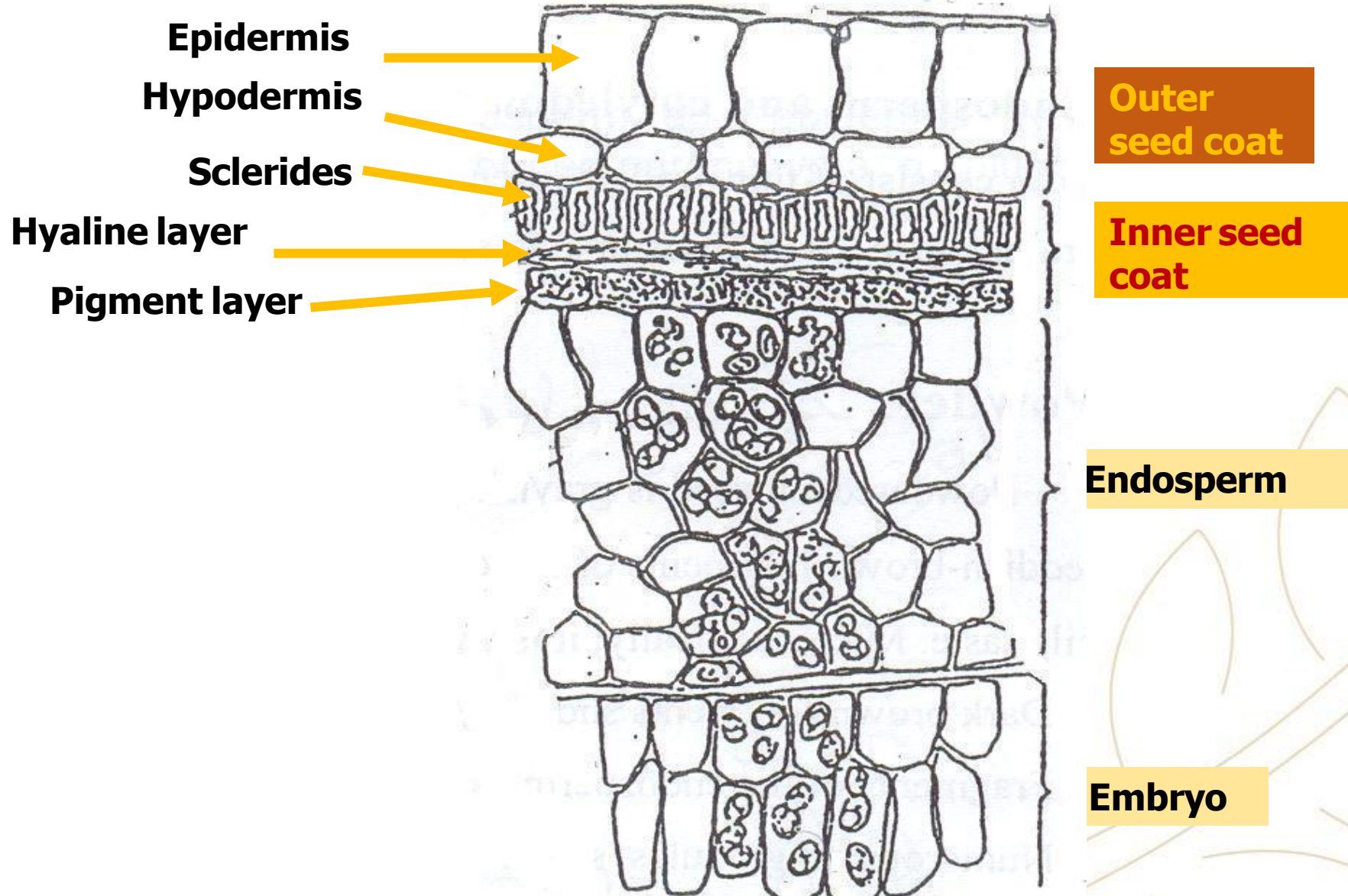
Taste: Mucilaginous oily taste



- **Testa:** Smooth, shining, pitted.
- **Hilum and micropyle:** Distinct as a small hollow on the edge near the pointed end.
- **Raphe:** Distinct yellow ridge from the hilum to the rounded end.
- **Ovule:** Anatropous ovule



TS.



Powder:

