



Pharmacognosy

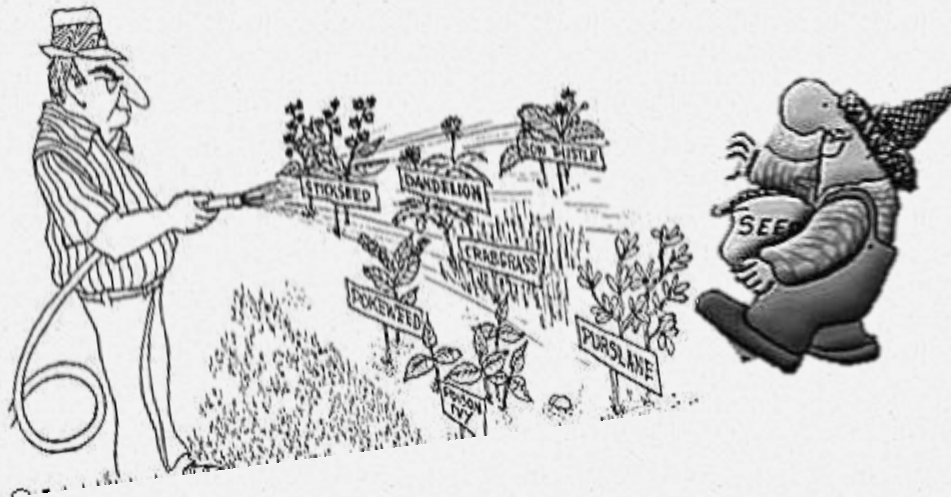
Medicinal seeds

Objectives

- To identify different histological structure of the seeds
- Investigate the microscopic characters of some medicinally important seeds

Introduction

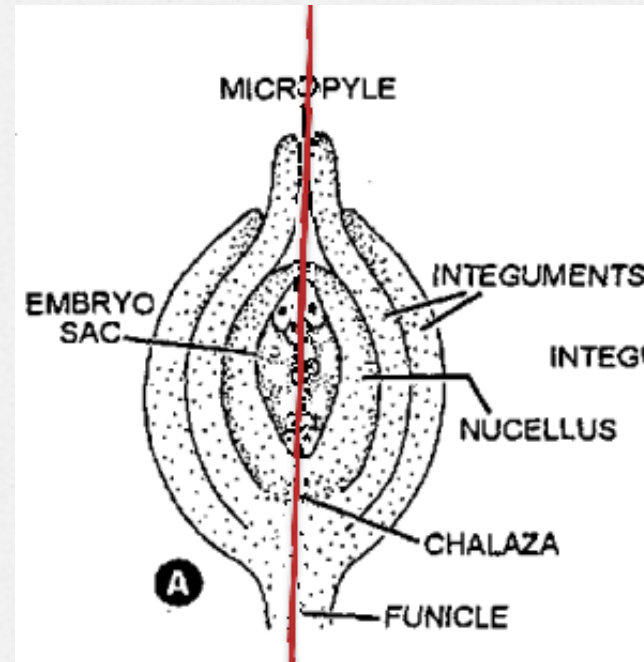
- The seed is an integumented fertilized ovule specialized for the distribution and continuation of the plant.



Types of ovules

1-Atropous or Orthotropous (typical ovule)

