



OCTOBER UNIVERISTY
FOR MODERN SCIENCES AND ARTS
جامعة أكتوبر للعلوم الحديثة والآداب

Lab 1

Pharmacognosy

PHG112





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 في مجال التعليم و البحث العلمي و المشاركة المجتمعية على المستوى القومي و الإقليمي و لها ترتيب متقدم في التصنيف العالمي 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 ريادة الأعمال، و أن يكون عضو فعال فى الفريق الطبى بتقديم أفضل رعاية صحية، مراعىً 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

Subterraneanians

Unorganized



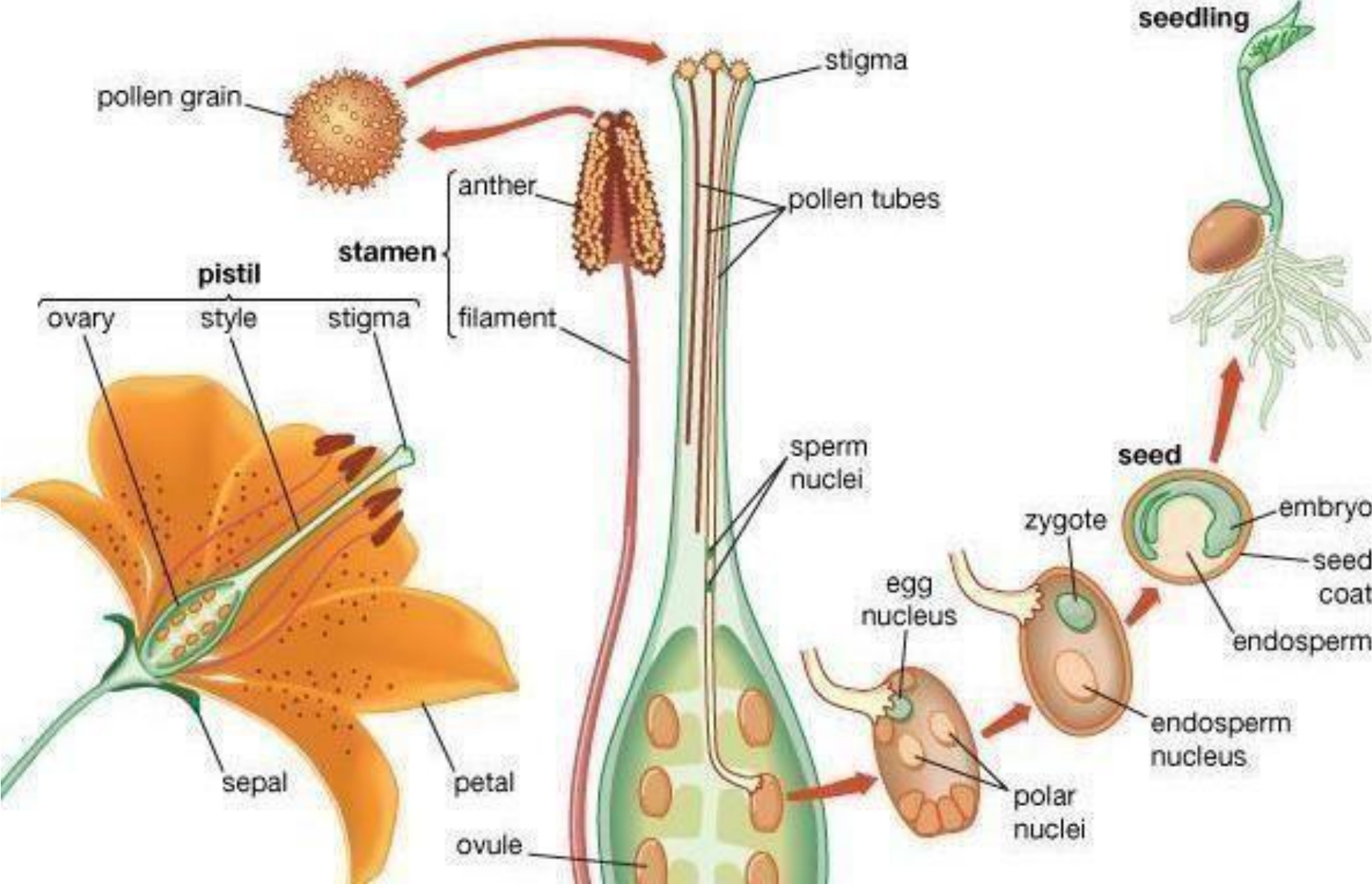
Definition:

Mature fertilized ovule that contains an embryo.

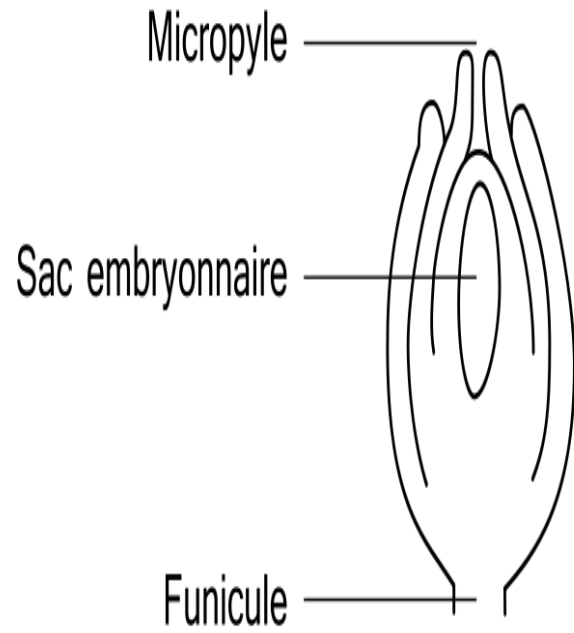
Its function is to facilitate transportation and to ensure continuation and distribution of the plant.



Seed formation:



Types of ovules:



Ovule
Orthotrope



Ovule
Campylotrope



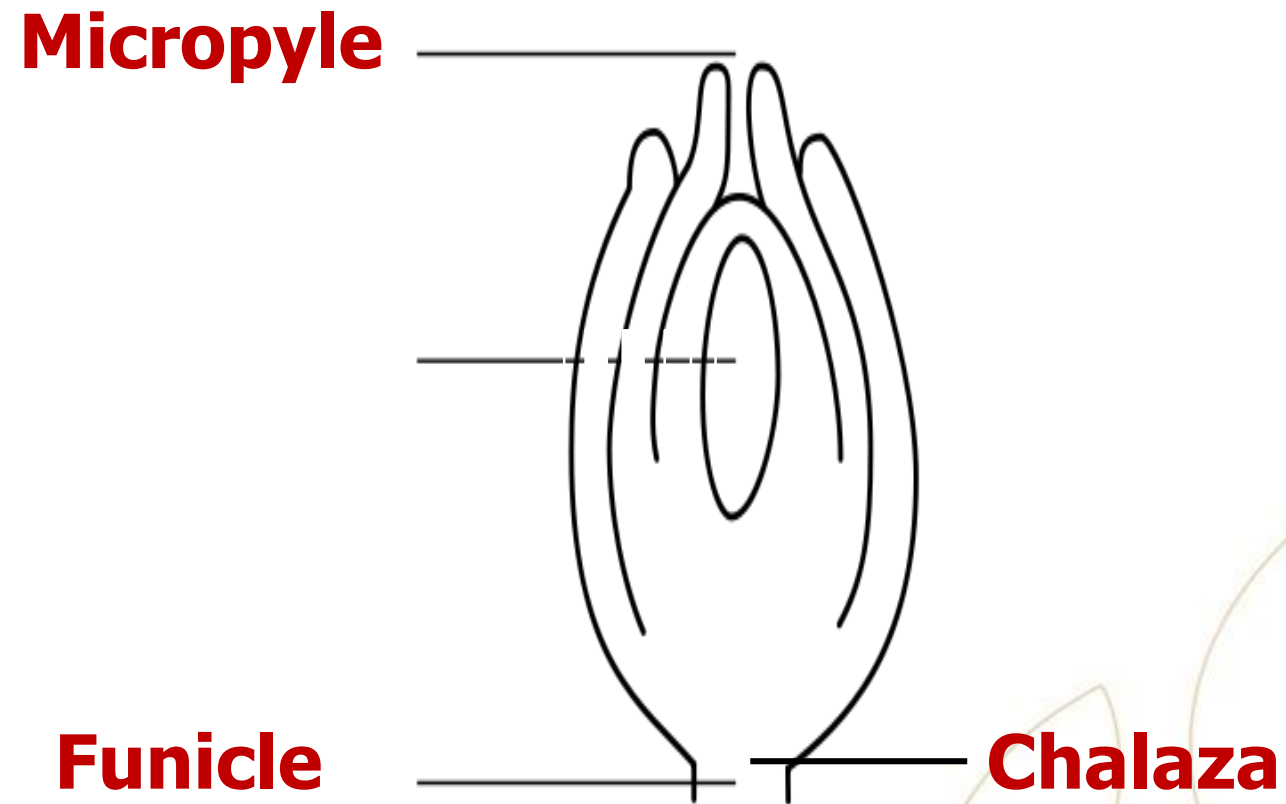
Ovule
Amphitrope



Ovule
Anatropous

Types of ovule:

1-Atropous ovule(Orthotropous).

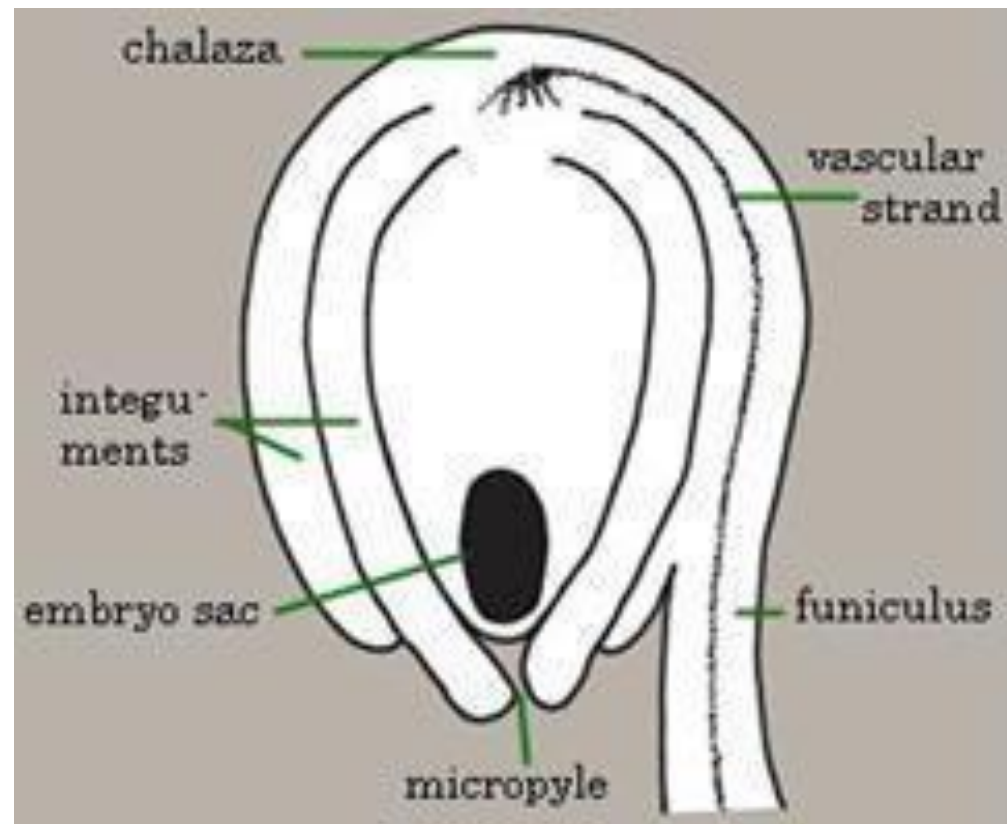


Types of ovule:

2-Anatropous ovule:

Inverted ovule

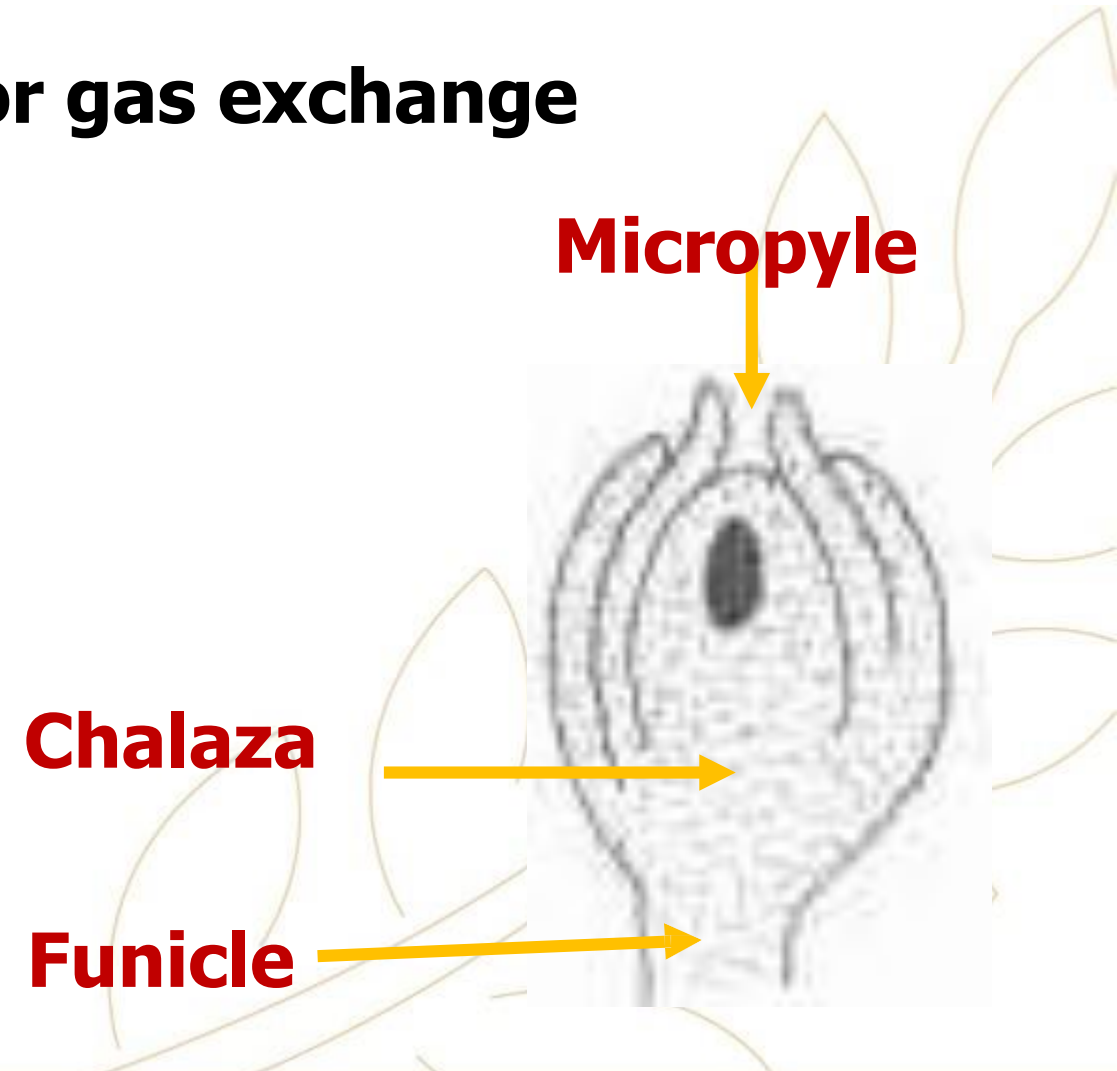
□ Raphe present half circum (Zingiberaceae, Linaceae).