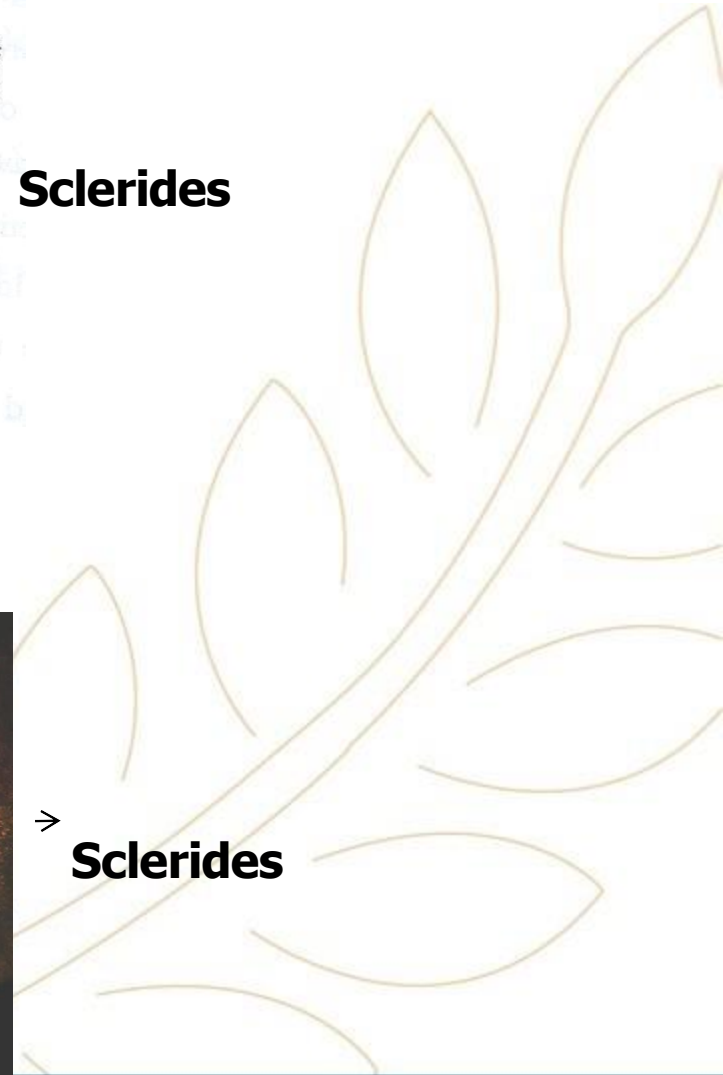
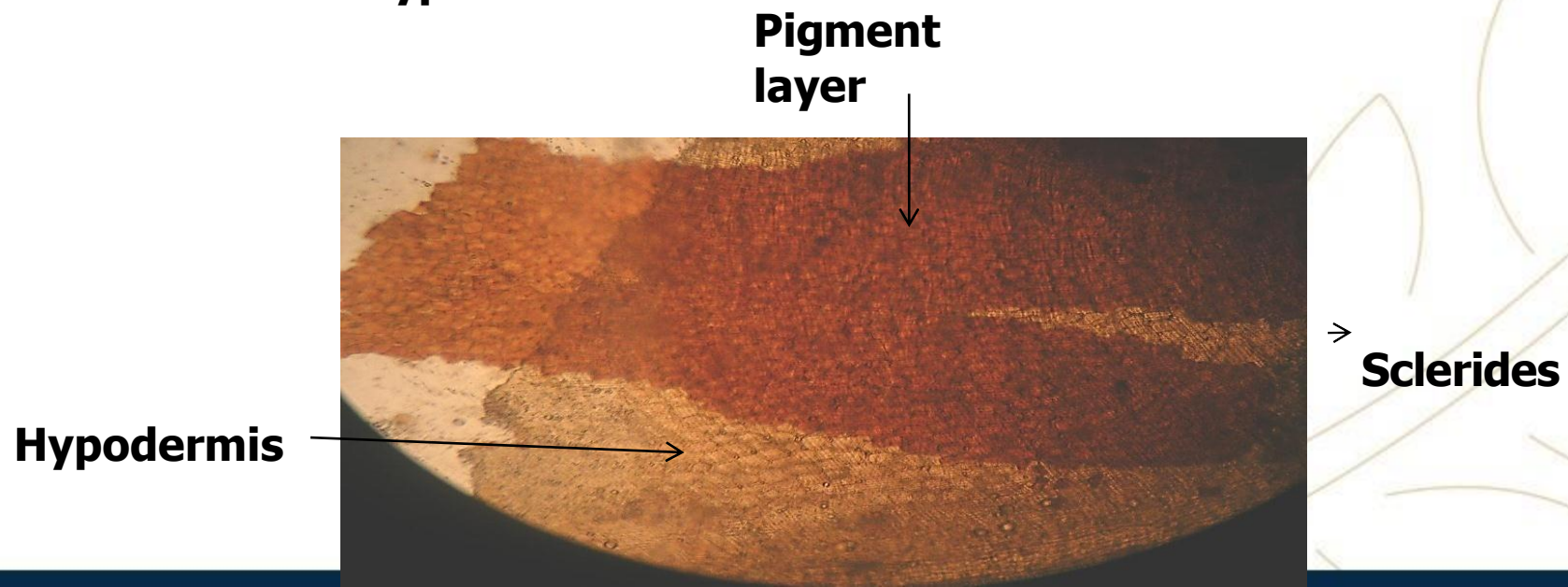
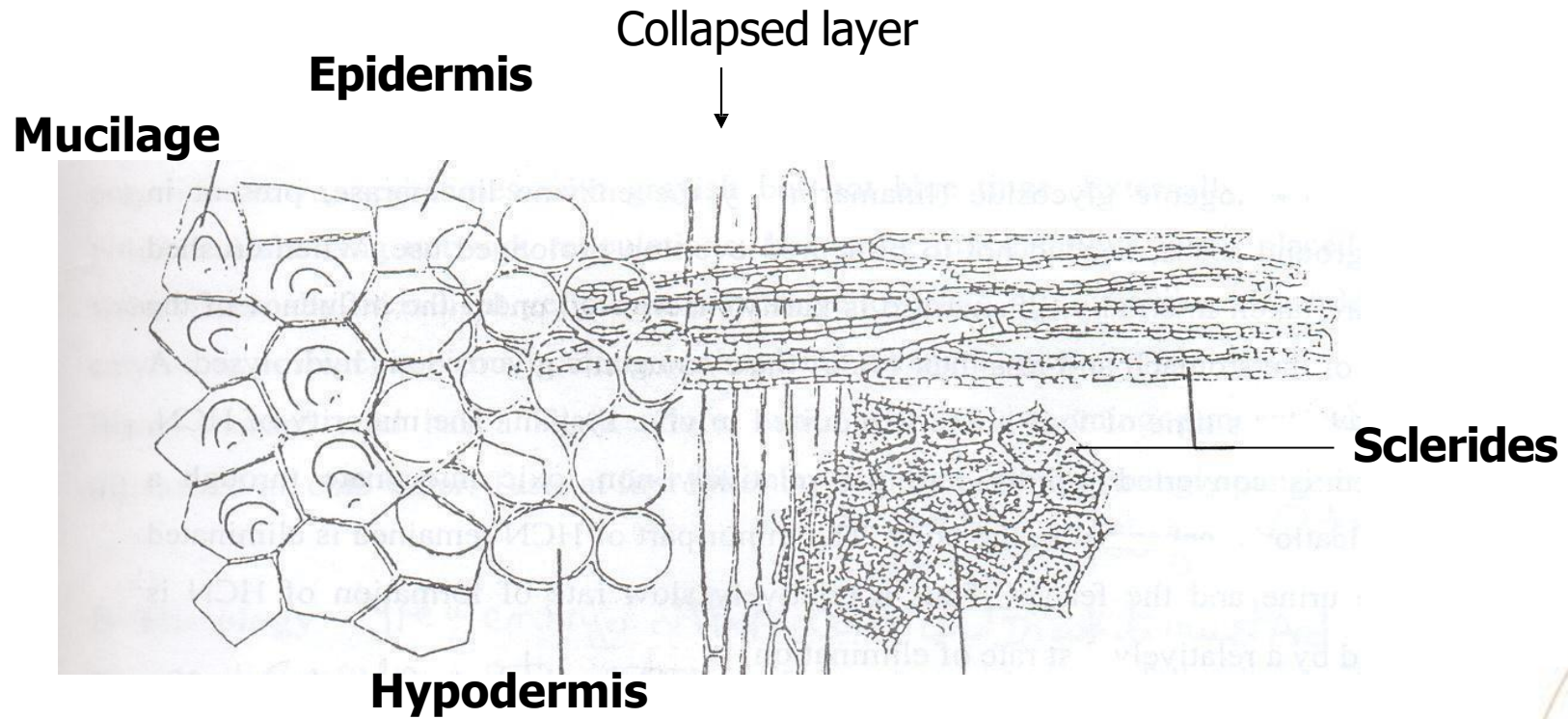
Condition: Fine powder

