
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
MSA
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IN EGYPT SINCE 1996
Established by Dr.Nawal El Degwi
MSA UNIVERSITY
جامعة أكتوبر للعلوم الحديثة والآداب
Pharmacognosy
PHG 112
Fall 2026

Pharmacognosy

PHG 112



Spring 2026

Lab 4



Intended Learning Outcomes (ILOs)

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

1. **Describe the macroscopic morphology of *Anise* and *Ammi-visnaga*** entire and as powder (shape, color, odor, taste and surface characters).

2. **Identify the microscopic diagnostic features of *Anise* and *Ammi-visnaga***, including vittae, endocarp and hair.

3. **Differentiate the shape of different fruits**, including ***Anise,*** and ***Ammi-visnaga***

4. **Apply proper laboratory skills and safety rules**, including slide preparation, KOH mounting, accurate drawings, waste disposal, and lab conduct.



Anise Fruit



Anise Fruit

Origin:

It is the dried fruits of *Pimpinella anisum* Family Apiaceae



Anise Fruit

Morphology:

Shape: Pear shaped, large base and tapered ends

Size: Small

Color: Greenish grey

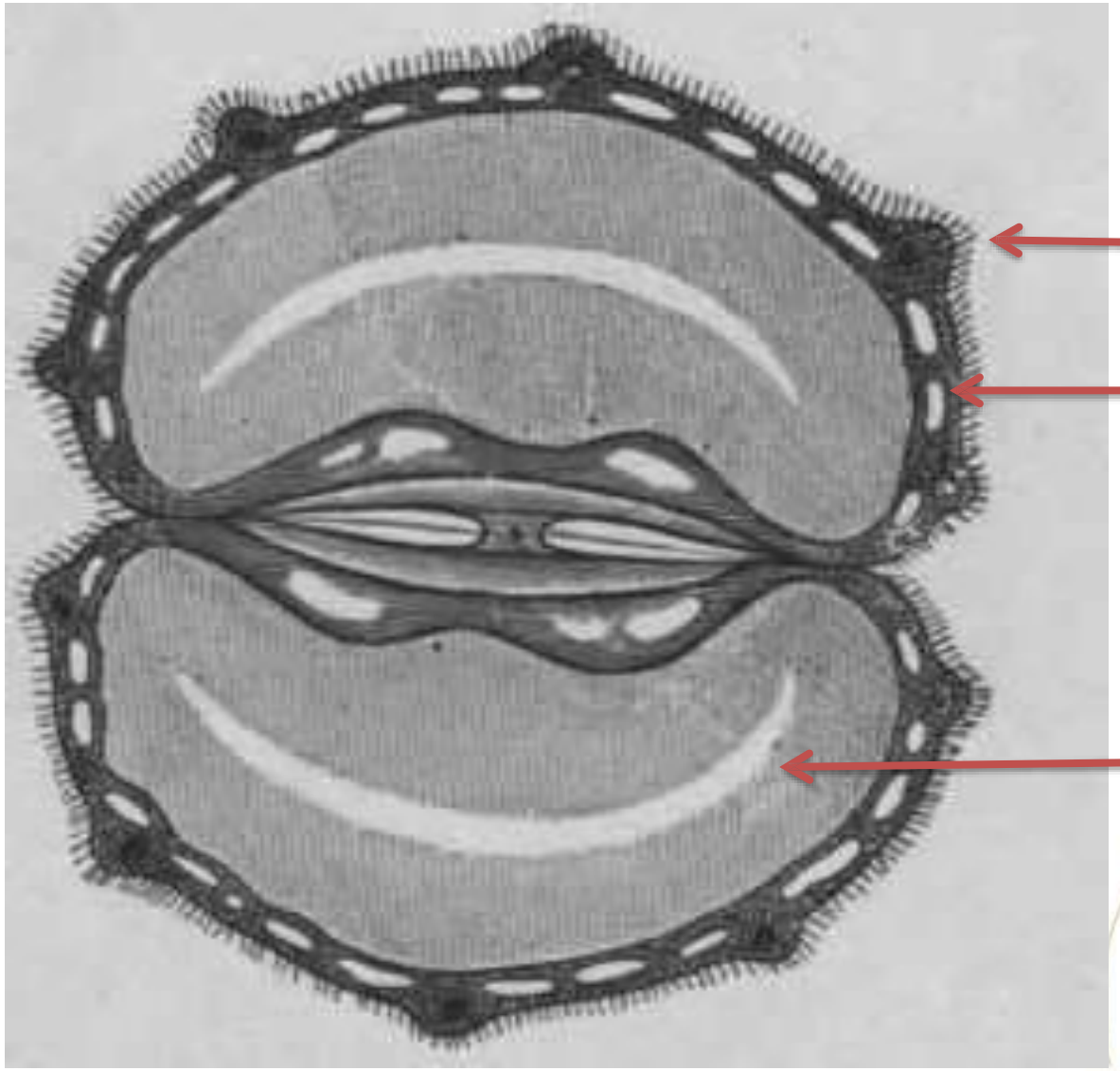
Odor: Aromatic odor

Surface: Hairy on dorsal side



Anise Fruit

T.S.



Anise Fruit

T.S.



Anise Fruit

Physical characters:

Condition: Fine powder

Color: Yellowish green

Odor: Aromatic odour

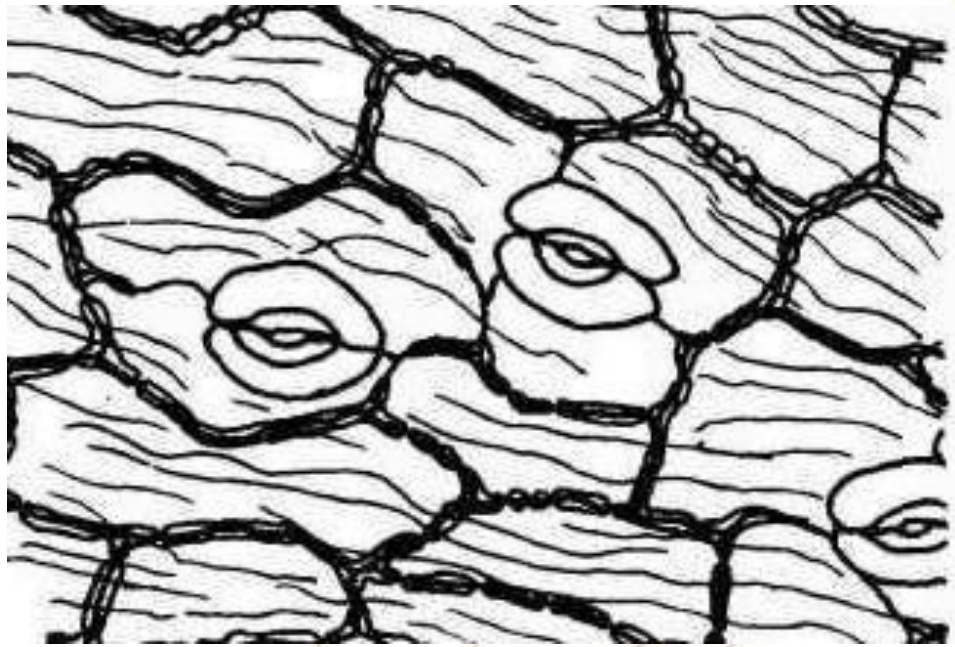
Taste: Sweet aromatic taste



Anise Fruit

Key elements:

1. Epicarp slightly wavy wall, striated cuticle, anomocytic stomata

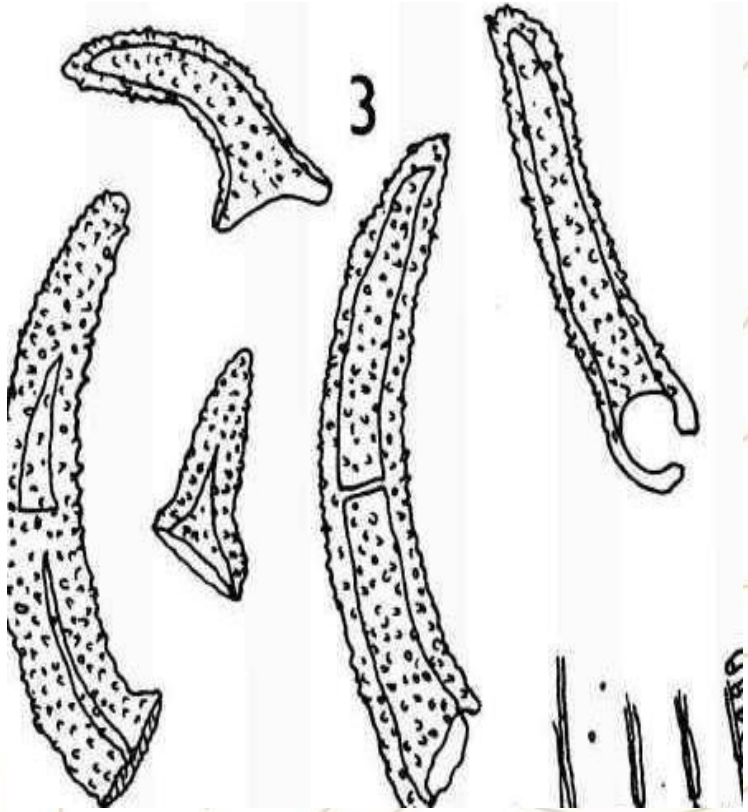


Anise Fruit

Key elements:

2. Unicelluar (occasionally bicellular) non glandular hair with warty cuticle

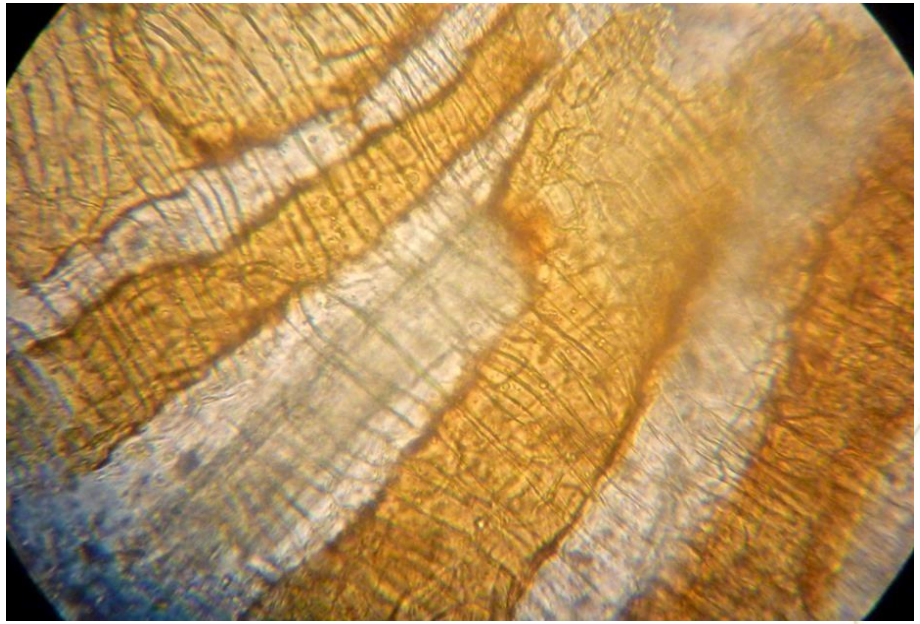


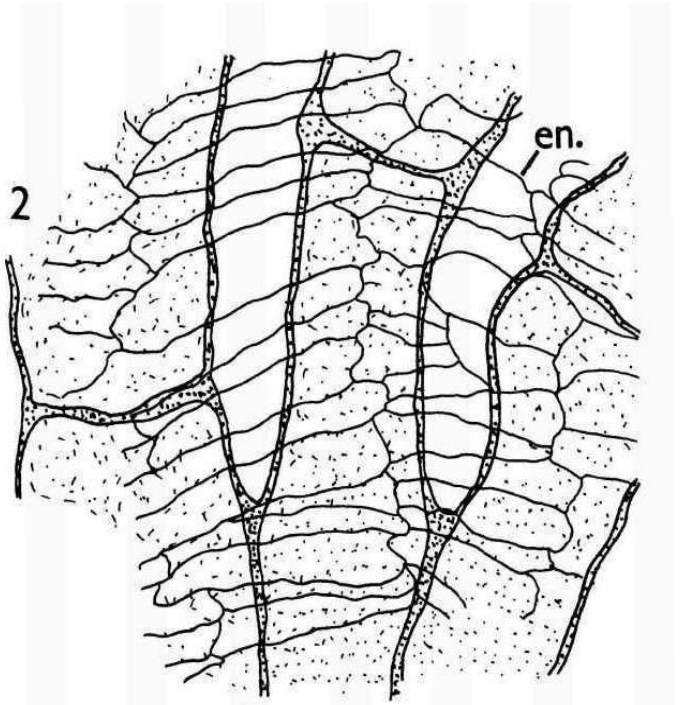


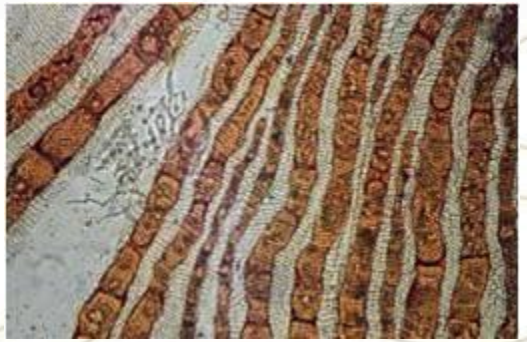
Anise Fruit

Key elements:

3. Branched vittae overlapped by non-parquetory endocarp



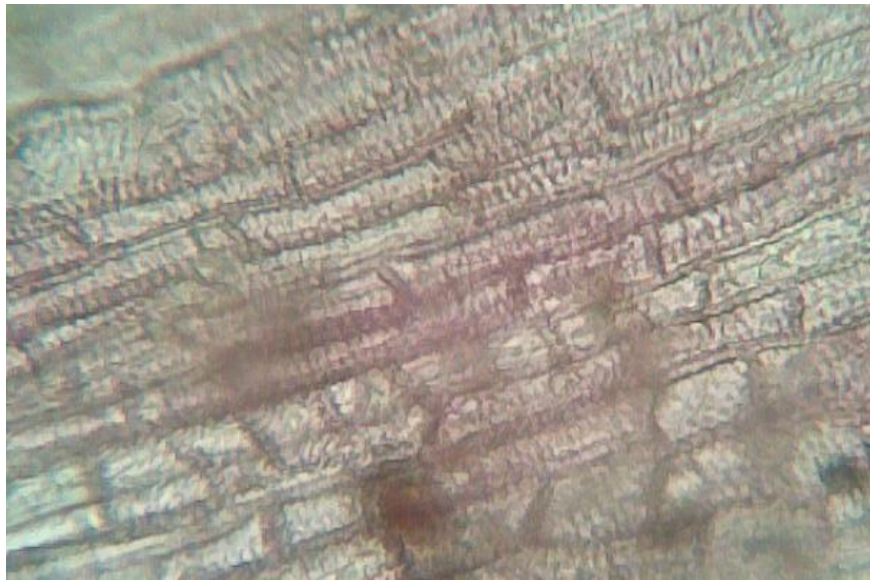


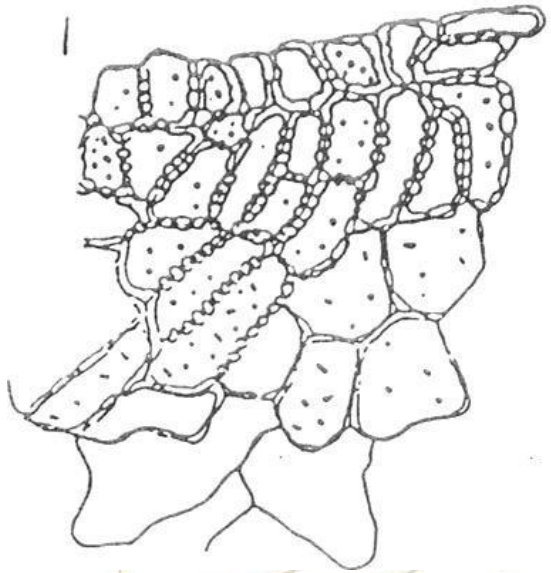


Anise Fruit

Key elements:

4. Lignified pitted parenchyma

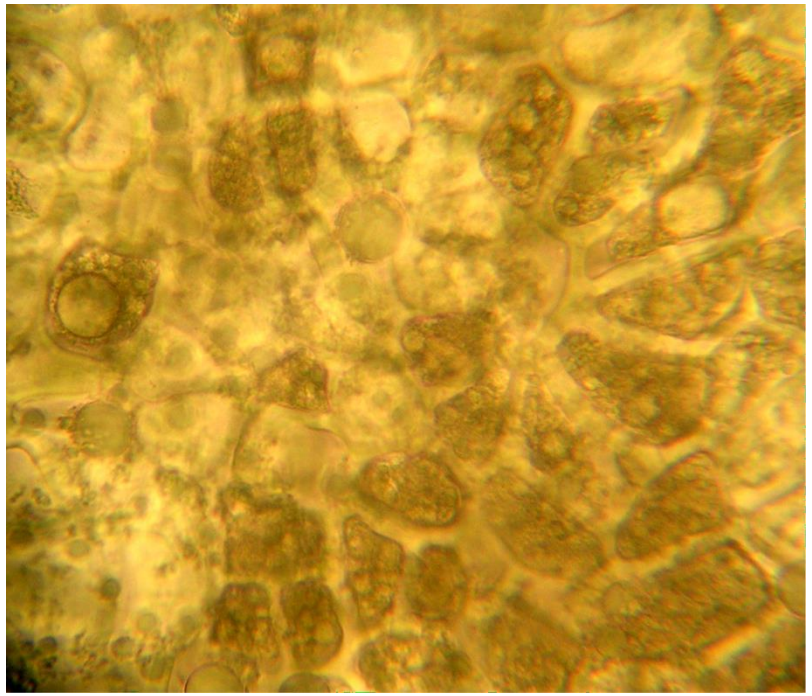




Anise Fruit

Key elements:

5. Numerous fragments of endosperm.





Anise Fruit

Microscopical characters:

- **Mount in KOH:** non glandular hair, branched vittae and lignified pitted parenchyma
- **Mount in phlouroglucinol :** Raphe, Vascular bundle, Pitted lignified parenchyma and Carpophore
- **Mount in Water:** non glandular hair

Anise Fruit

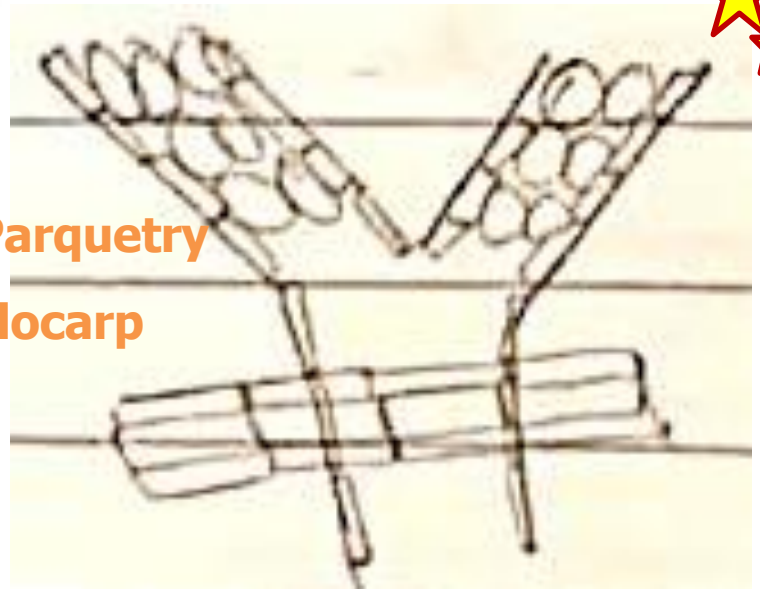
Uses:

1. Used to relieve **cough** and symptoms of **bronchitis**.
2. **Carminative;** helps relieve **flatulence** and **colic,** including in children.
3. **Lactagogue** (traditionally used to promote milk secretion).
4. Has a mild **sedative** action.
5. Anise oil is used as a **flavouring agent** in the food and beverage industries.