Types of scars:

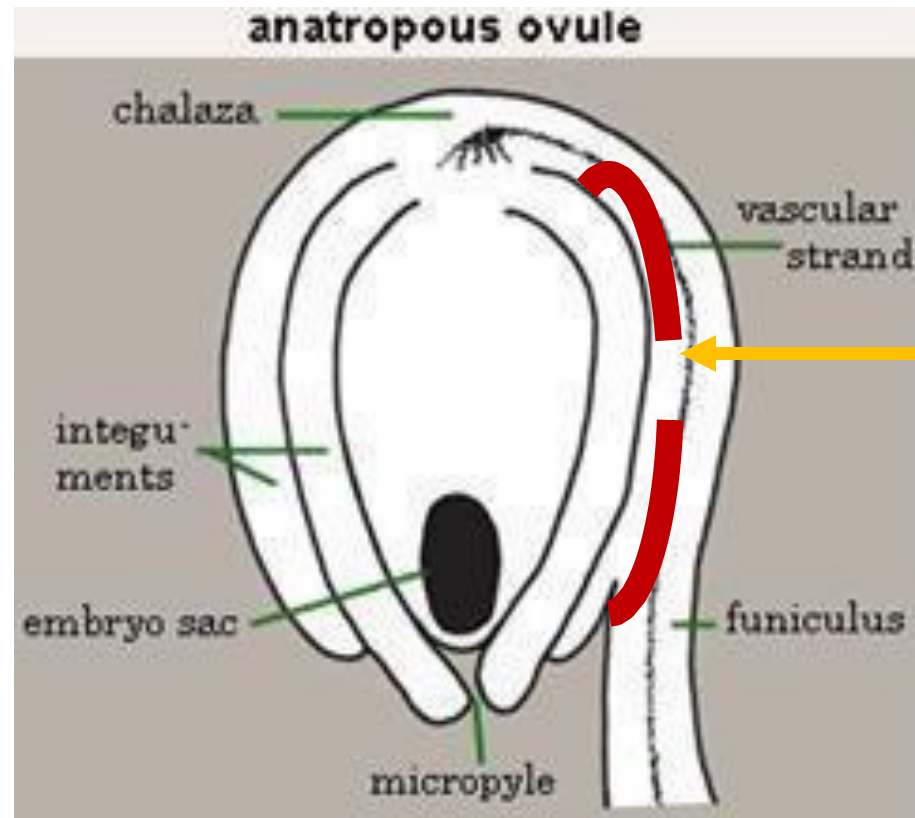
1-Hilum: Scar left after removal of **seeds from its funicle**

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.



Typical layers of seed:

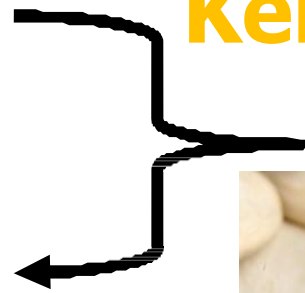
1 **Testa (seed coat)**

2 **Perisperm**

3 **Endosperm**

4 **Embryo**

Kernel



Types of seeds:

Kernel

Typical albuminous seed →

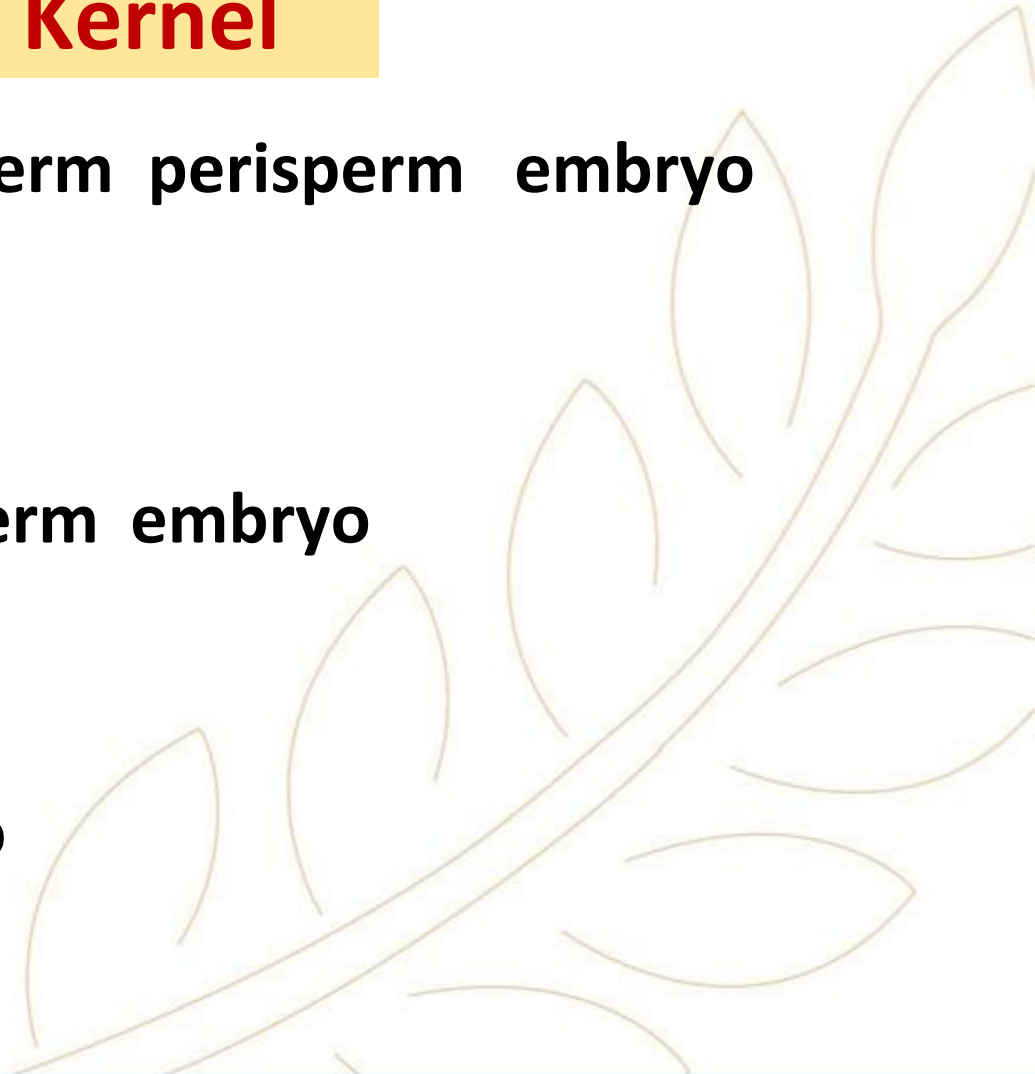
endosperm perisperm embryo

Albuminous seed →

endosperm embryo

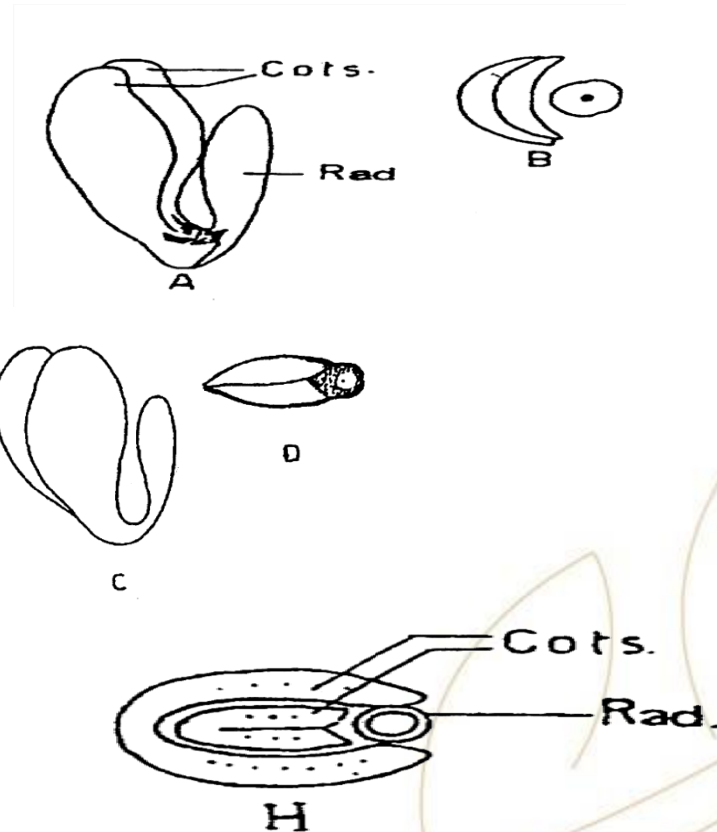
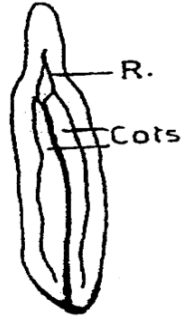
Exalbuminous seed →

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:

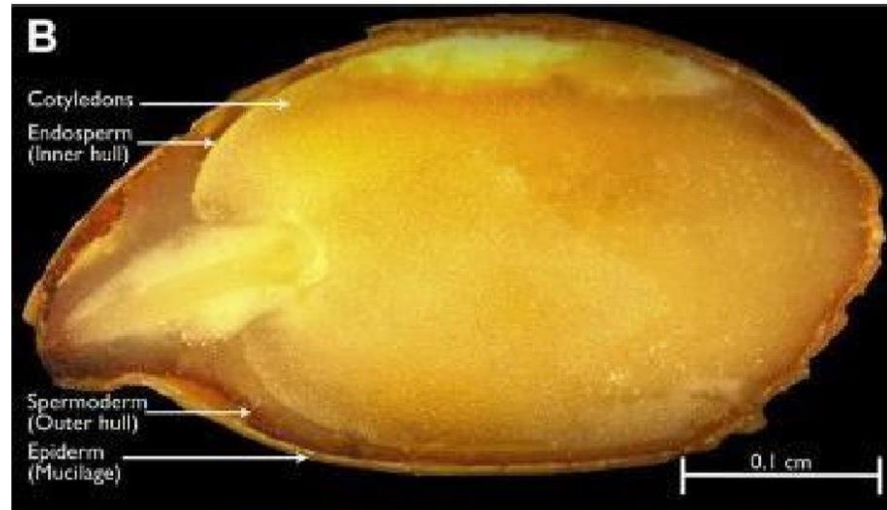
Shape: Elongated ovate nearly flate, rounded at one end, pointed at the other end.

Odor: Very slight, characteristic when crushed.