Color: Yellowish brown with dark particles

Odor: Oily characteristic odor of linseed

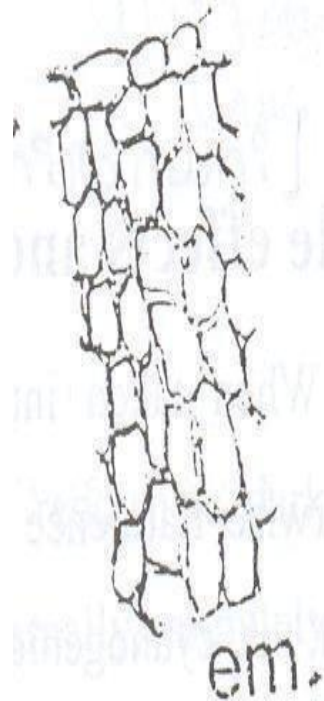
Taste: Mucilaginous oily



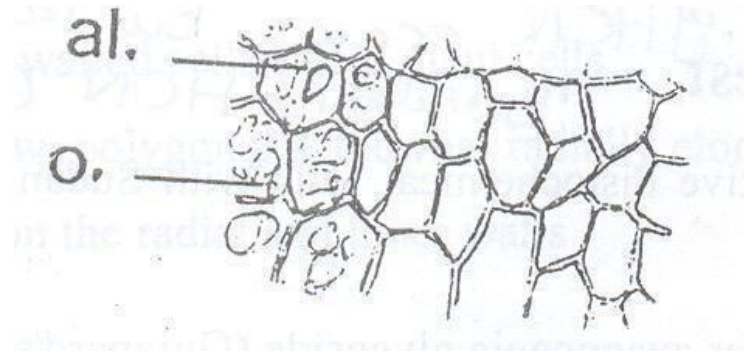




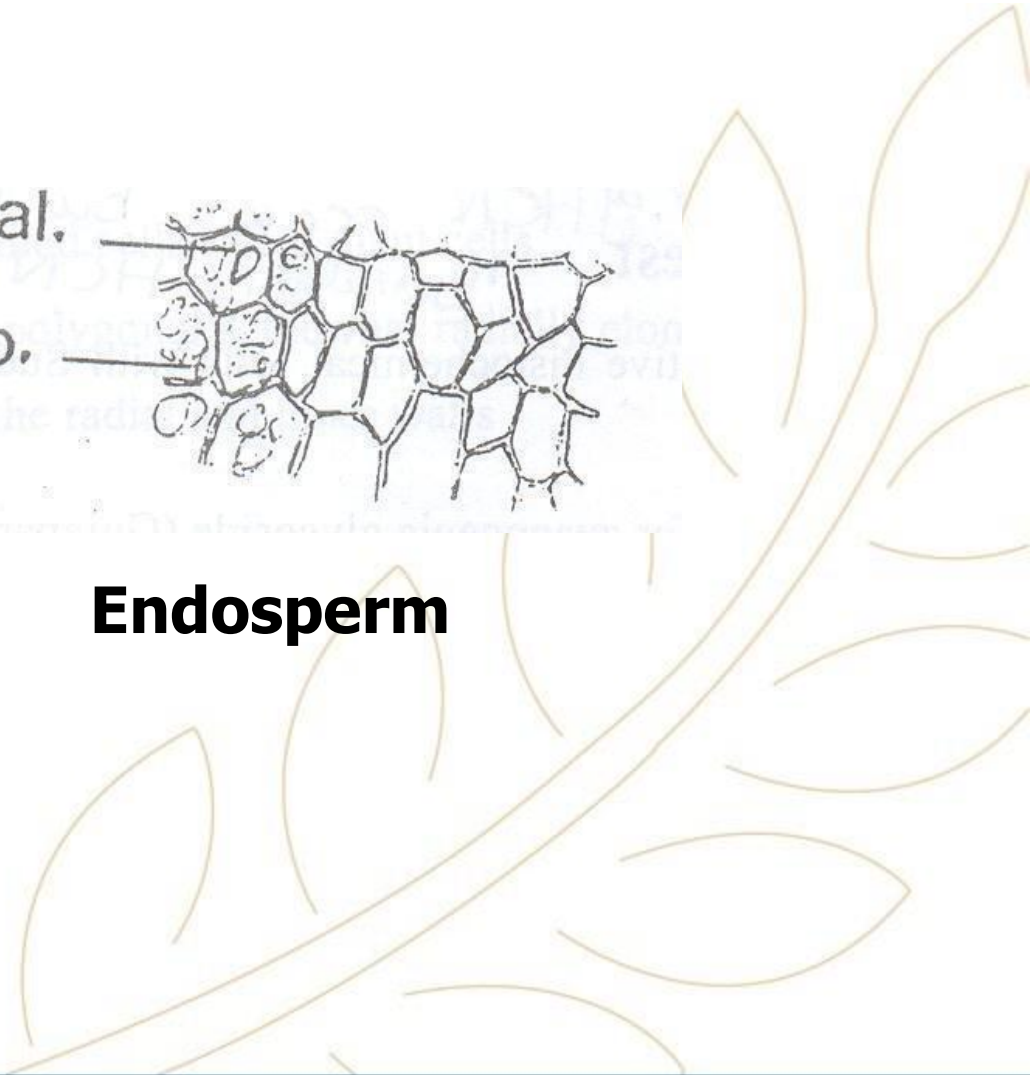
Pigment layer

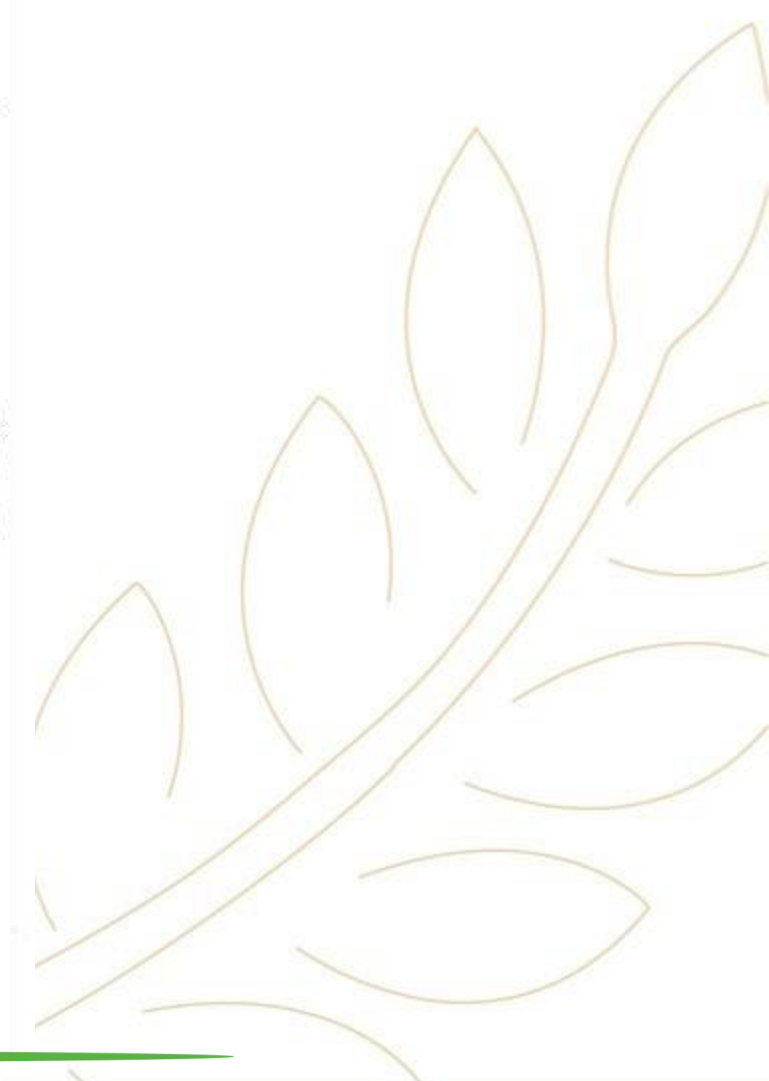
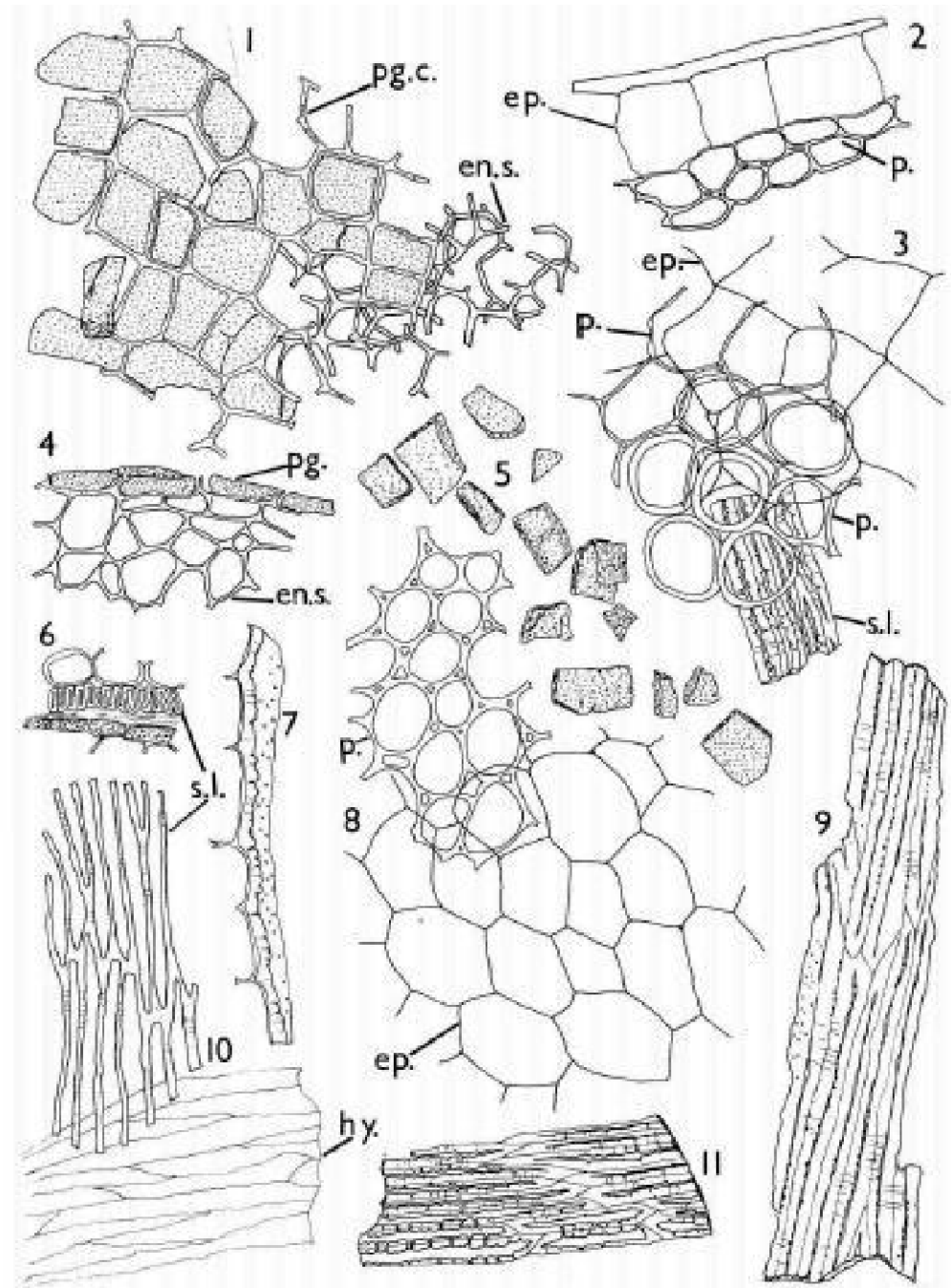


