

Pharmacognosy

PHG 112
PG 102

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Spring 2025



Faculty of Pharmacy

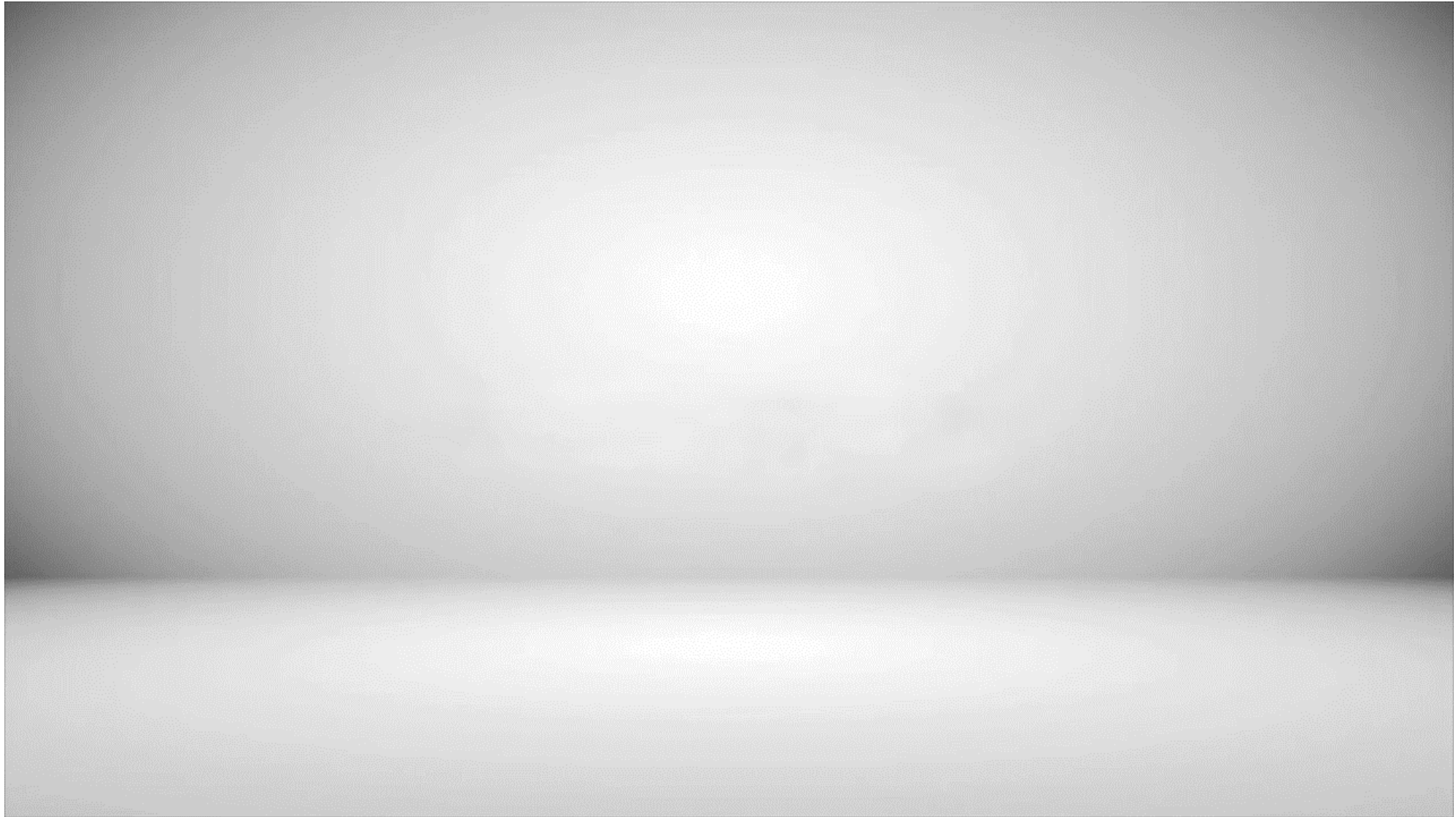
Lecture 4



By the end of the lecture, students should be able to demonstrate knowledge of:

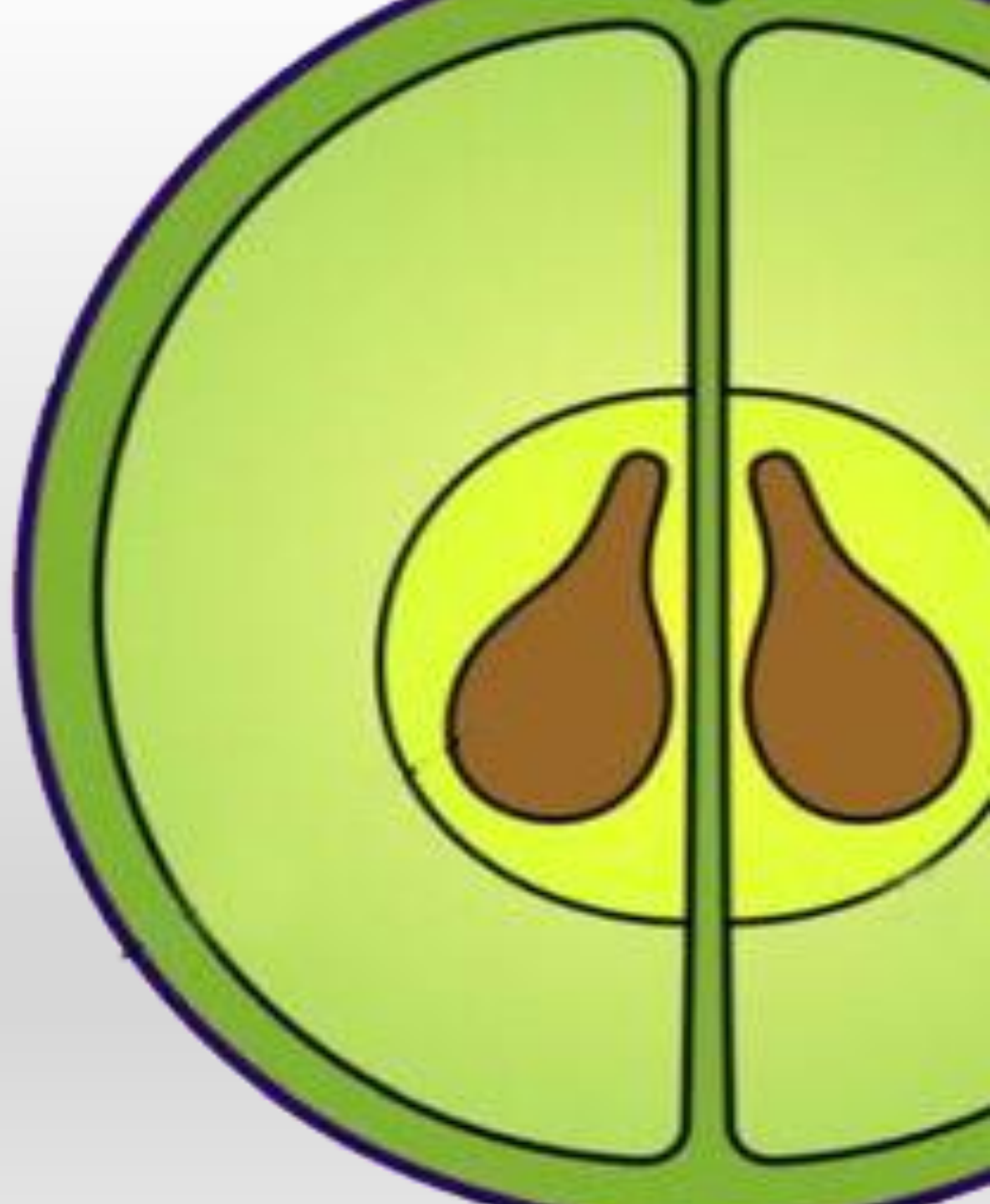
- *Fruit formation and key morphological and histological features*
- *Family Umbelliferae as important nutraceutical and cosmeceutical fruits*
- *Ammi visnaga and Ammi majus their chemical constituents & uses*