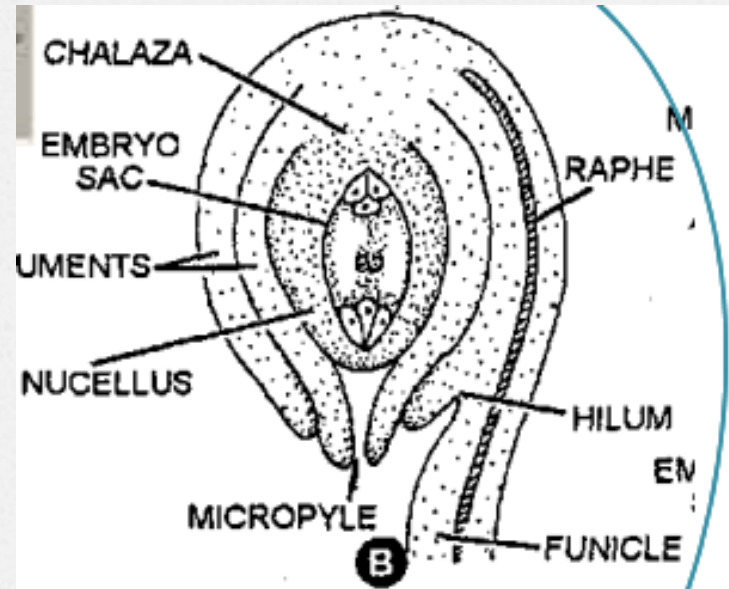
The growth of the ovule is uniform and straight, not curved, having funicle, chalaza and micropyle on one straight line and the micropyle is lying at the extreme apex opposite the funicle, shows no raphe as in *Nux Vomica*



Types of ovules

2-Anatropous (common type)

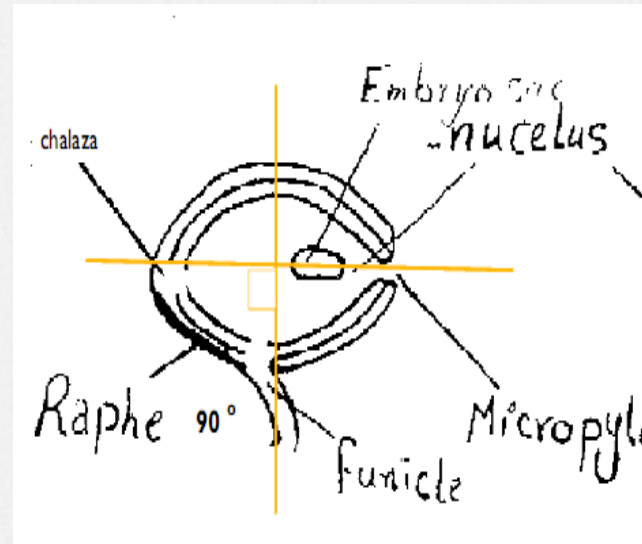
The ovule is inverted (180°); bent upon the funicle and fused with it so that the micropyle is adjacent to the placenta, raphe runs from one end to the other as in *Linaceae*, *Zingiberaceae*, and *Myristicaceae*



Types of ovules

3-Amphitropous

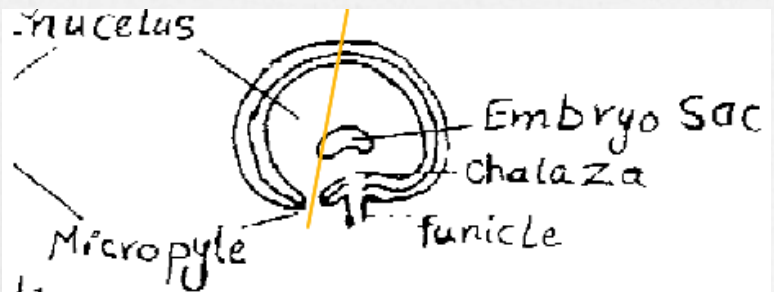
The ovule is partially bent (rotated on its stalk through an angle of 90° instead of 180°). Micropyle, chalaza are in one line at right angle to funicle and hilum. Raphe (short raphe) runs from chalaza to $\frac{1}{2}$ distance of micropyle. Chalaza, micropyle and free funicle are widely separated.