Embryo

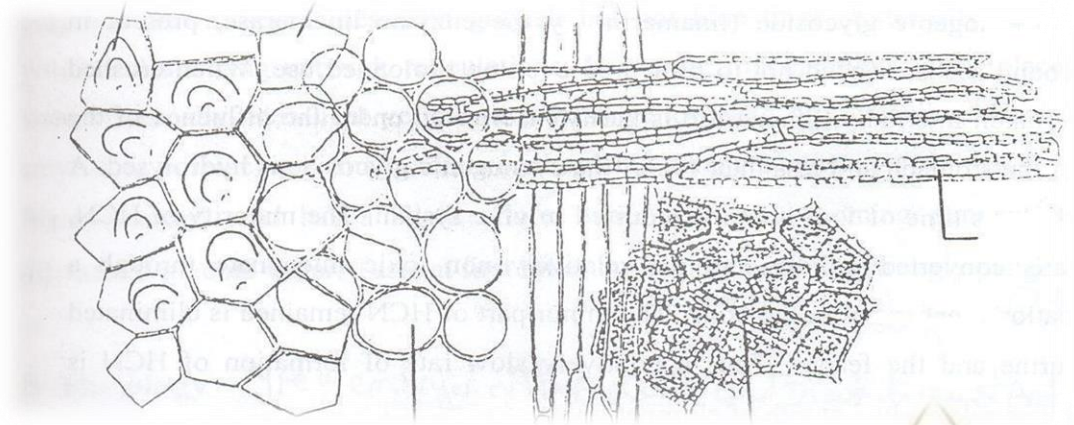


Endosperm





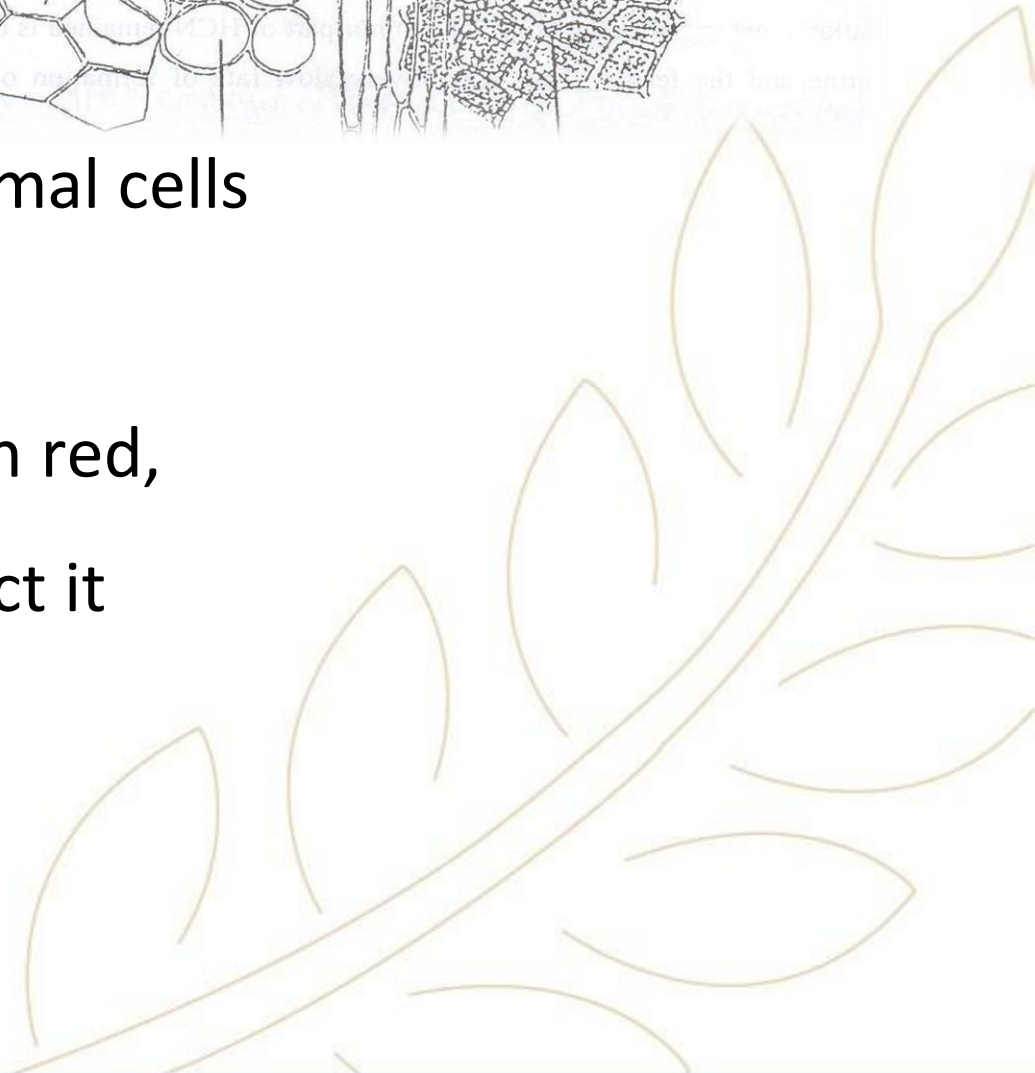
Microscopical Character:



Mount in KOH: all key elements except epidermal cells

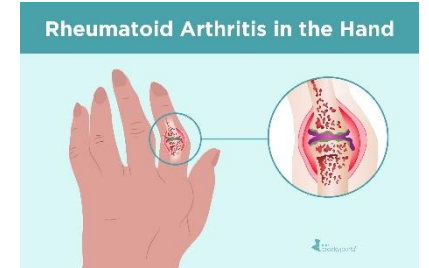
Mount in phloroglucinol : Sclerides → will turn red,
Epidermal cell → ruthenium red is used to detect it