Surface: Flattened

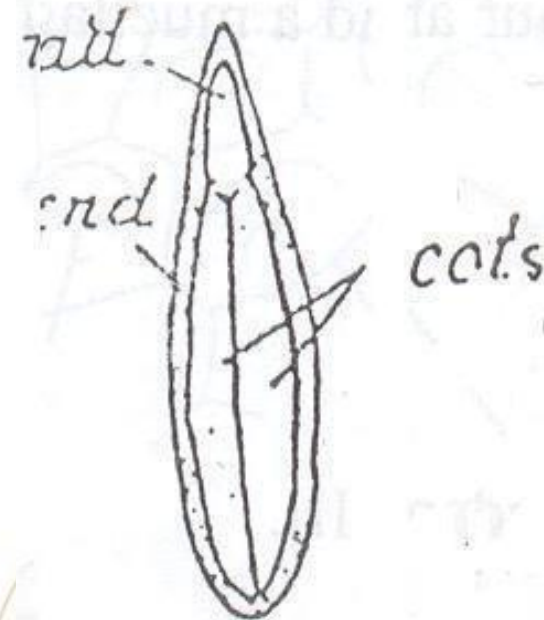
Color: Glossy brown

Taste: Mucilaginous oily taste

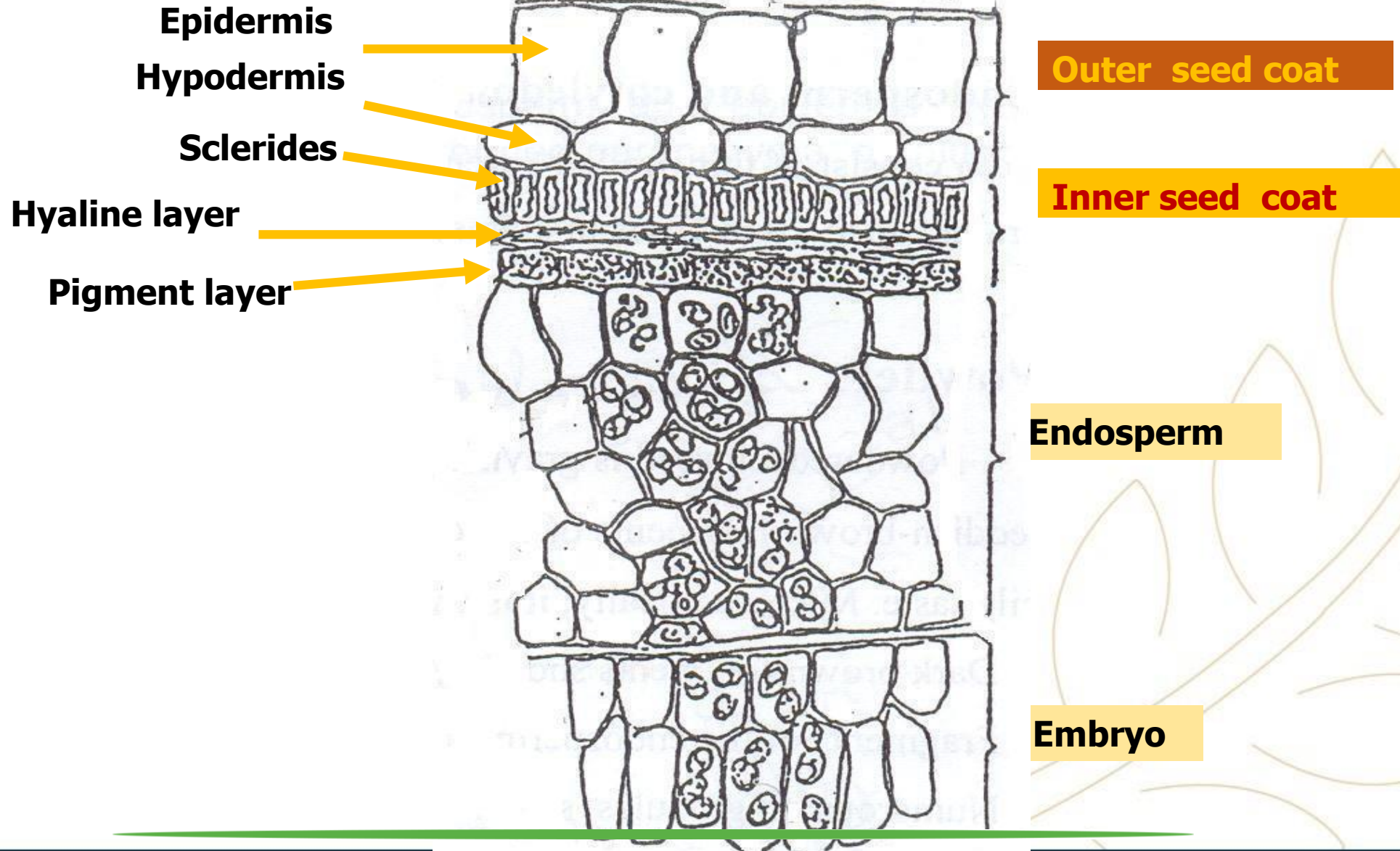


Morphology:

- **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



T.S.



Powder:

Condition: Fine powder

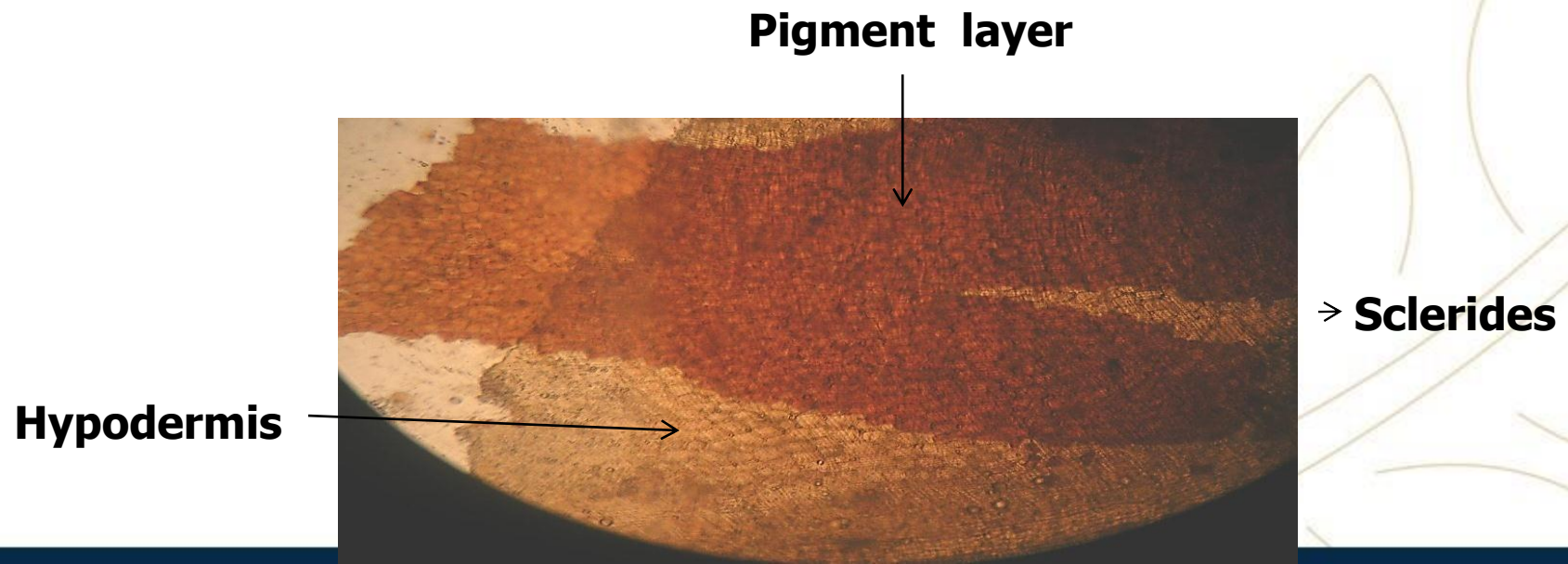
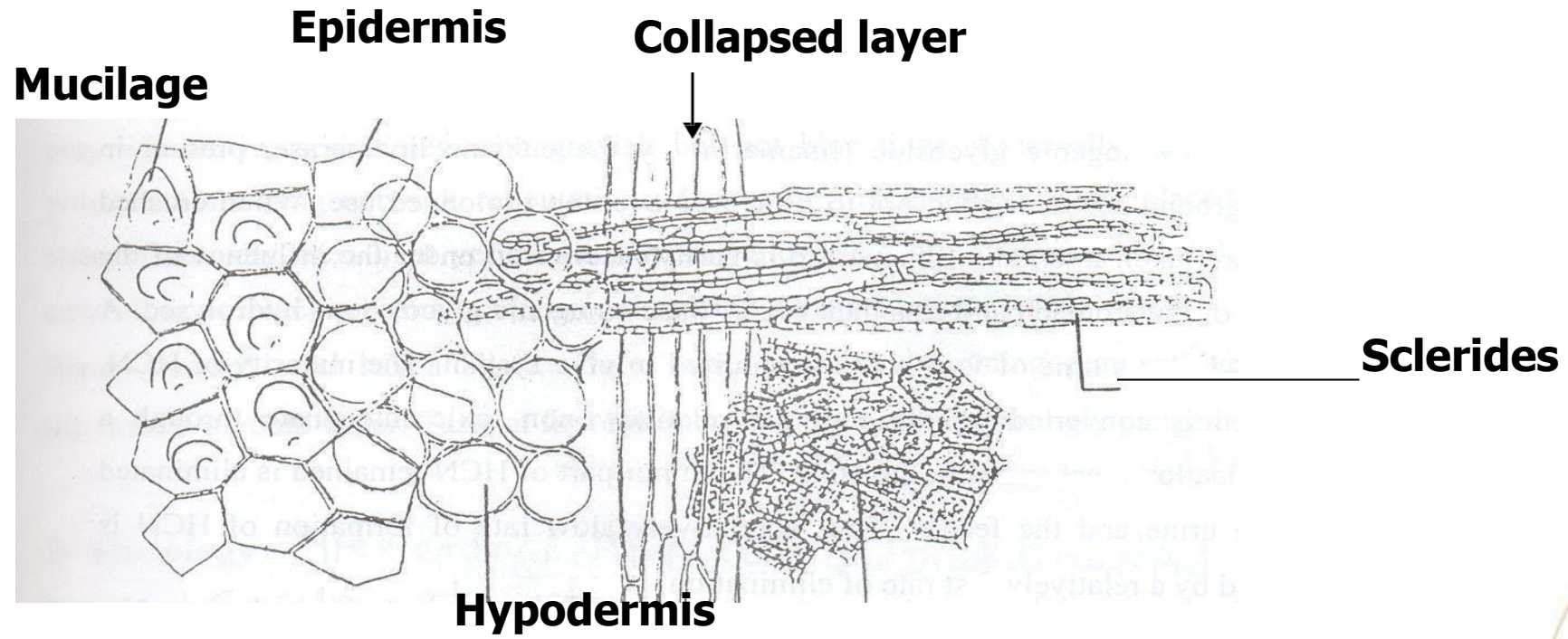
Color: Yellowish brown with dark particles