Fruit Formation

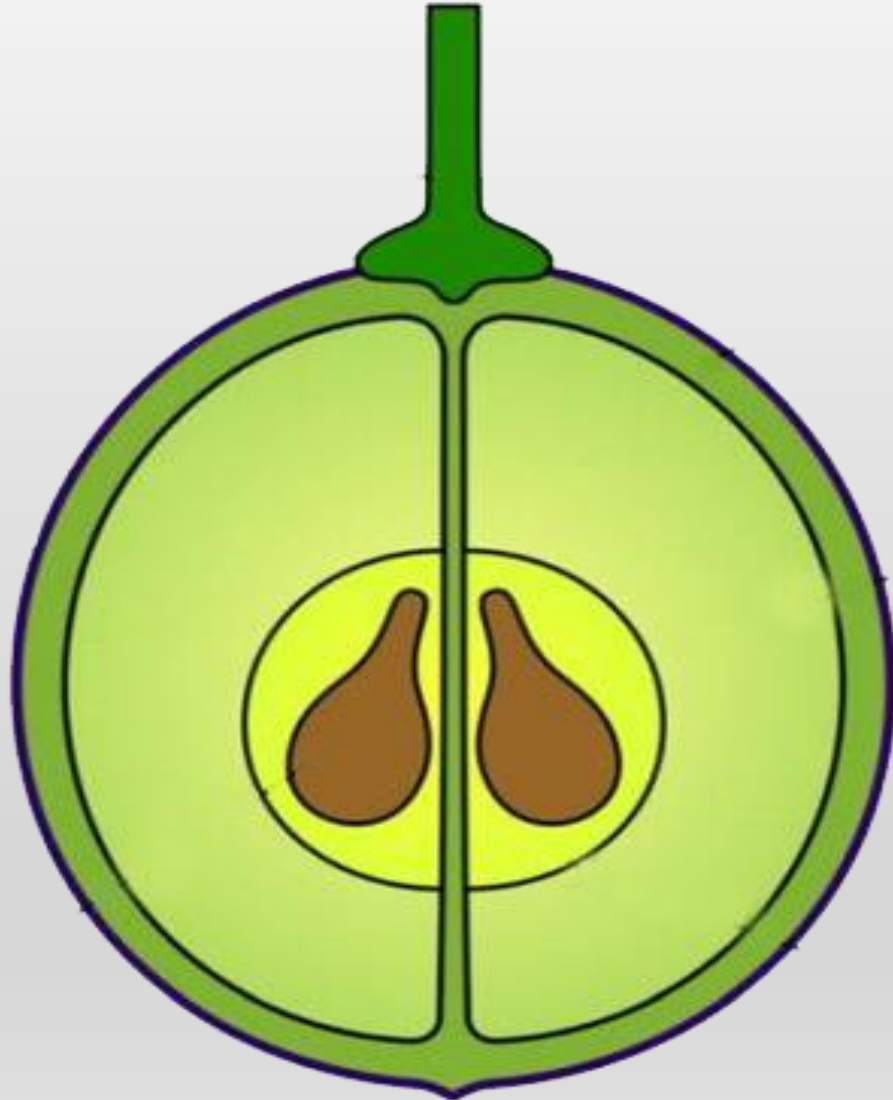


The Fruit

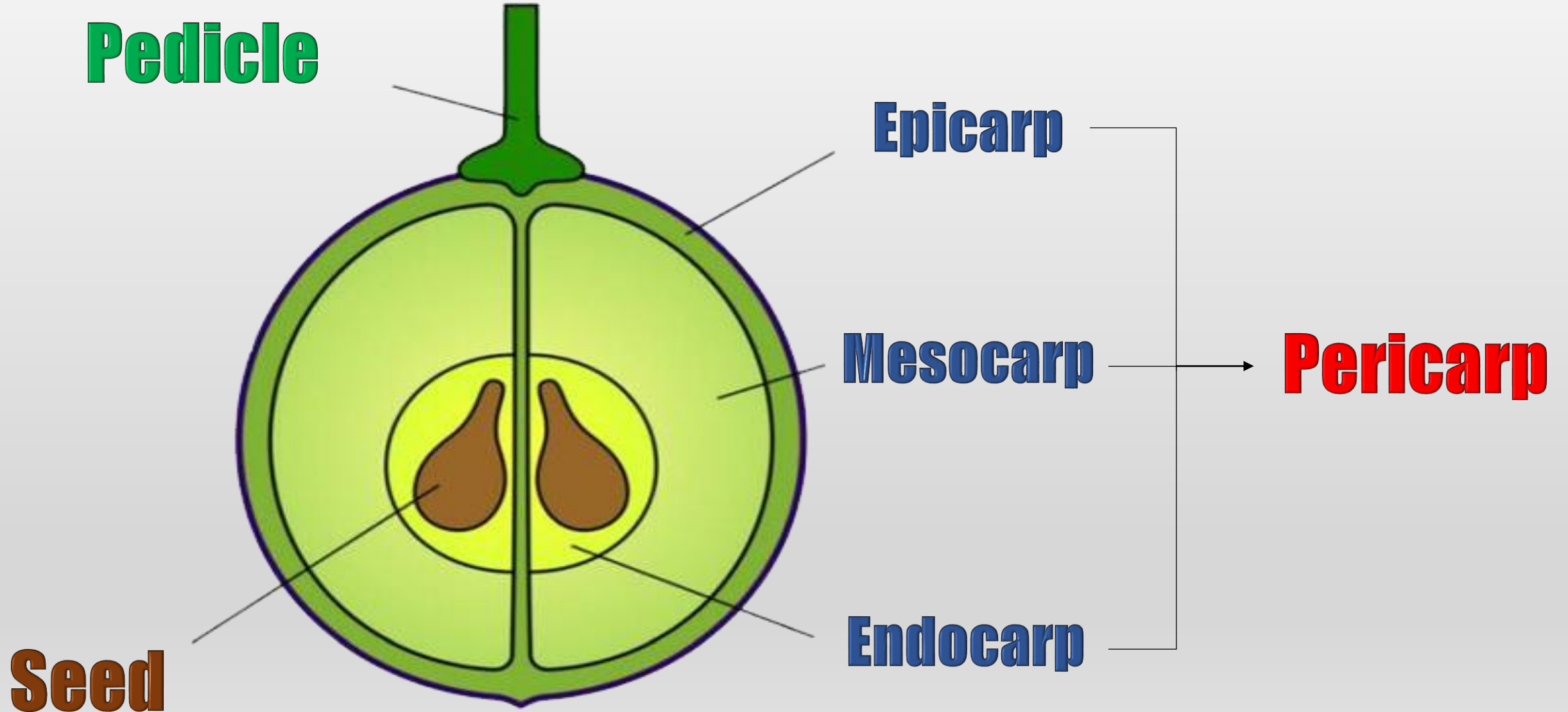
The whole product of the development of the **gynaecium** as a result of fertilization