Types of ovules

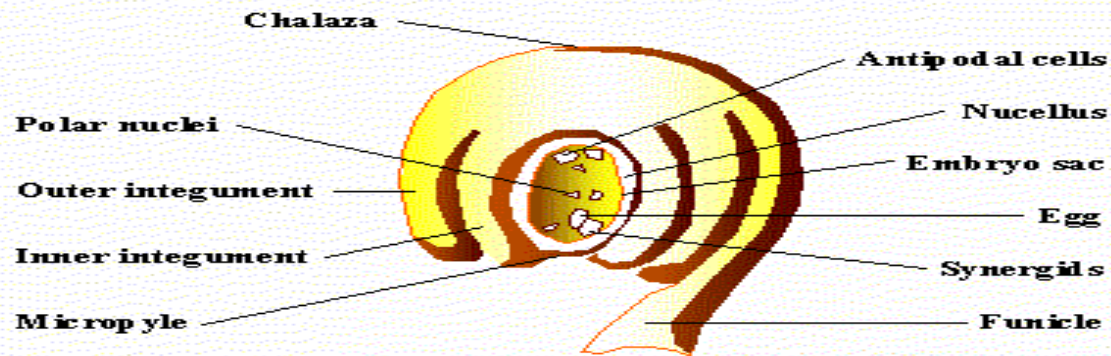
4-Campylotropous

It is characterized by a rapid growth of one side of the nucellus and coats on one side and the development on the other side almost arrested. So, the micropyle is brought adjacent to the chalaza and hilum. There is no raphe, as in *fenugreek* and *black mustard*.



ILLUSTRATED GLOSSARY

The structure and main types of ovule



Anatropous



Orthotropous



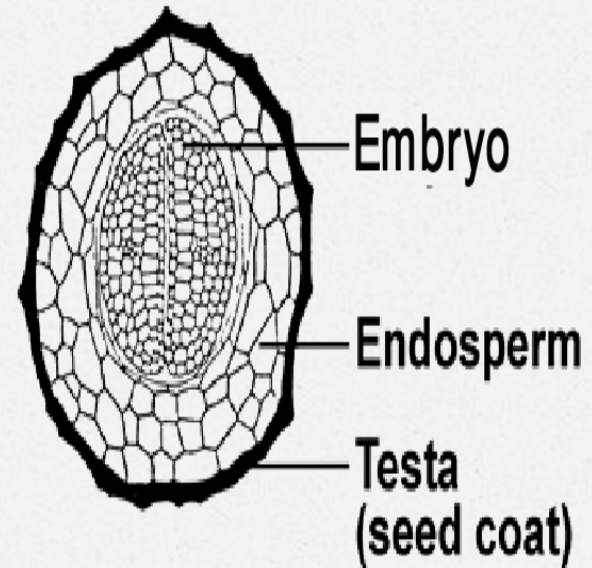
Campylotropous



Amphitropous

Structure

- (1) Seed coat.
- (2) Reserved food tissues (endosperm, perisperm).
- (3) Embryo (composed of 1-2 cotyledons).



1-Seed coat

o The seed may have one seed coat as in nux vomica or two coats as in Cardamom.

o It may show the following layers:-

o I-Epidermis

o II-Hypodermis.

o III-Sclernchymatous layer.

o IV-Nutritive layer.

o V-Pigment layer.

2-Endosperm

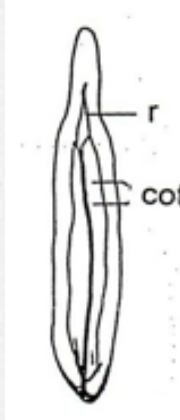
- It is composed of cellulosic walled parenchyma containing reserve food materials.

Embryo

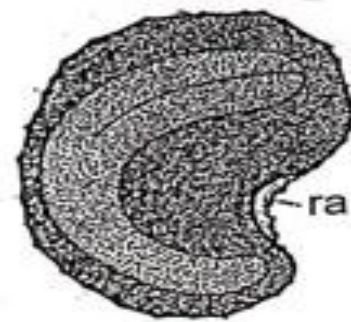
- Composed of (1-2 cotyledons)
- It is formed from thin cellulosic parenchymatous cells containing reserve food materials, like starch, fixed oil and aleurone grains.