Odor: Oily characteristic odor of linseed

Taste: Mucilaginous oily



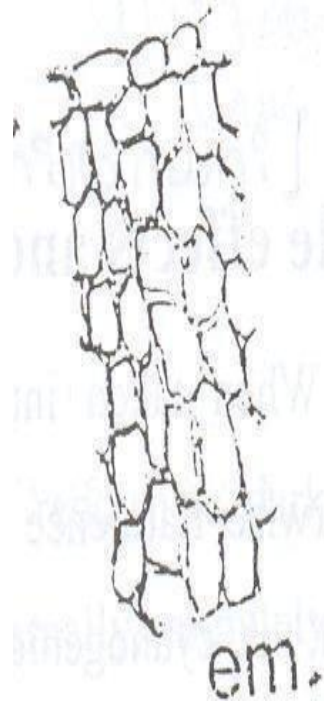
Key Elements:



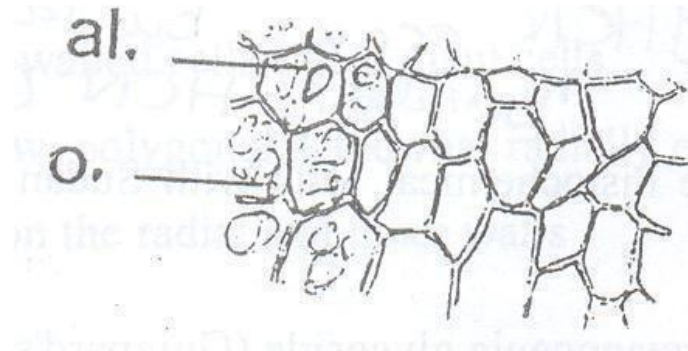
Key Elements:



**Pigment
layer**

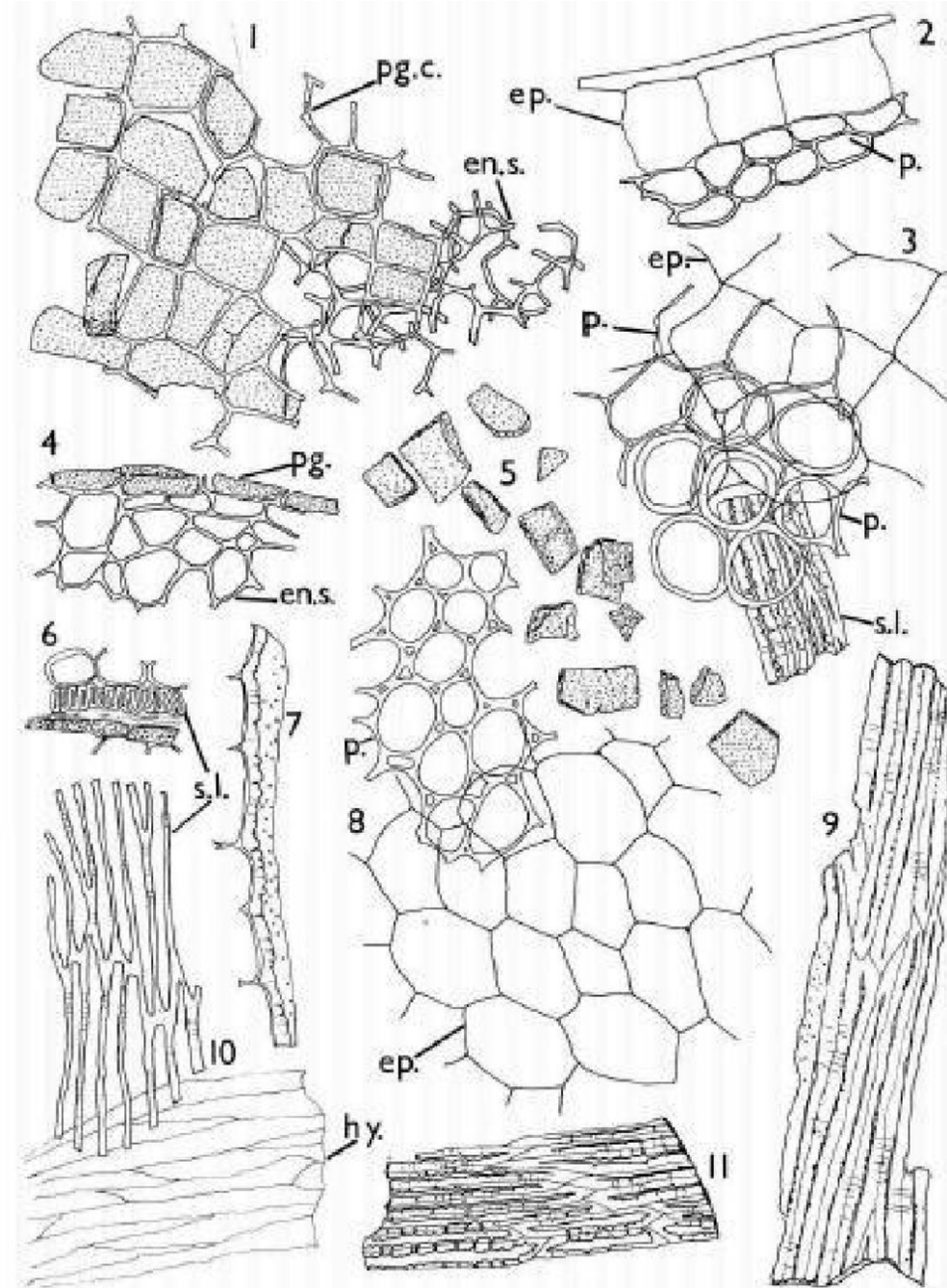


Embryo



Endosperm

Key Elements:

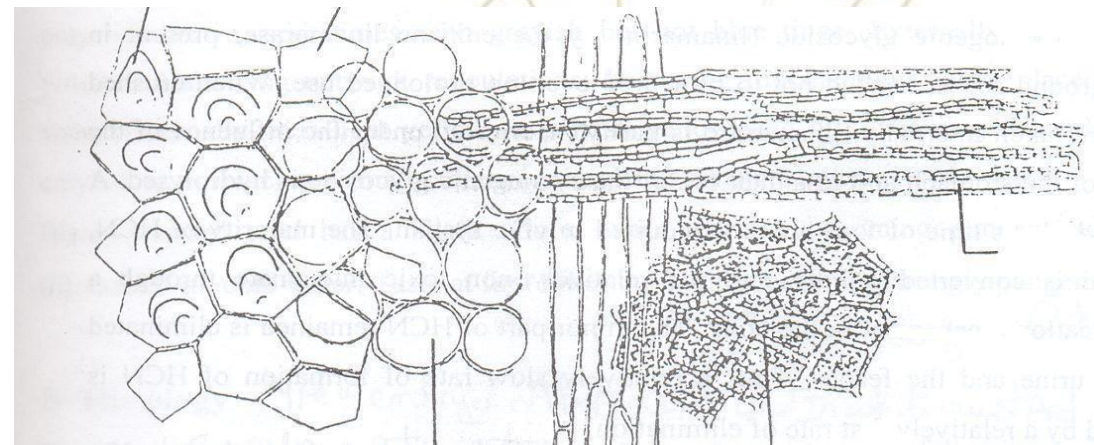


Microscopical Characters:

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

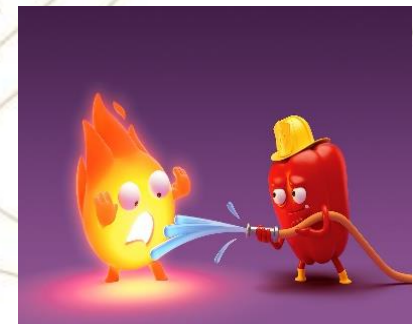
Mount in water: Starch (undeveloped seed)



Uses

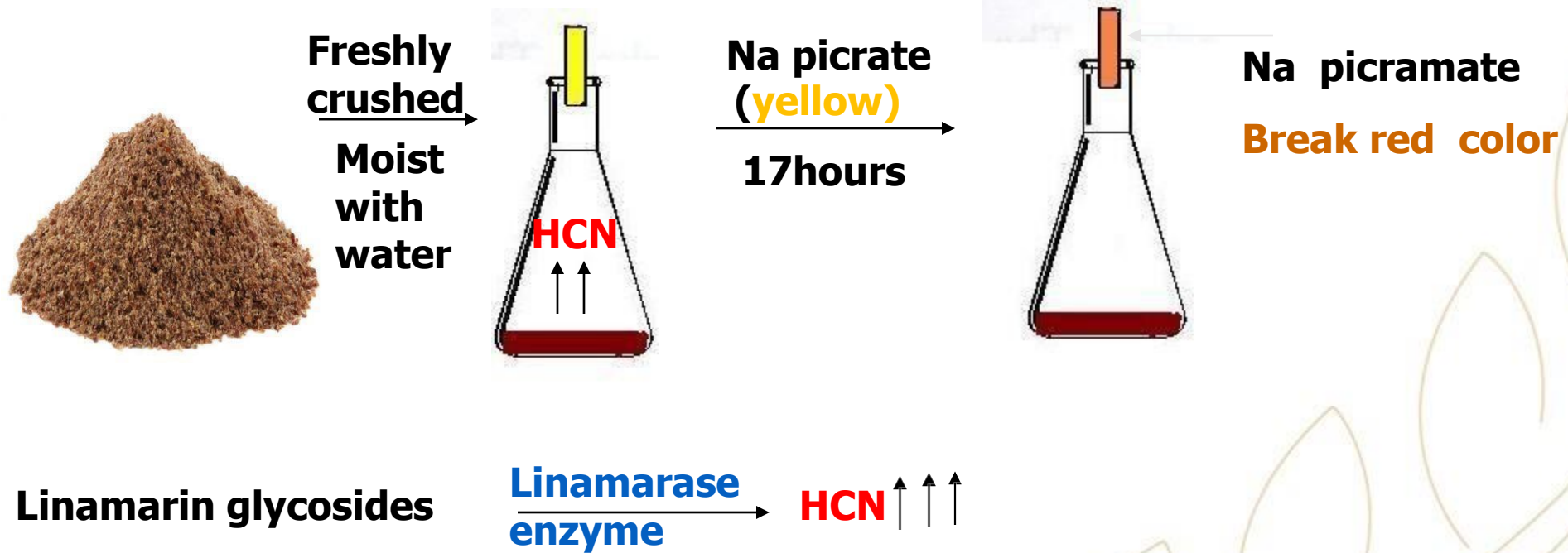
1. Used in patients with **rheumatoid arthritis** and **psoriasis**.
2. **Demulcent** in acute or chronic gastritis
3. **Bulk laxative** in habitual constipation, due to its mucilage & fixed oil which have a lubricant effect.
4. **Anti-inflammatory**, Omega-3-fatty acids have demonstrated effect due 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.