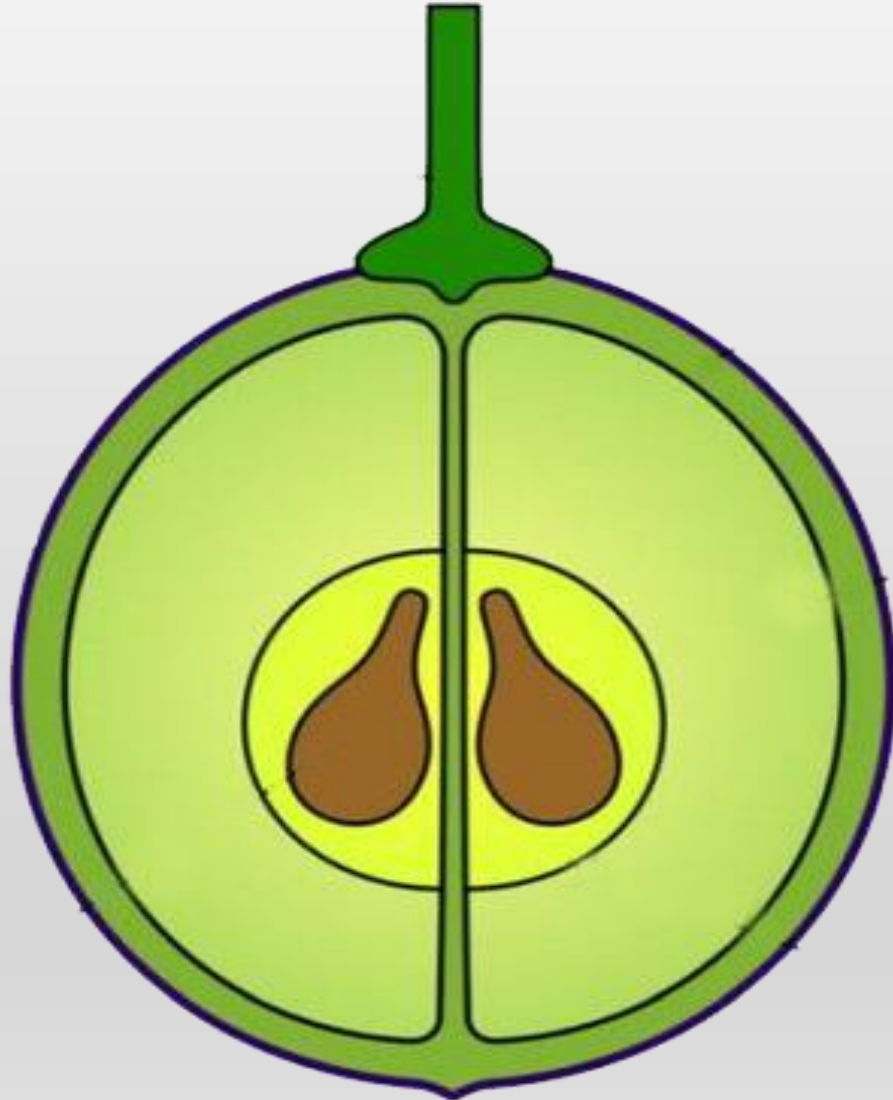
Parts of the Fruit

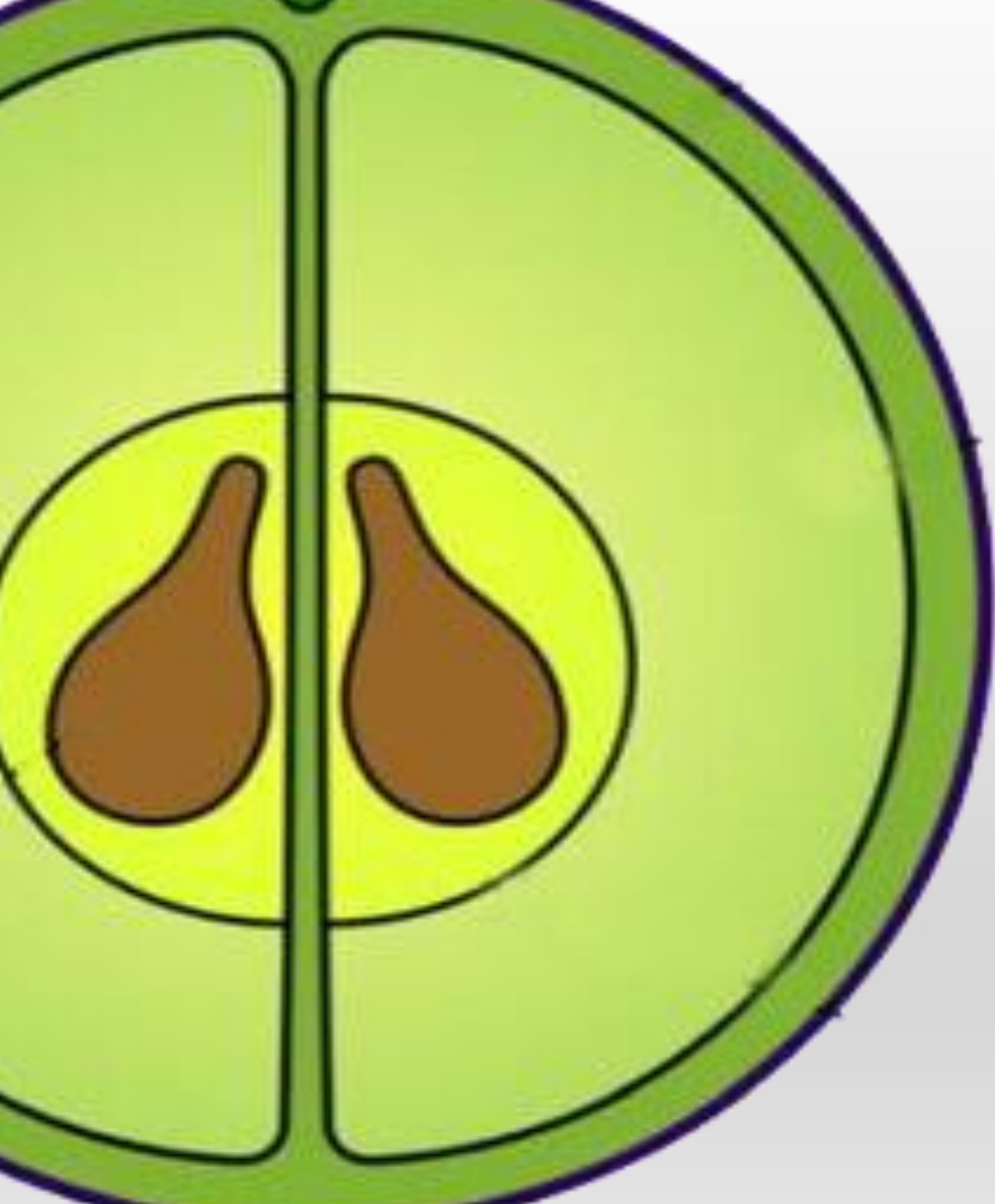


Parts of the Fruit



Parts of the Fruit





Pericarp

The fruit wall enclosing the seed and is typically made up of three distinct layers: the **epicarp**, which is the outermost layer; the **mesocarp**, which is the middle layer; and the **endocarp**, which is the inner layer surrounding the ovary or the seeds.