Mount in water: Starch



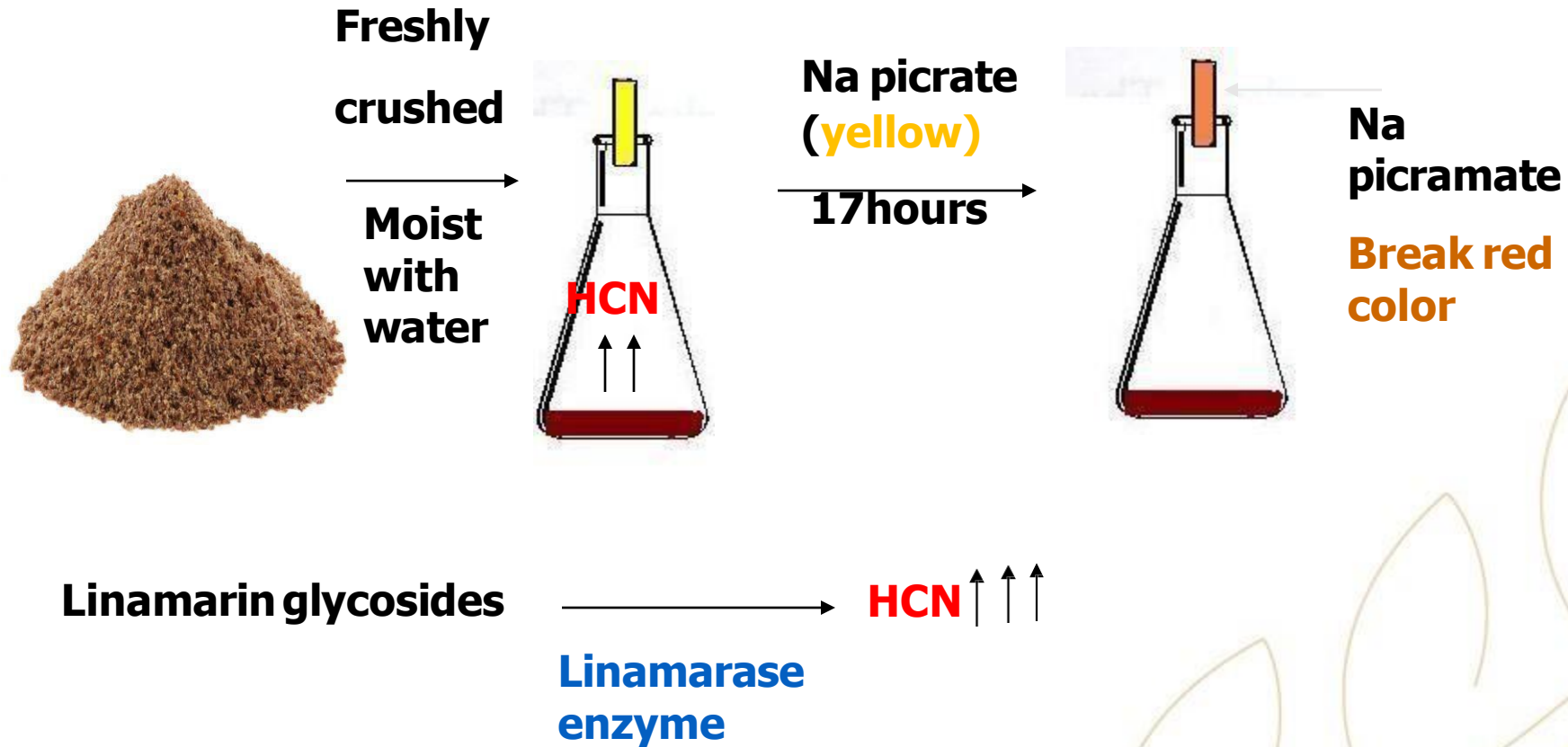
Uses

1. Used in patients with **rheumatoid arthritis** and **psoriasis**.
2. **Demulcent** in acute or chronic gastritis
3. **Bulk laxative** in habitual constipation, due to its mucilage & fixed oil which have a lubricant effect.
4. **Anti-inflammatory**, Omega-3-fatty acids have demonstrated effect (due to reduced production of inflammatory mediators).
5. **Heart protecting against angina pectoris**, since Omega-3 fatty acids reduce the whole Blood viscosity & lower cholesterol level.
6. **Externally**, used as an **emollient** in poultices for boils, carbuncles and other skin infections.



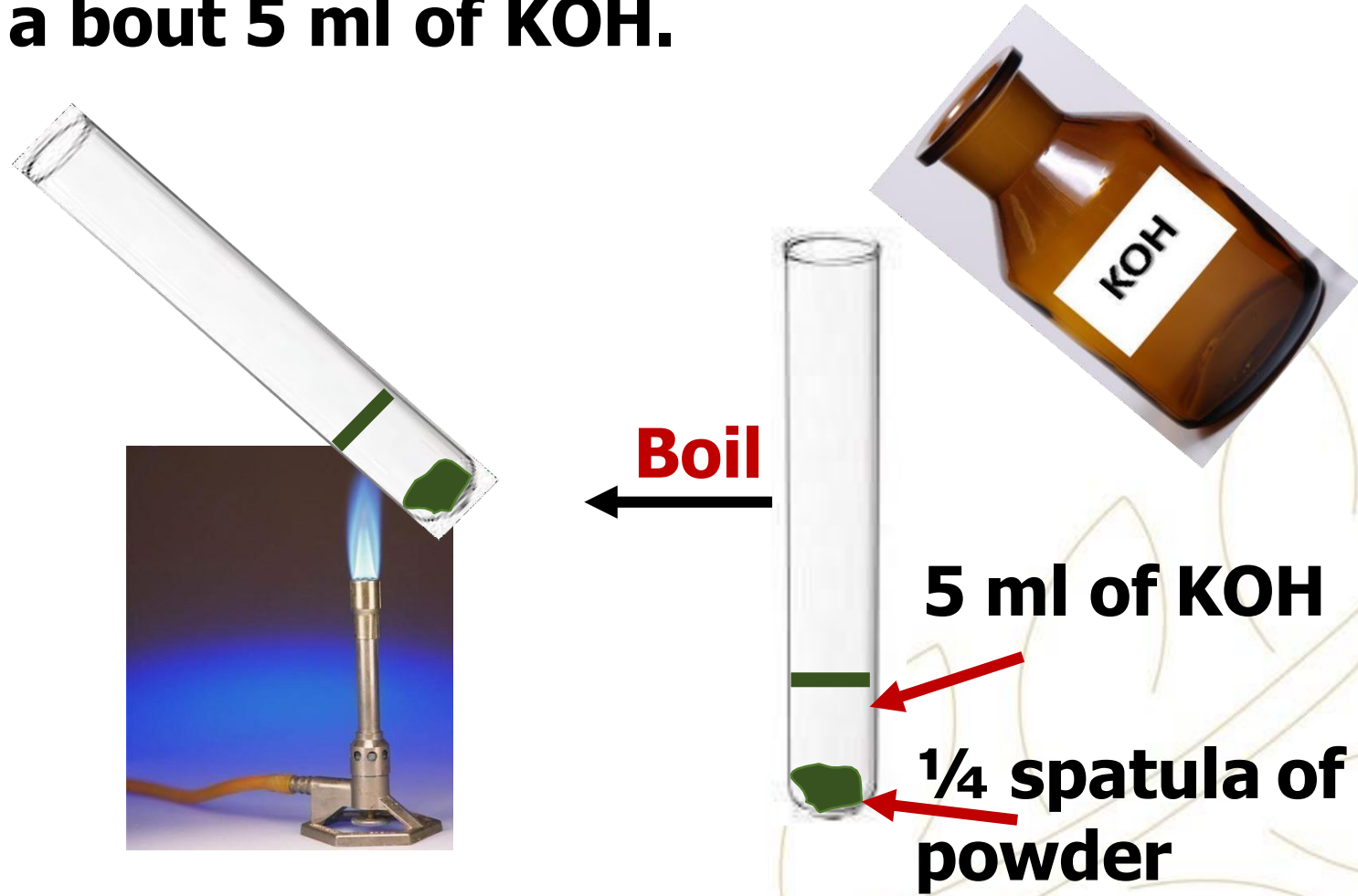
Chemical test:

General test for cyanogenic glycoside:



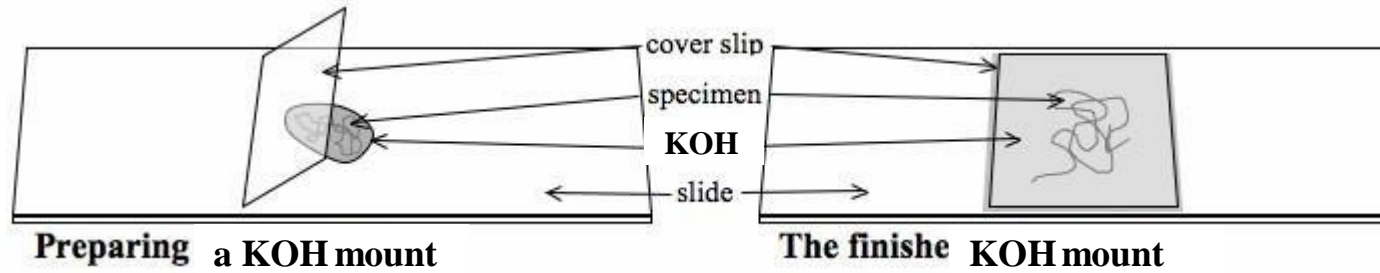
Practical work:

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.



P.S.

- Keep your work place and tools clean.
- Dispose the left KOH in the container not in the sink.



Black mustard



Origin

The dried ripe seeds of *Brassica nigra*

Family: Brassicaceae (Cruciferae)