Types of embryo

o Straight embryo:

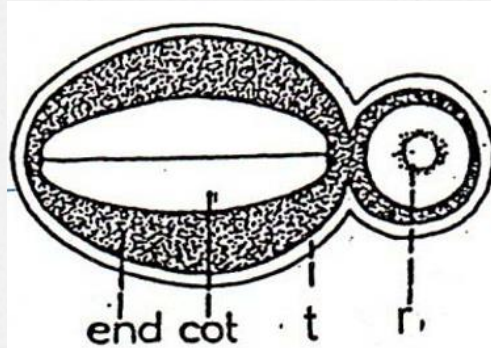


o Curved

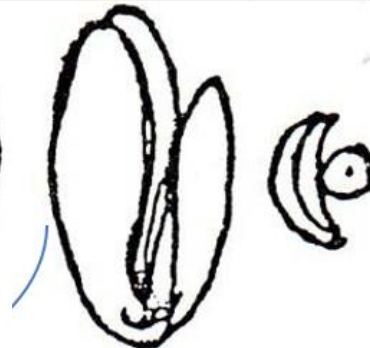


Curved embryo
(Papaver)

o Bent



Accumbent embryo



Incumbant embryo



Orthoplocally embryo
(Mustard)

Note

- o If the embryo is surrounded by endosperm or both endosperm & perisperm the seed is called “inalbuminous seed”
- o If the embryo is surrounded by seed coat directly the seed is called as “exalbuminous seed”



Medicinal seeds

Lin seed and Fenugreek seed

Lin seed(Flax seed)

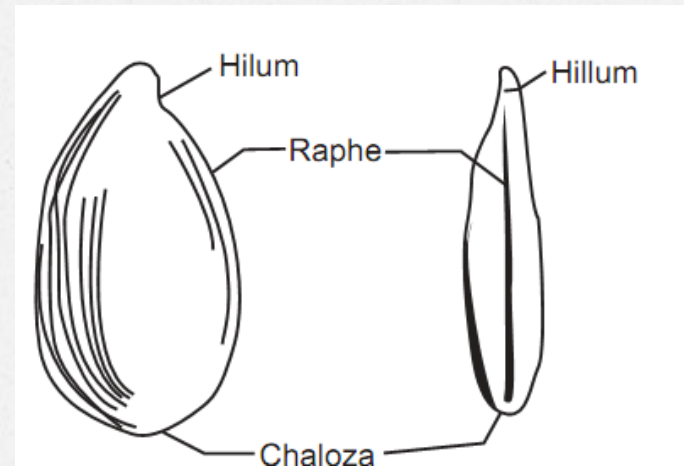
“بذر الكتان”

- Origin:-The dried ripe seeds of *Linum usitatissimum*, family Linnaceae, yields not less than 30% fixed oil.

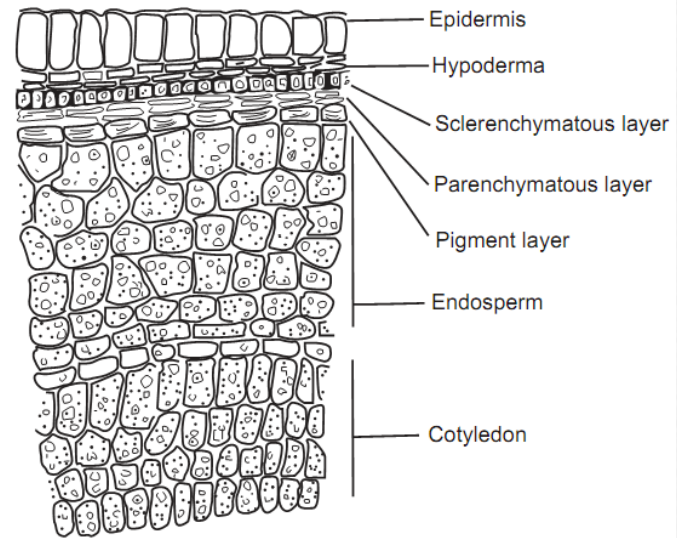


Morphology

- **Oval lanceolate**
- **Glossy brown**
- **mucilaginous taste**
- **Pointed end**
- **Slippery texture.**