Pericarp

Dry



Wheat Grain



Cardamom



Nuts

Succulent



Capsicum



Orange



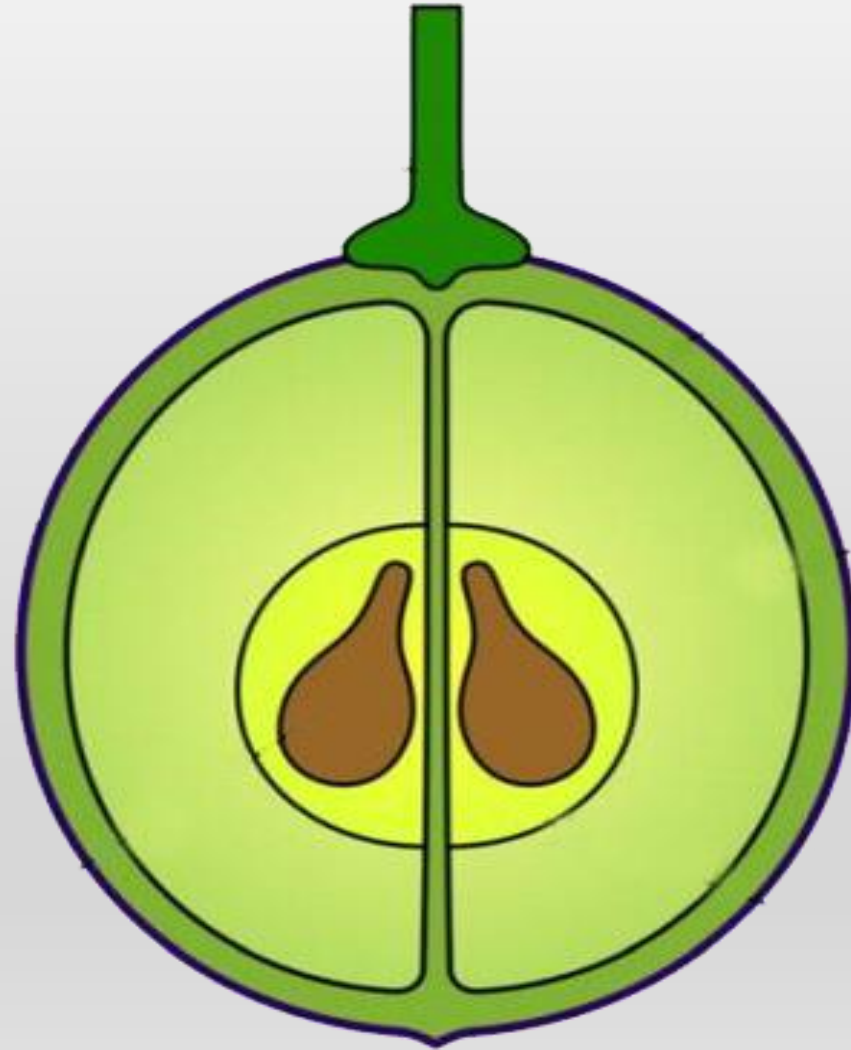
Tomatoes

Seeds

Mature fertilized plant **ovules** and they are considered the unit of reproduction of a flowering plant, capable of developing into another such plant



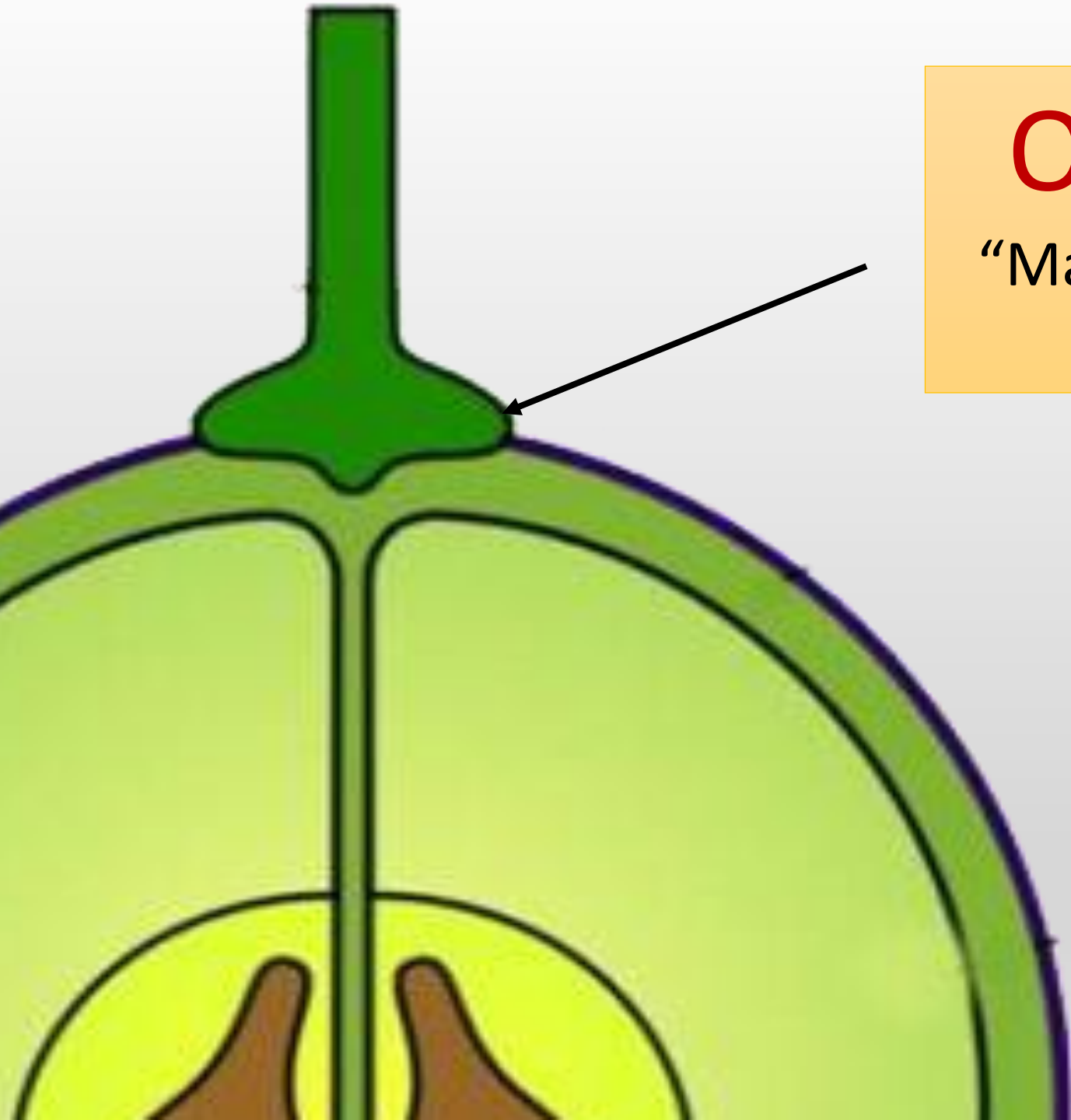
Fruit Scars





Apical and minute

“Marking the remains of style and stigma.”