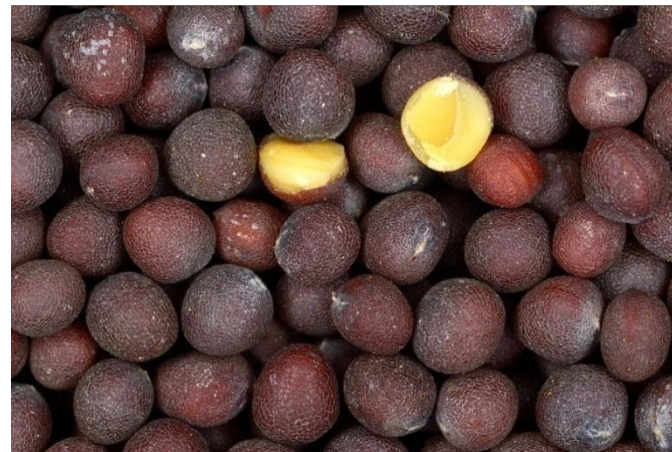


Condition: Dried ripe seeds

Color: Dark brown nearly black

Odor: Odorless , pungent on crushing and moist with water

Taste: Bitter pungent



Shape: Nearly rounded or nearly spherical

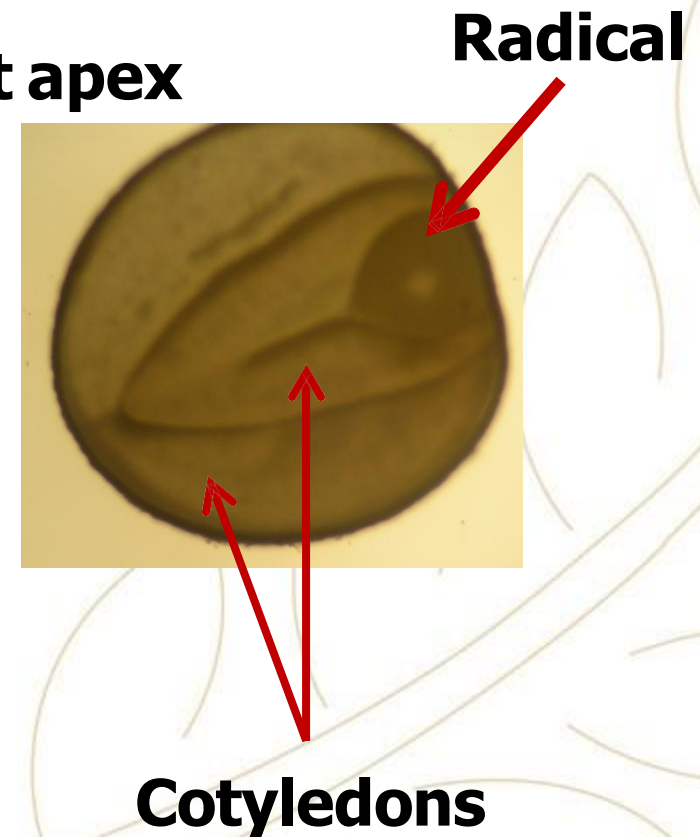
Surface: Reticulate slightly pitted

Hilum and micropyle: Pale point at apex

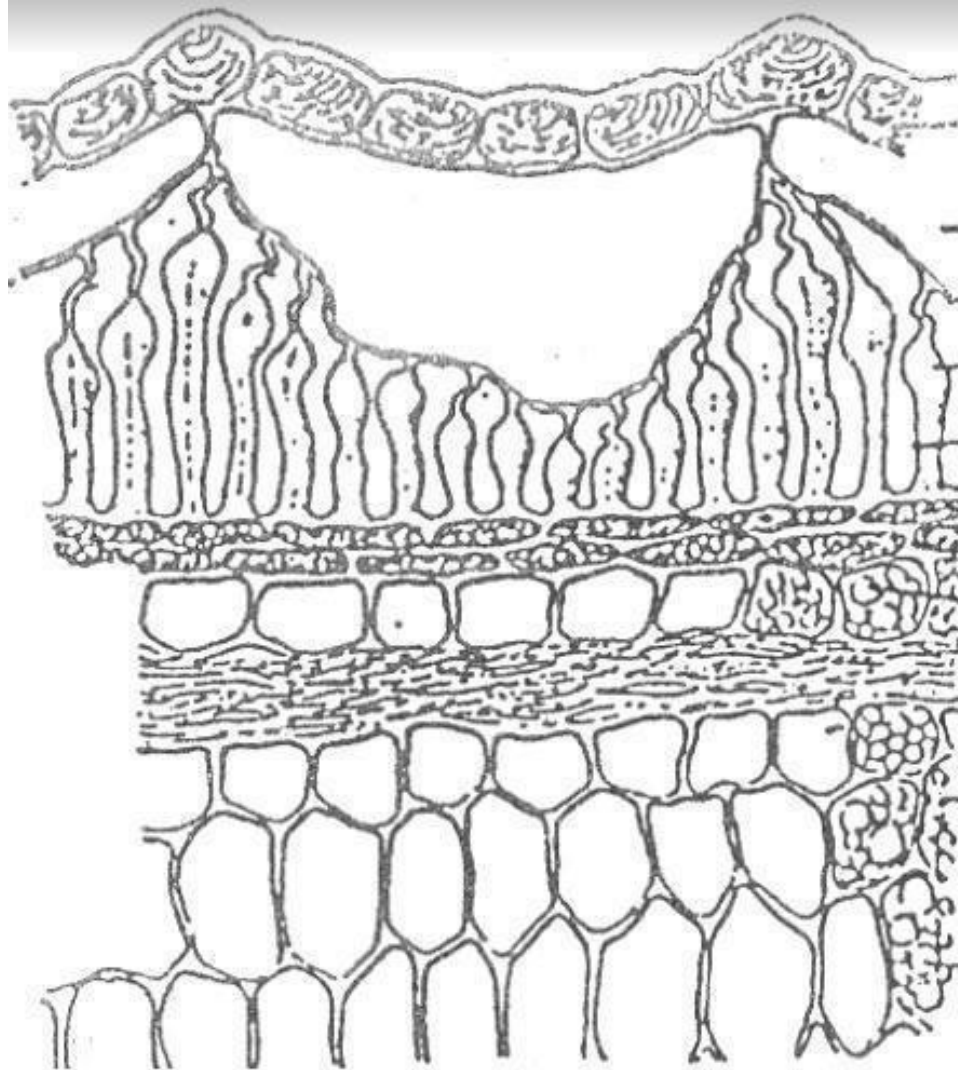
Raphe: Absent

Embryo: Orthoplocous

Kernal: Exalbuminous seed



T.S.



Epidermis with Mucilage

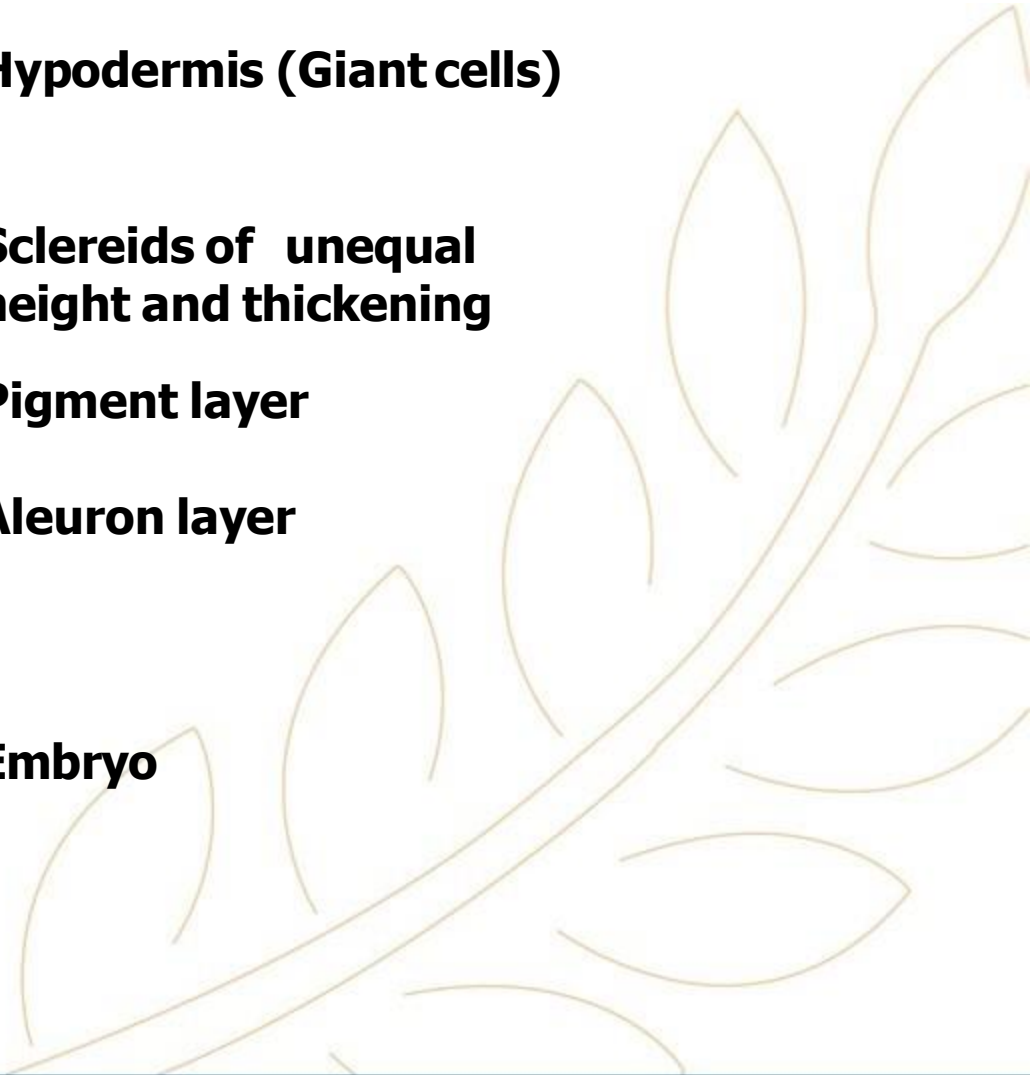
Hypodermis (Giant cells)