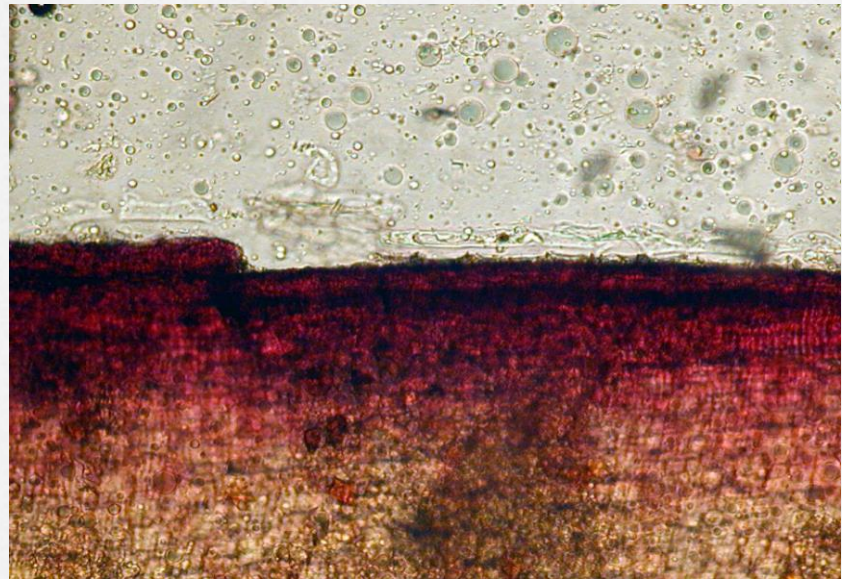
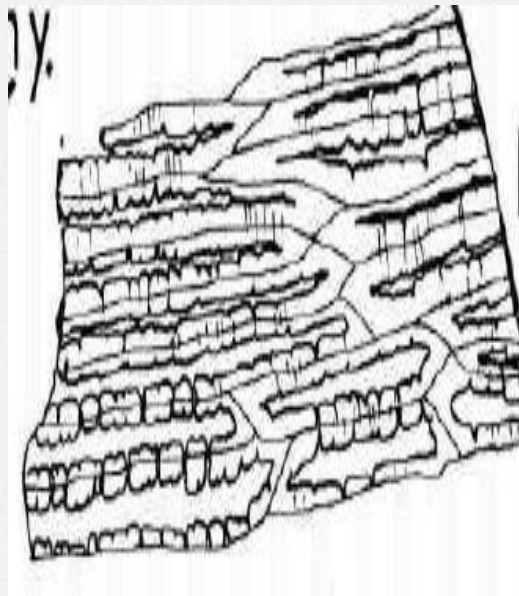


T.S in the seed



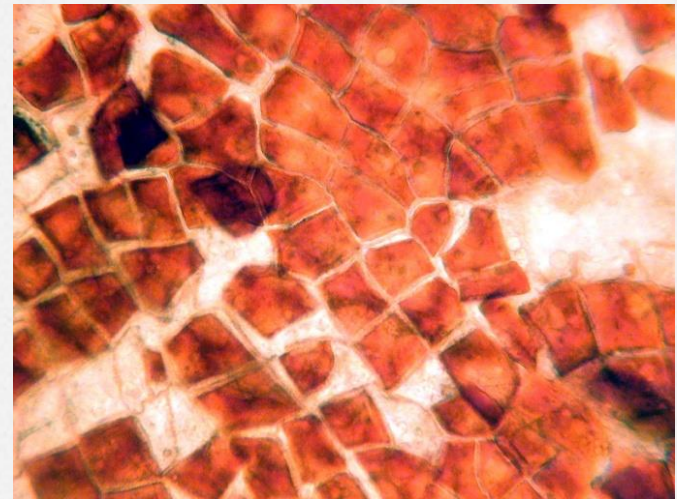
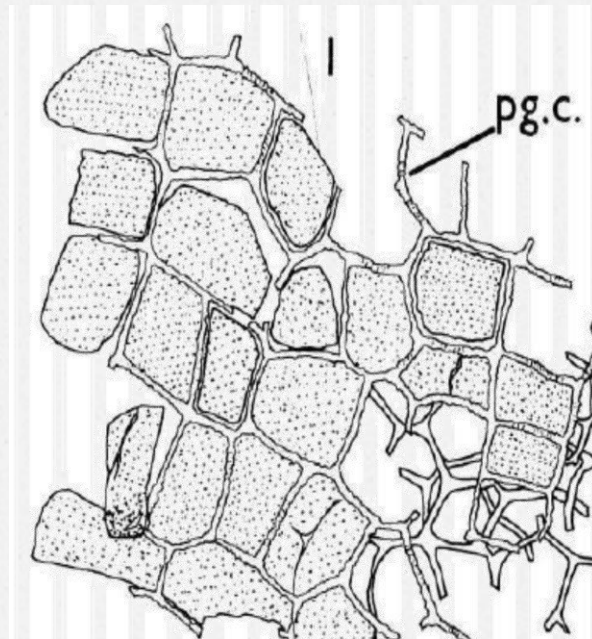
Microscopic character