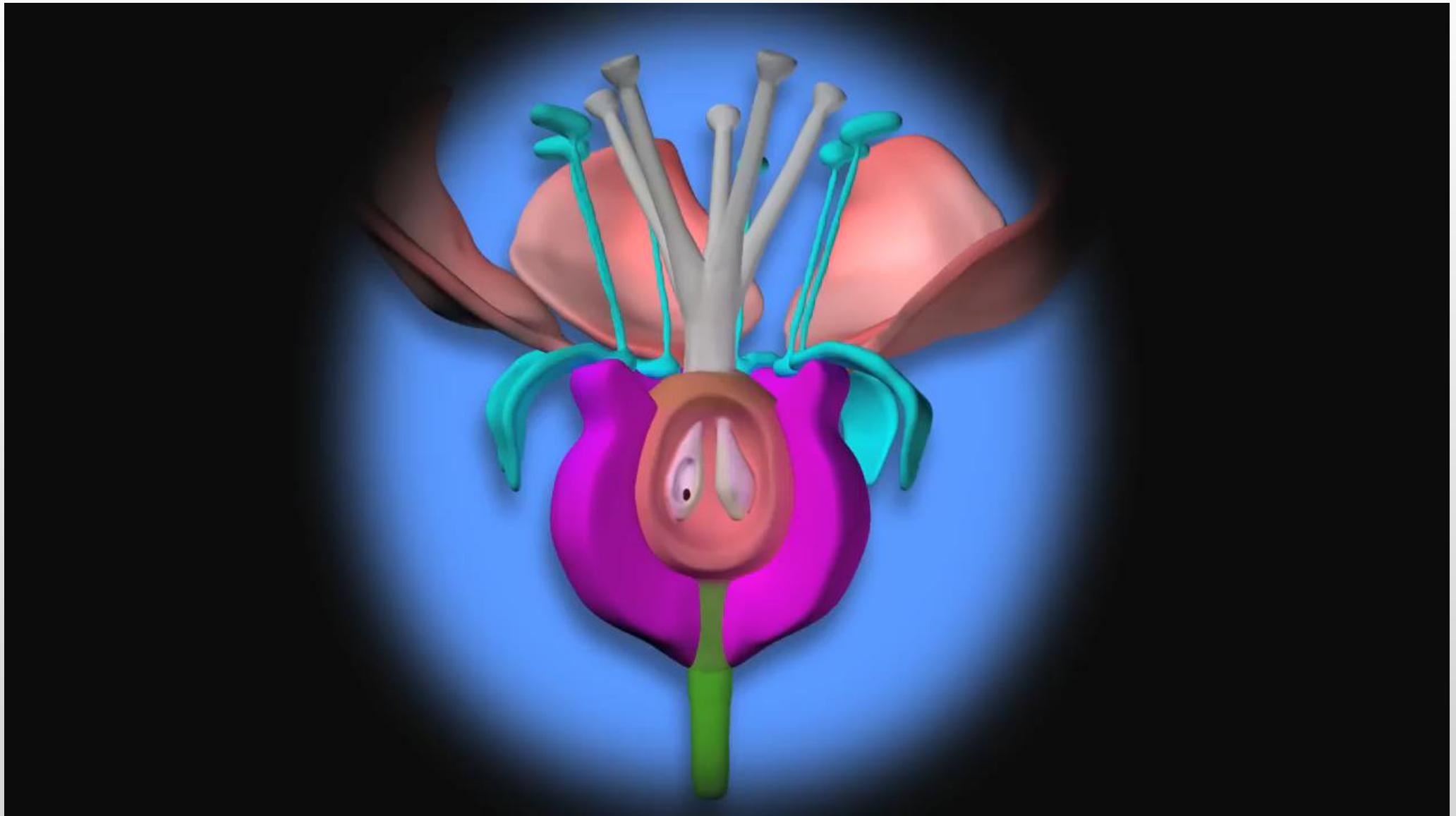


One at the base

“Marking the attachment to the stalk or parent plant”

Sometimes **other parts**
of the flower in
addition to the
gynaecium participate
in the production of
the fruit.