Sclereids of unequal height and thickening

Pigment layer

Aleuron layer

Embryo



Condition: fine powder

Color: Dark brown with yellow particles

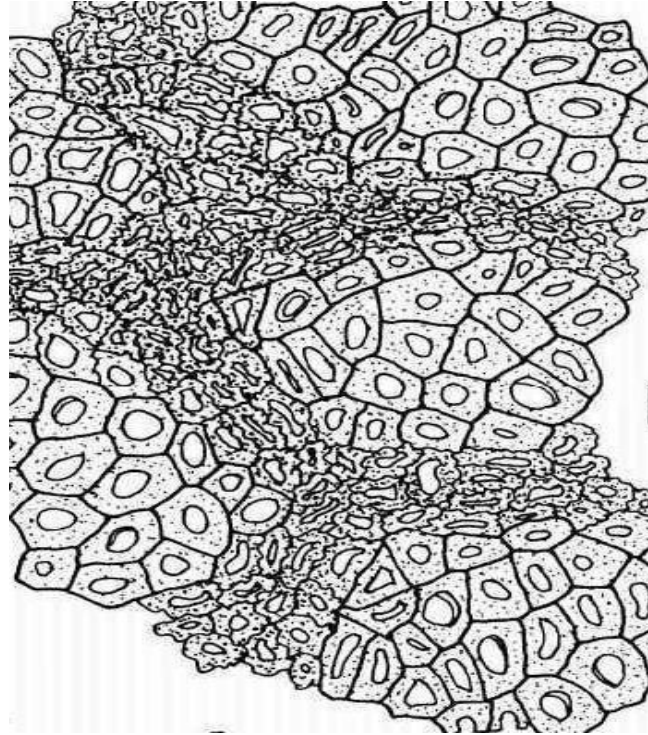
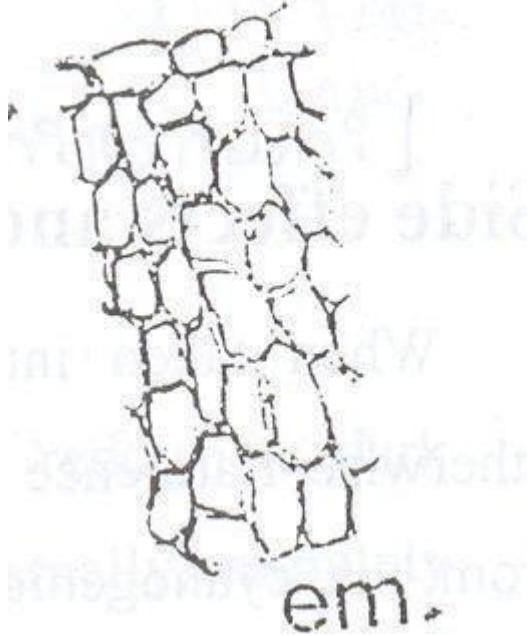
Odor: pungent

Taste: bitter acrid

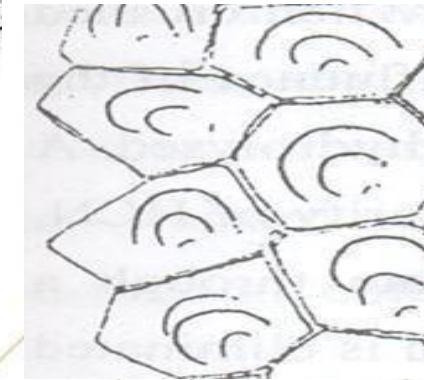
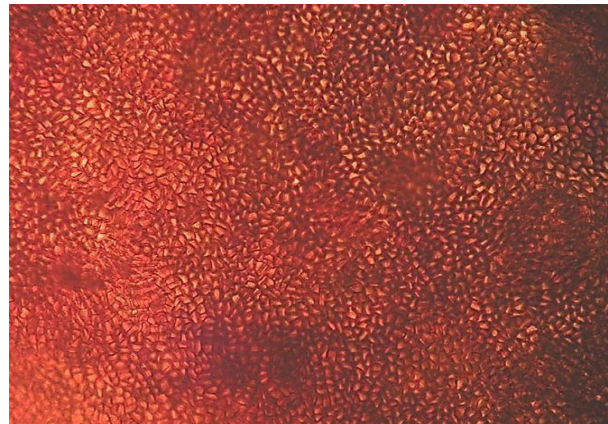


r:

Powder:

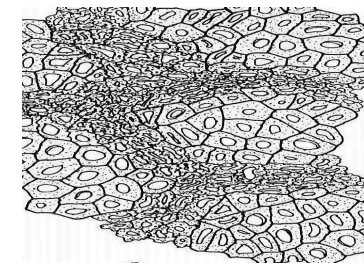
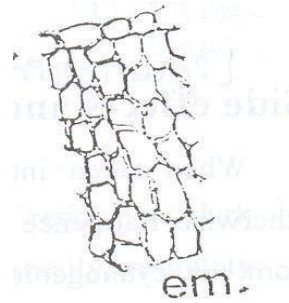


Sclerides of unequal heights and thickening

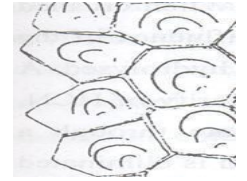


Epidermis showing mucilage

Microscopical Character:



Sclerides of unequal heights and thickening



Epidermis showing mucilage

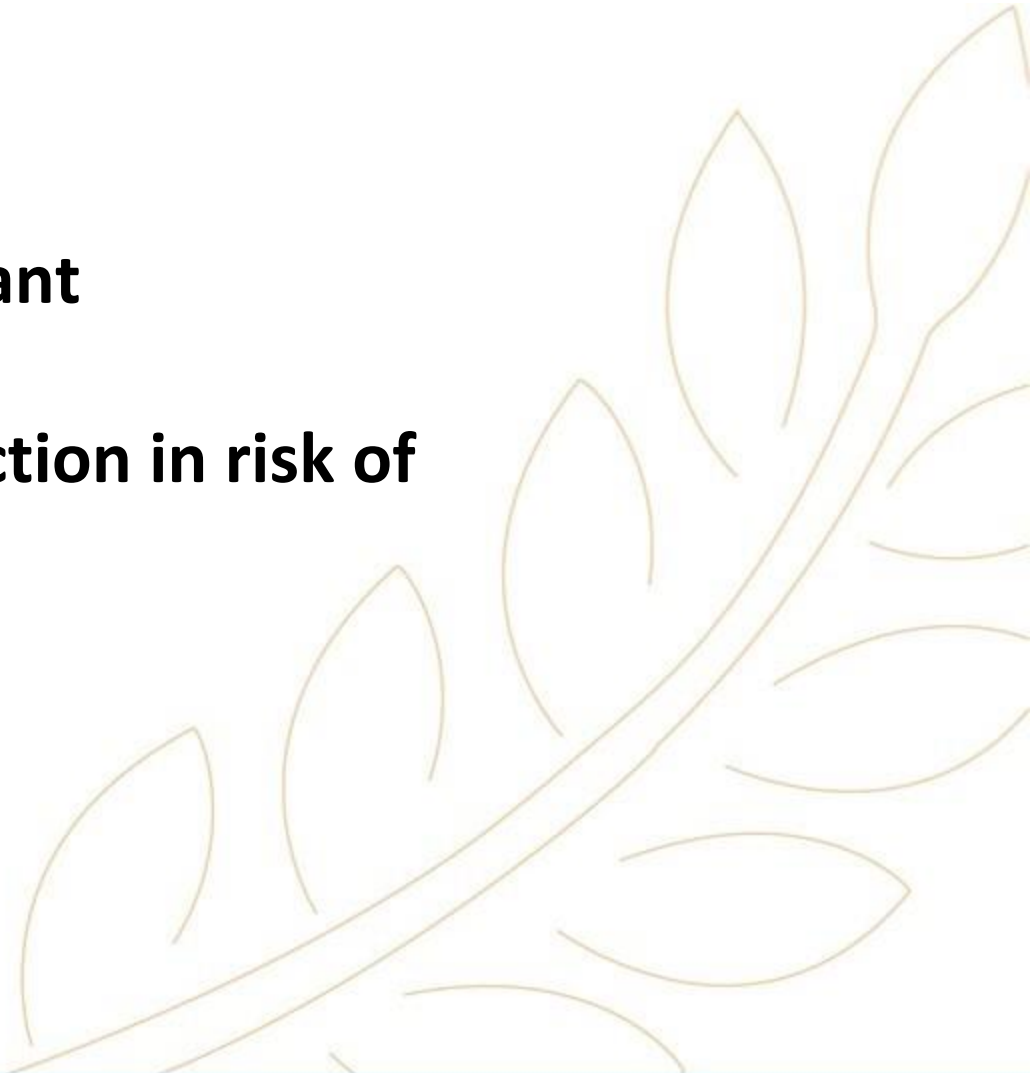
Mount in KOH: all key elements except epidermal cells

Mount in phloroglucinol : Sclerides of unequal heights → will turn red,
Epidermal cell → ruthenium red is used to detect it

Mount in water: Starch

Uses

1. Spice
2. Externally: Rubefacient and counter irritant
3. Oil appears to be associated with a reduction in risk of cancers of alimentary tract.