Rheumatoid Arthritis in the Hand



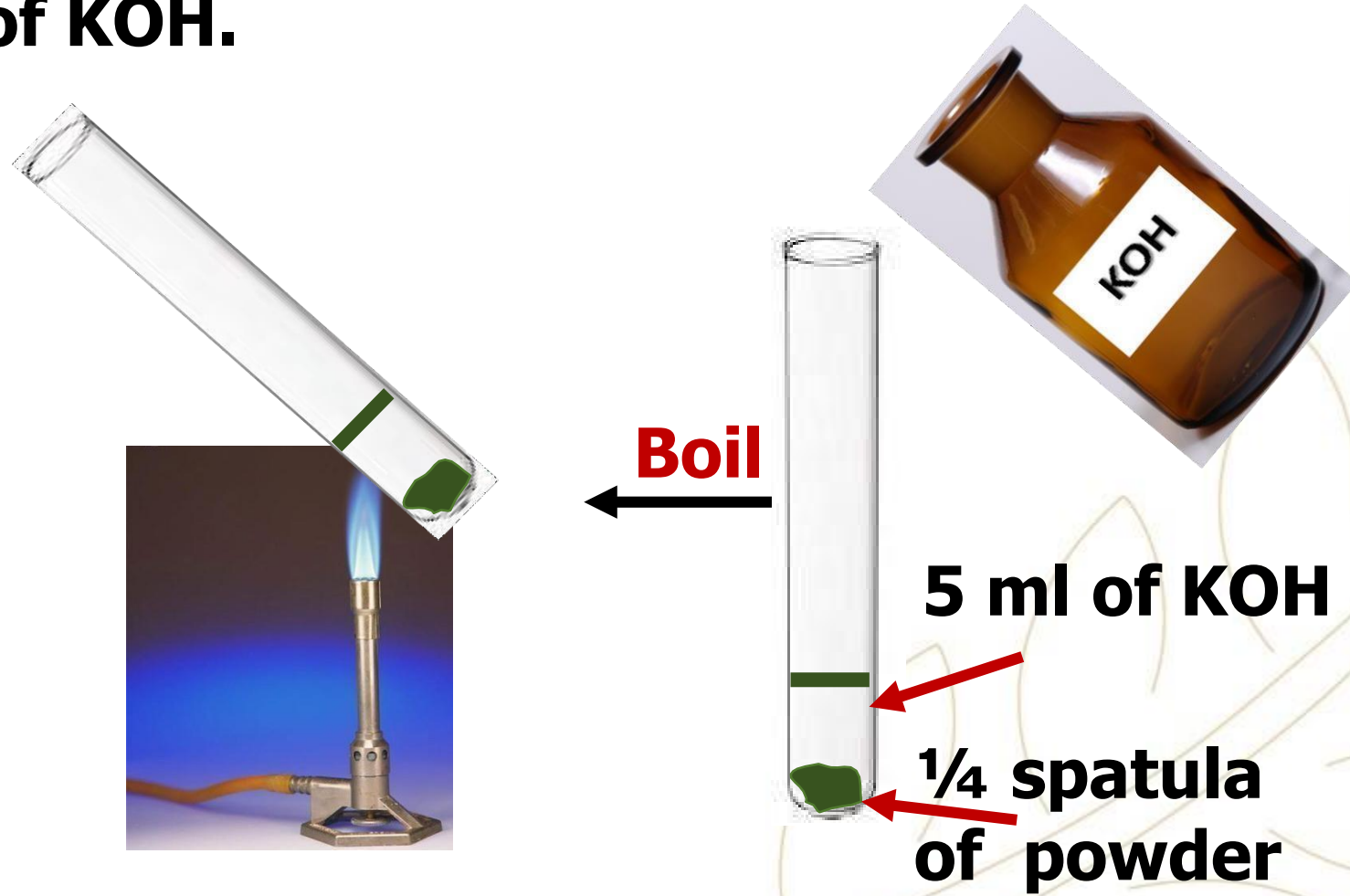
Chemical test:

General test for cyanogenic glycoside:



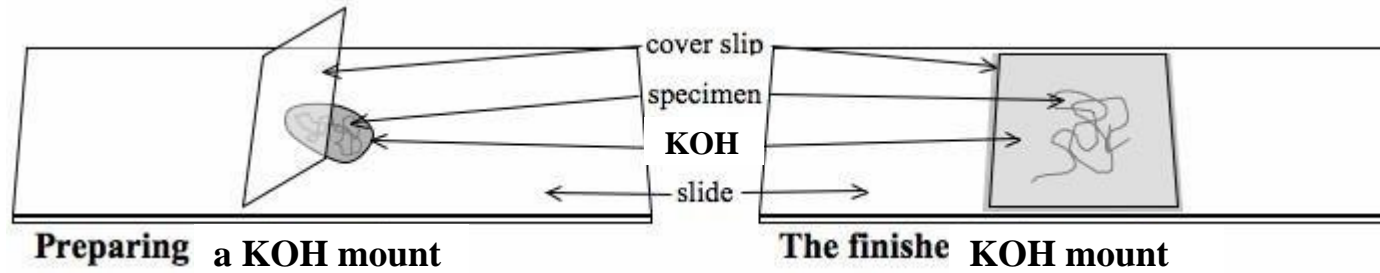
Practical work:

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



Practical work:

2- Prepare your slide and check the key elements.



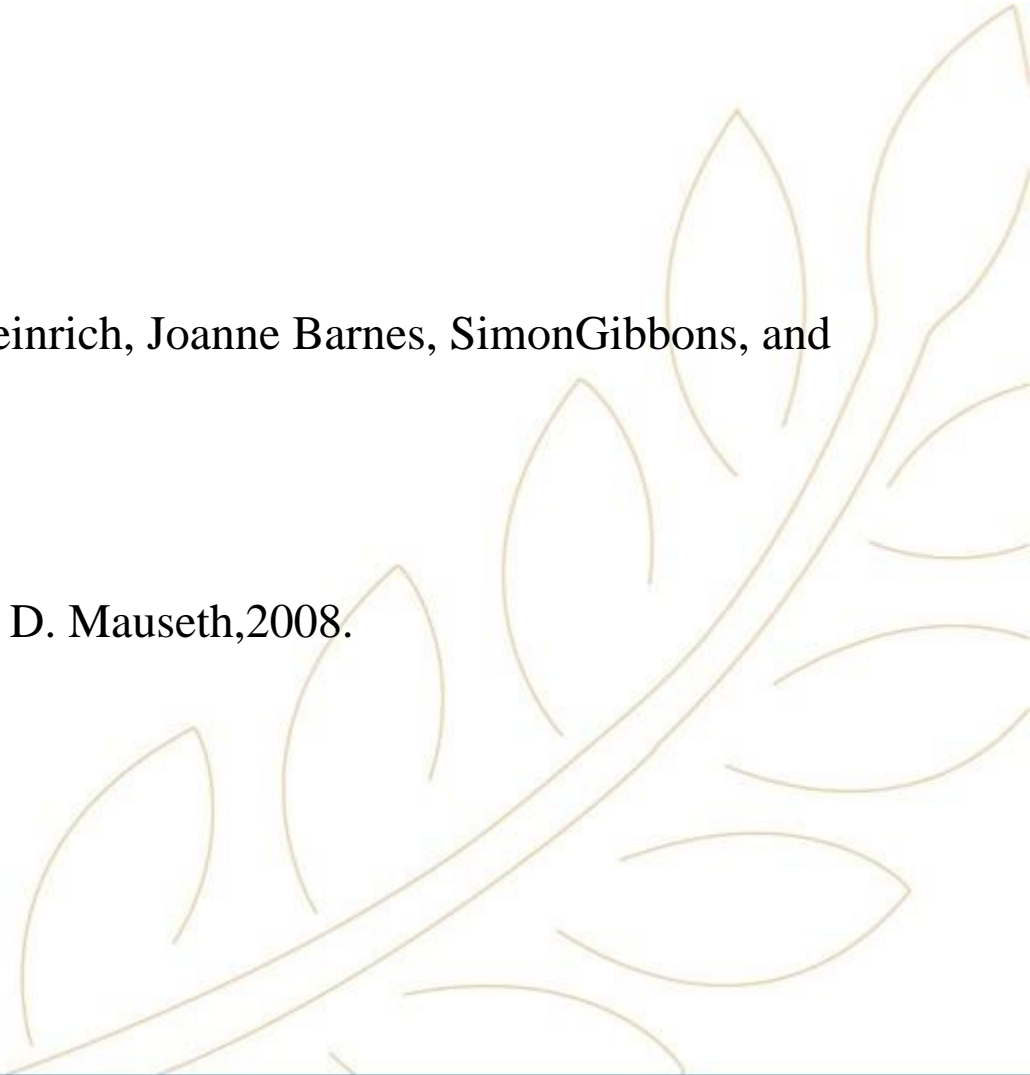
P.S.

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



References:

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



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
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Thank You!

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