False Fruit

False Fruit



Apple



Pear



Family

Umbelliferaea

Family Umbelliferaea



Fennel



Anise



Ammi visnaga

Type of fruit: True, Dry, Simple, Schizocarpic

Name of fruit: Cremocarp

General characters of family Umbellifereae



General characters of family Umbelliferae

Morphology

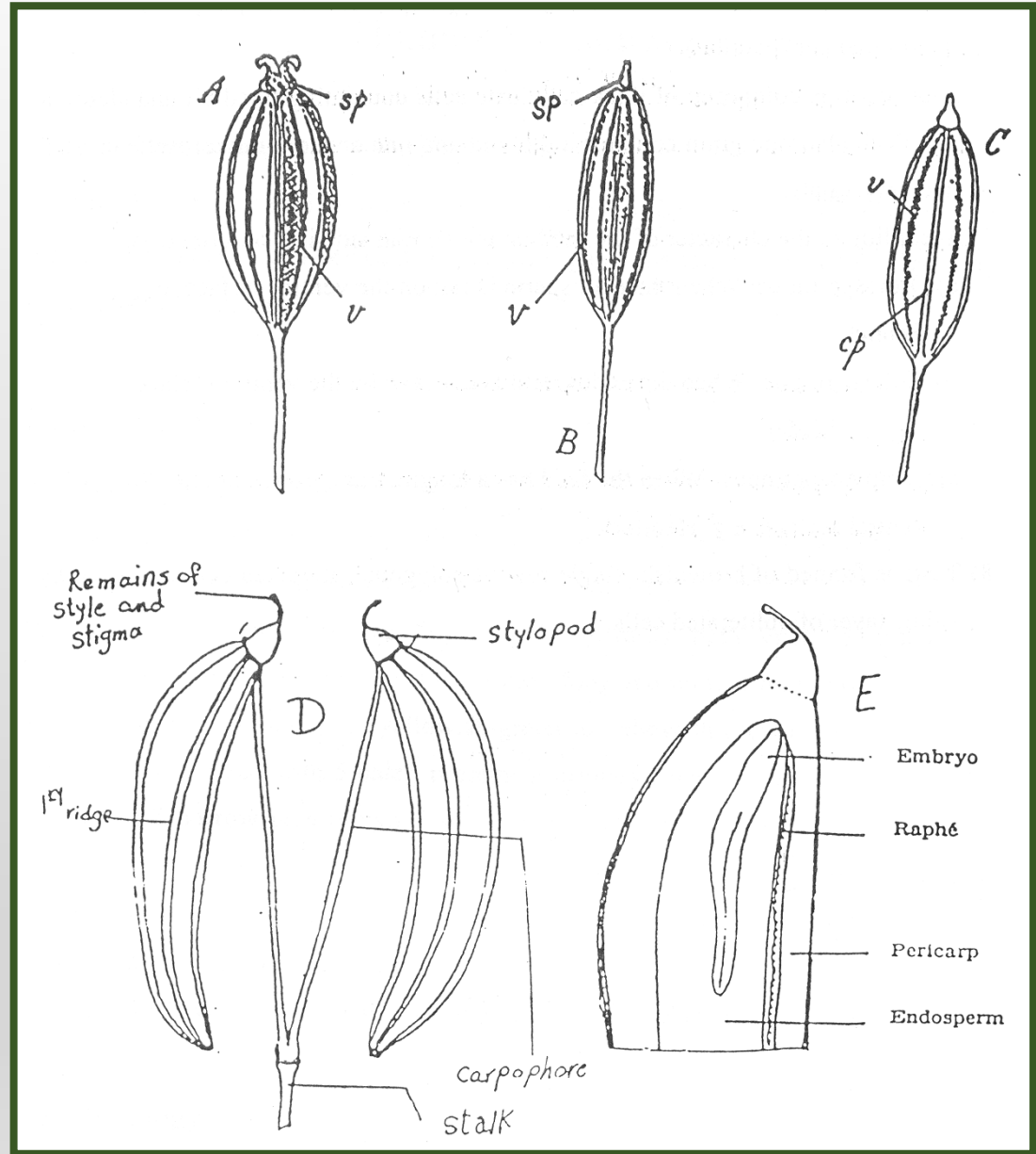


1) The fruit is true, simple, dry, schizocarpic, cremocarp that splits upon drying into two indehiscent one seeded mericarps.

2) The apex of the fruit is crowned with a conical structure named stylopod (represents the remains of the style, stigma and nectary disc).

General characters of family Umbellifereae

Morphology



**General characters of family
Umbellifereae**

Morphology

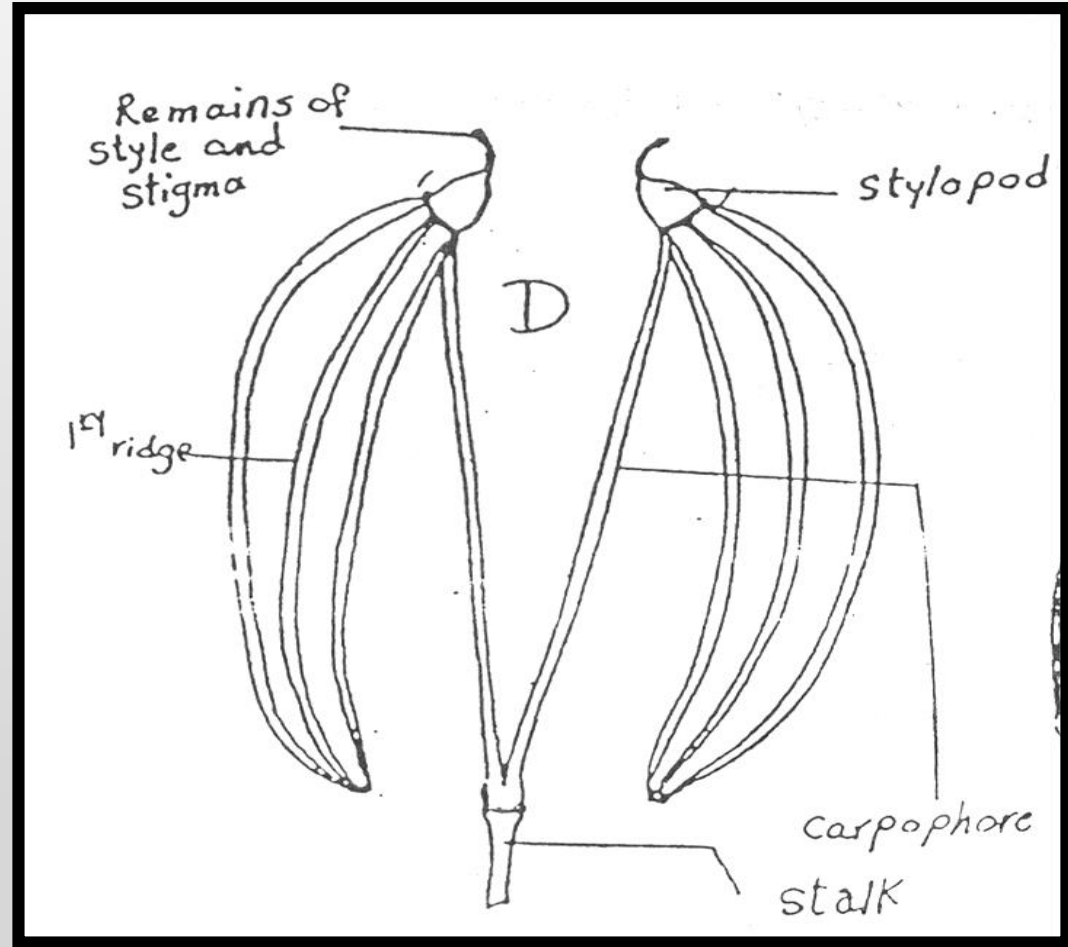


3) Surface of the cremocarp is characterized by the presence of 10 primary ridges(5 on each mericarp) over the vascular bundles & 8 secondary ridges over the vittae

4) Carpophore is a minute thread lies between the two mericarps.
It is an elongation of the receptacle between the carpels

General characters of family Umbellifereae

Morphology



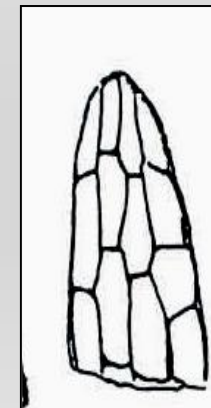
**General characters of family
Umbellifereae**

Histology



1) Epicarp is usually one row (epidermis)

2) Glandular trichomes are rare, while non-glandular trichomes occur as unicellular to multicellular having a shaggy form



**General characters of family
Umbellifereae**

Histology



3) The fruits are characterized by the presence of schizogenous secreting ducts (vittae) in the mesocarp, containing volatile oil or bitter principles; they are six in number in each mericarp.