1-Sclernchymatous layer (sclerides)



Microscopic character

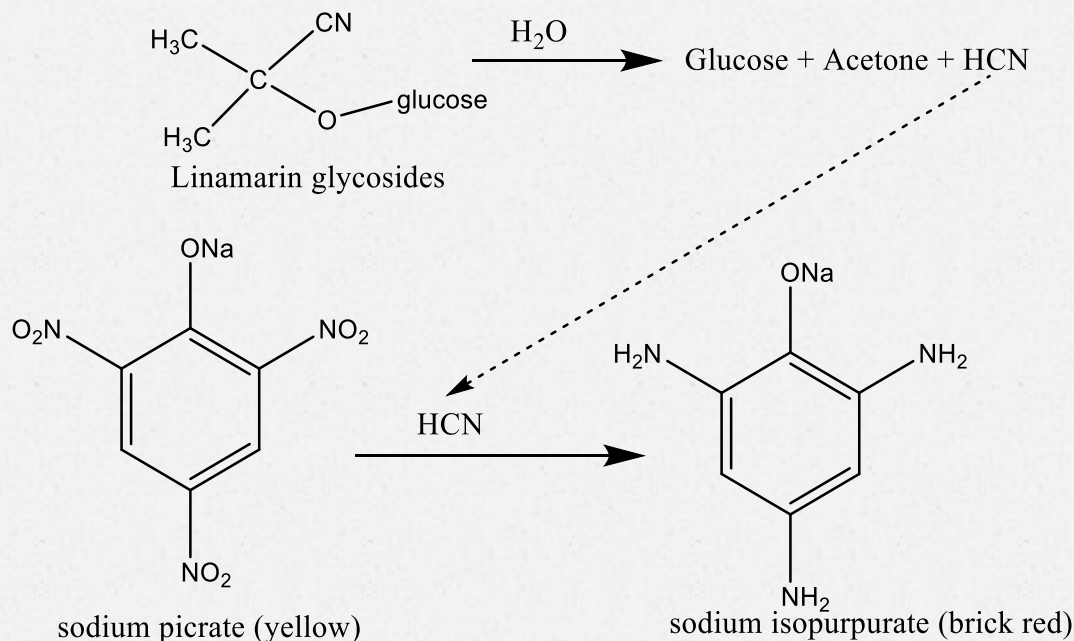
○ 2-Pigment layer (*)



Active constituents

- 30% - 40% Fixed oil
- 5-9% mucilage (pectose)
- Cyanogenic glycosides (linamarin)
- Omega-3 fatty acids
- Tannin
- 25% protein, starch

Test for linamarin glycoside (Guignard paper test)



Guignard paper (filter paper moistened with aqueous solution of picric acid, then allowed to dry and dipped in aqueous solution of sodium bicarbonate and dried).

Uses

- ✓ **Cardiovascular disease ???**
- ✓ **Laxative for constipation, demulcent (in cough mixtures) ???**
- ✓ **Poultices**
- ✓ **Painting**

Chemical test

- 1-Mayer's test: yellowish white ppt
- 2-Rhithenium red : red color due to presence of mucilage