White mustard

Origin:

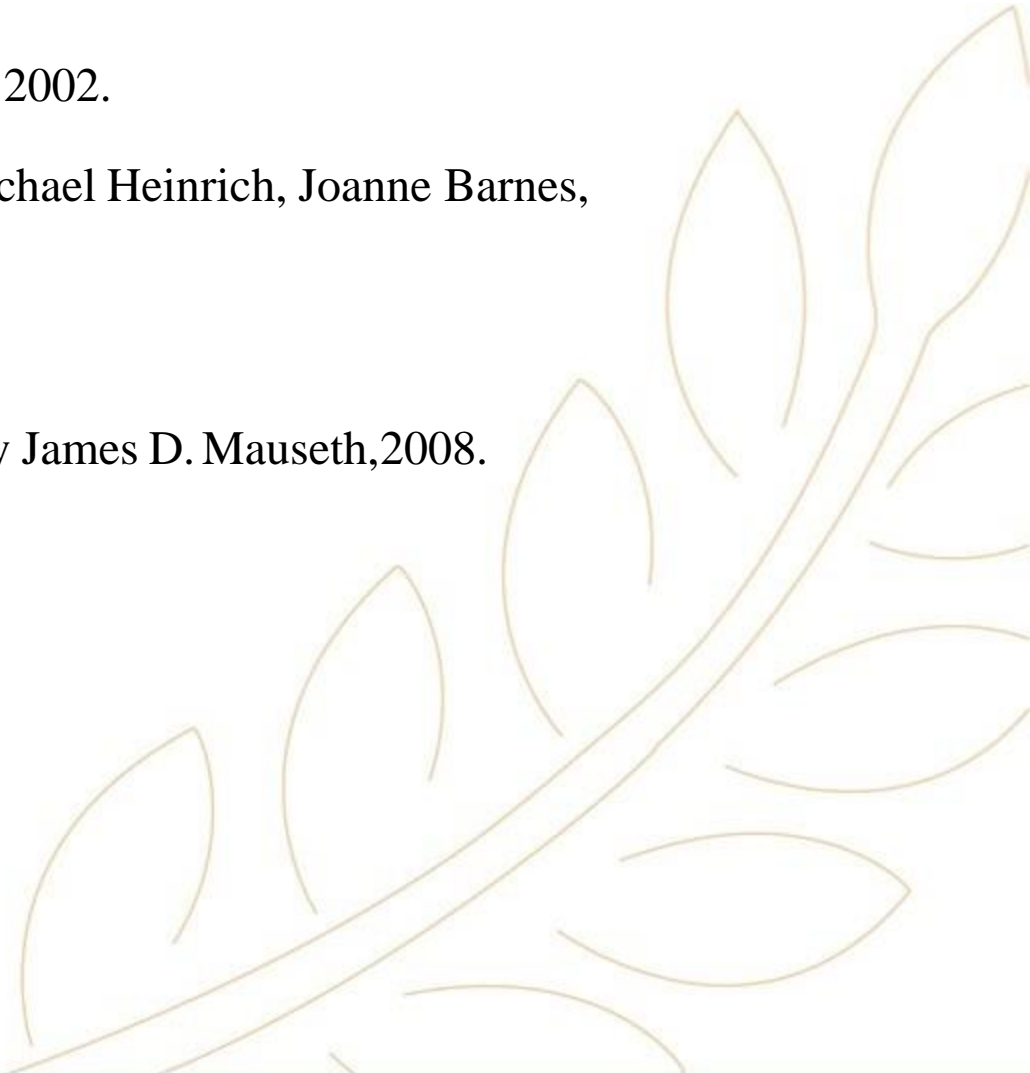
The dried ripe seeds of
Brassica alba

Family: Brassicaceae (Cruciferae)



References:

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



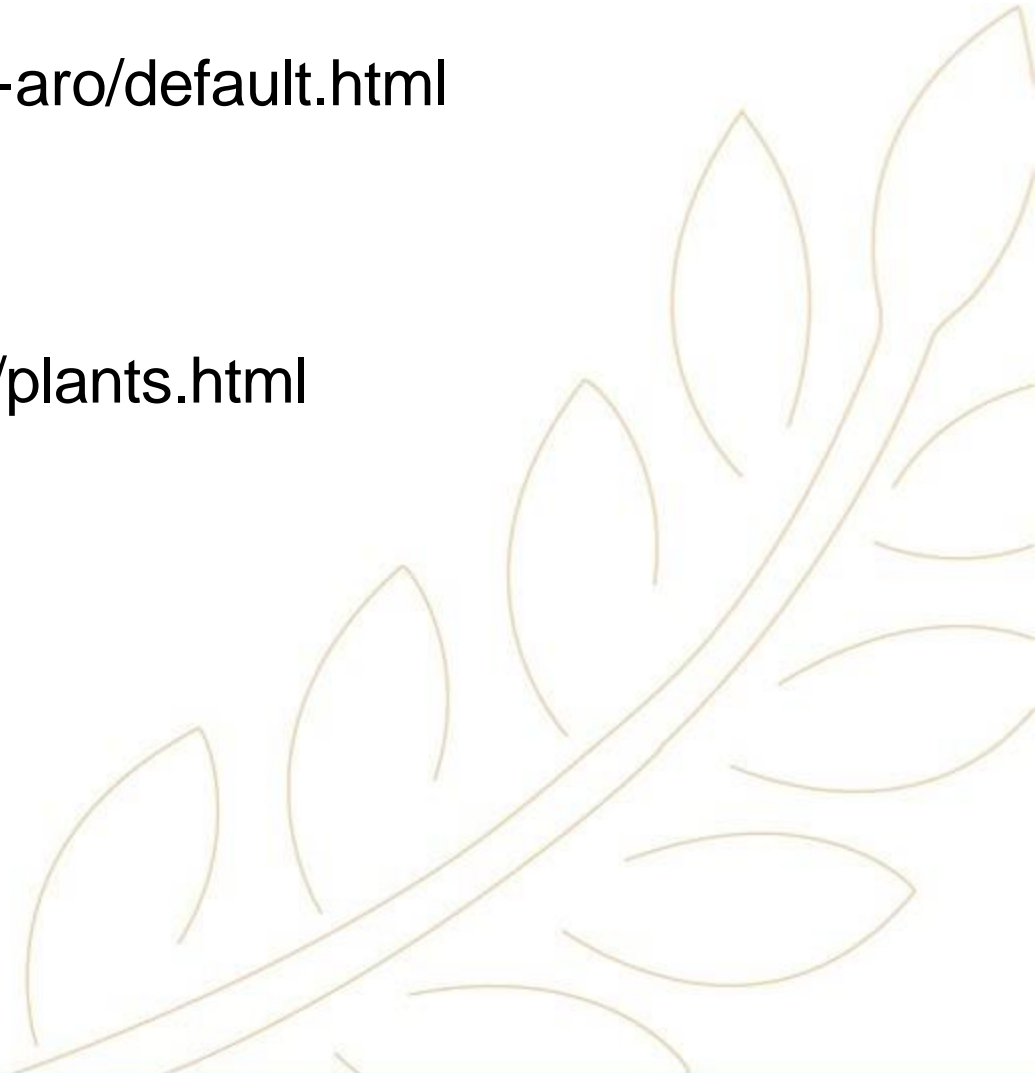
Useful links:

<http://www.hort.purdue.edu/newcrop/med-aro/default.html>

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

<http://www.danish-schnapps-recipes.com/plants.html>

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





Established by Dr.Nawal El Degwi
October Univeristy for Modern Sciences and Arts
جامعة أكتوبر للعلوم الحديثة والآداب

Thank You!

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