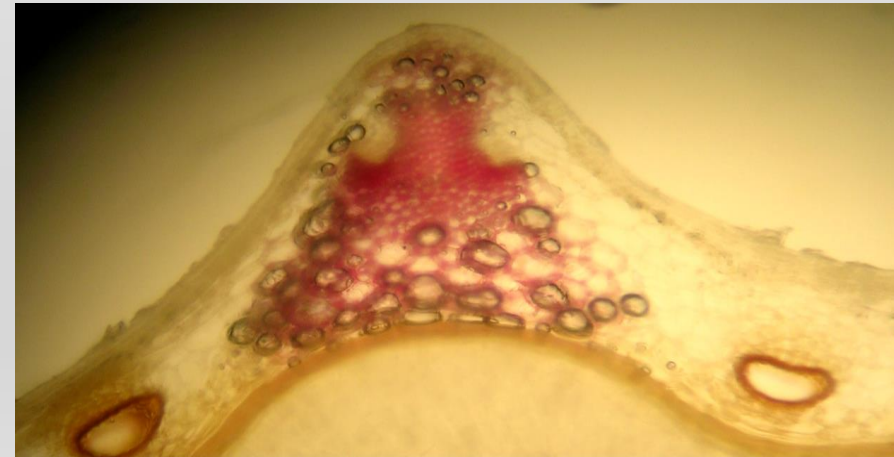


General characters of family
Umbellifereae

Histology



4) The vascular bundle is bicollateral fibro-vascular bundle and sometimes accompanied by reticulate parenchyma cells. They are five in number in each mericarp and located in the mesocarp in **primary ridges**.



**General characters of family
Umbelliferae**

Histology



5) The endocarp is composed of one row of narrow elongated cells. It appears in surface view as parallel cells, arranged in groups, either in parquetry or non - parquetry manner.



Ammi visnaga

Ammi majus

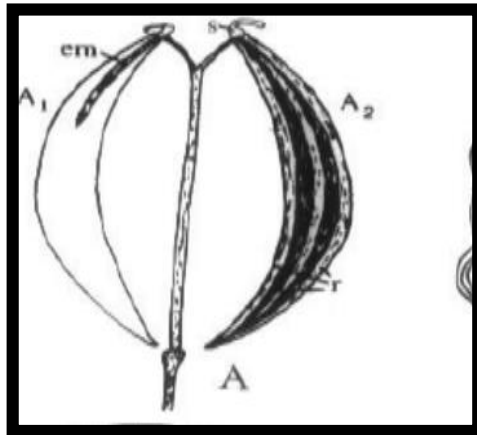
**Origin: The dried ripe fruit of
Ammi majus Lam.
F. Umbelliferae (Apiaceae).**



Ammi visnaga

Violet tinge

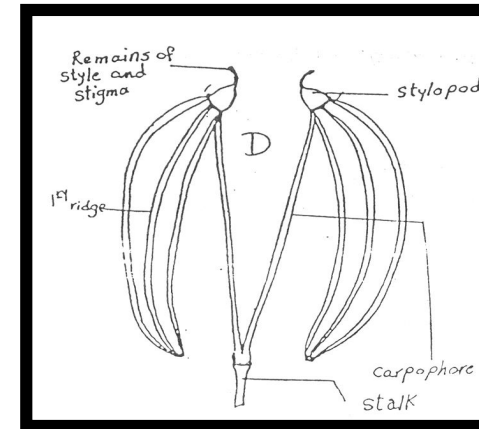
Simple Carpophore



Ammi majus

NO Violet tinge

Forked Carpophore



Morphology

Ammi visnaga

Crescent shaped Vascular bundle

Porous inner most layer of mesocarp

Finely striated epicarp

Ammi majus

Oval Vascular bundle

Non-Porous inner layer of mesocarp

Distinctly striated epicarp

Histology

Ammi visnaga

**Bitter principles: Khellin,
visnagin and visnadin**

Flavonoids: quercetin

**Essential oil containing α -
terpineol and linalool**

Fixed oil & protein

Ammi majus

**Bitter principles: Psoralene
and Ammidin**

Fixed oil & protein

Active constituents

Ammi visnaga

Spasmolytic especially on the muscles of the **bronchi, GIT, biliary tract, urogenital system, and coronary vessels**

1- Whooping cough It is now given for bronchial asthma and is safe even for children

2- Cramp-like conditions of **GIT, biliary colic, and painful menstruation.**

Uses

Ammi majus

Psoralene stimulates **pigment production** in skin exposed to **UV light.**

It is used externally as liniments and lotions for treating **vitiligo, alopecia, and psoriasis.**



Ammi visnaga

3- It is used for the removal of **gall bladder** and **kidney stones** by relaxing the muscles of the ureter.

4- The drug relaxes the **coronary arteries**, helps to improve the blood supply to the heart muscle, and thereby eases **angina pectoris**.

5- Can be used externally as ***Ammi majus***

Ammi majus

Uses



Ammi visnaga

In **pregnancy** due to **uterine stimulating** activity of khellin.

Photodermatitis in sensitive individuals

Prolonged use may cause nausea, constipation, lack of appetite, headache, allergic symptoms (itching) and sleeplessness

Ammi majus

Photodermatitis in sensitive individuals

Contraindications and side effects

Ammi visnaga

Ammi visnaga boiled in **water**
then add **NaOH** → **Rose red**
colour

Ammi majus

Ammi majus boiled in **water**
then add **NaOH** → **NO** **Rose red**
colour

The **alcoholic** extract of ***Ammi majus***
fruit gives a **blue**
fluorescence in ultraviolet light

Chemical test



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

↙

Thank You!

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