Main Key Eelements Drawings:

1 Branched vittae



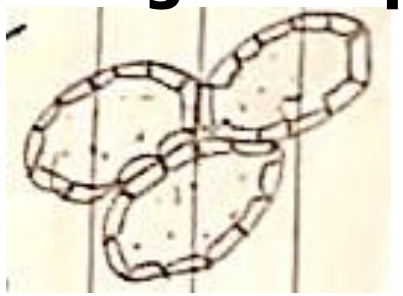
Non-Parquetry endocarp

2 Non glandular hair with warty cuticle



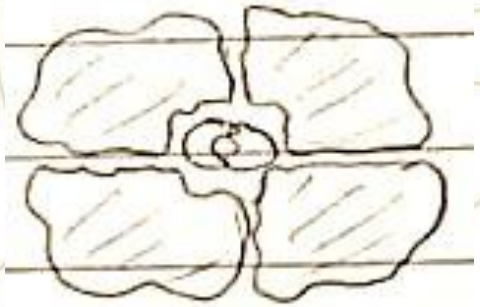
Unicelluar (occasionally bicellular)

3 Reticulate lignified parenchyma



4 Epicarp

Slightly wavy wall, striated cuticle, anomocytic stomata.





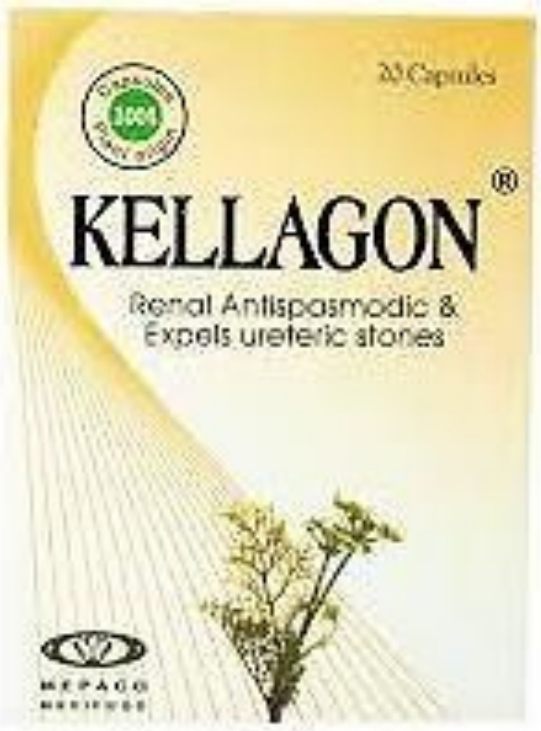
Ammi-visnaga Fruit

Ammi-visnaga Fruit

Origin:

It is the dried ripe fruit of *Ammi visnaga* family Apiaceae







Ammi-visnaga Fruit

Morphology:

Shape: Small ovoid

Color: Brownish green with violet tinge

Odor: Slightly aromatic

Taste: Bitter

Surface: Primary ridge

and Secondary ridge



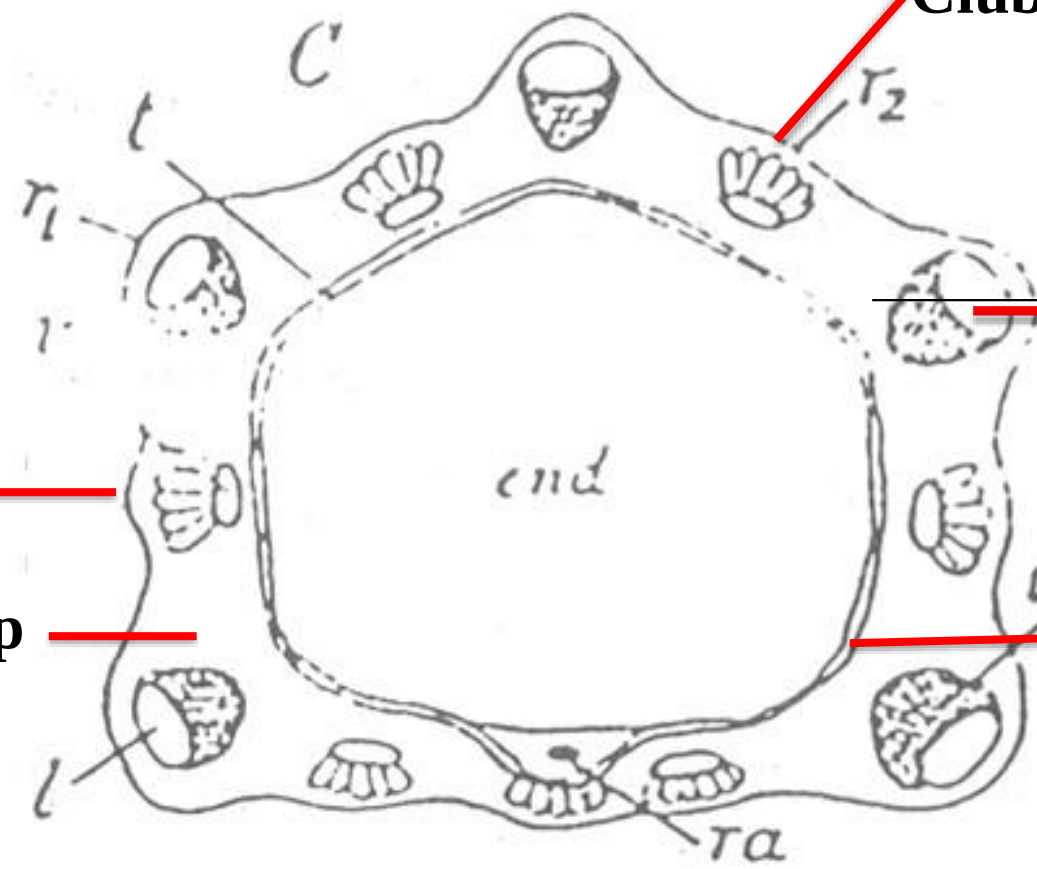
Ammi-visnaga Fruit

T.S.:



Ammi-visnaga Fruit

T.S.



Club shaped vittae

crescent shaped vascular bundle

Epicarp

Endocarp

Innermost layer of mesocarp

T. S. of Ammi visnaga mericarp (diagram)

Ammi-visnaga Fruit

Physical Characters:

Condition: Fine powder

Colour: Brownish green

Odour: Slightly aromatic

Taste: Bitter



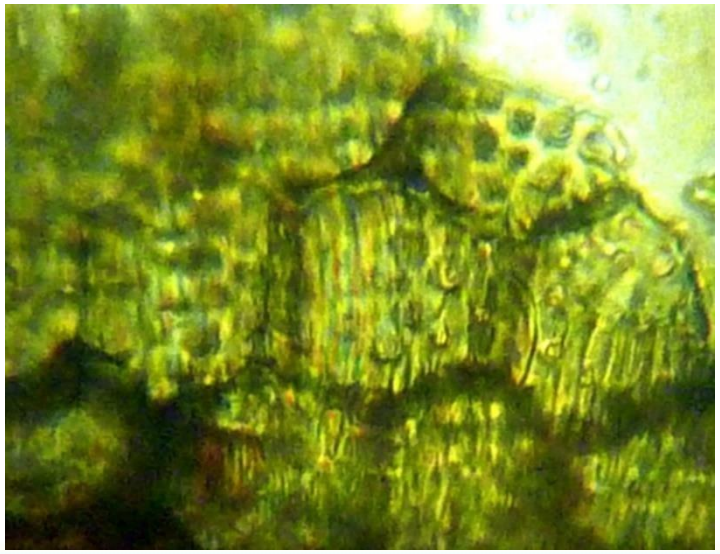
Ammi-visnaga Fruit

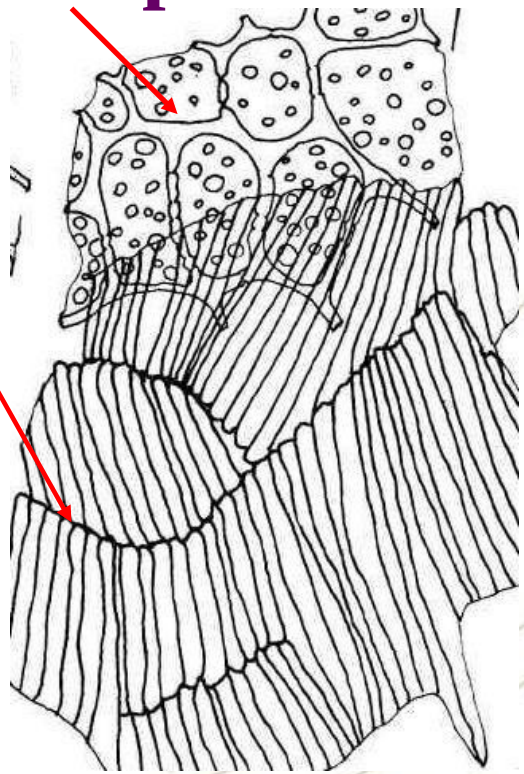
Key elements:

1. Fragments showing innermost layer of mesocarp (porous layer) accompanied by parquetory endocarp

Inner most layer of mesocarp

Parquetry endocarp

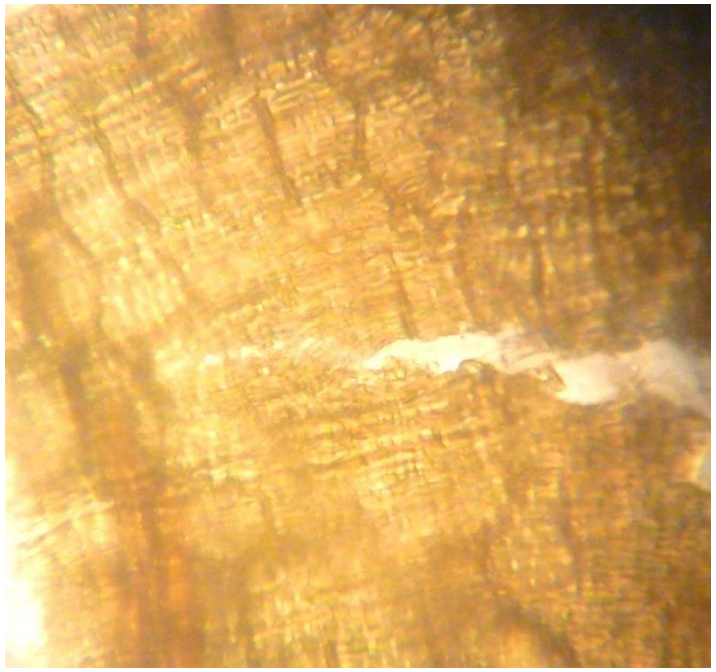


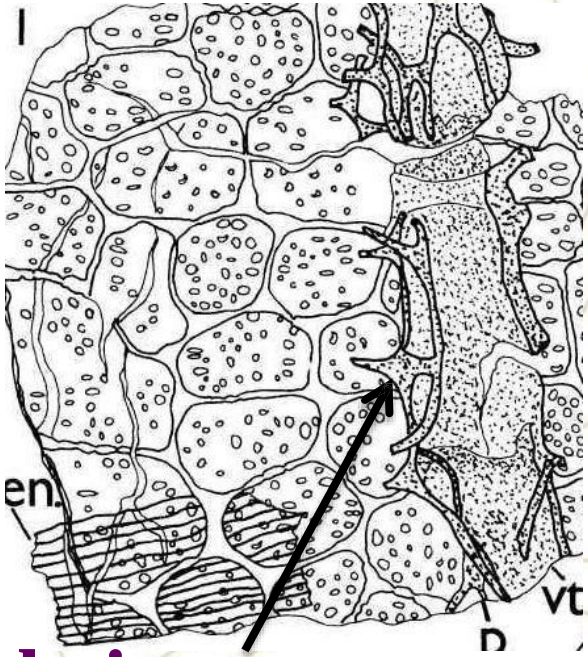


Ammi-visnaga Fruit

Key elements:

2. Fragments showing innermost layer of mesocarp (porous layer) accompanied by parquetory endocarp and club shaped vittae.



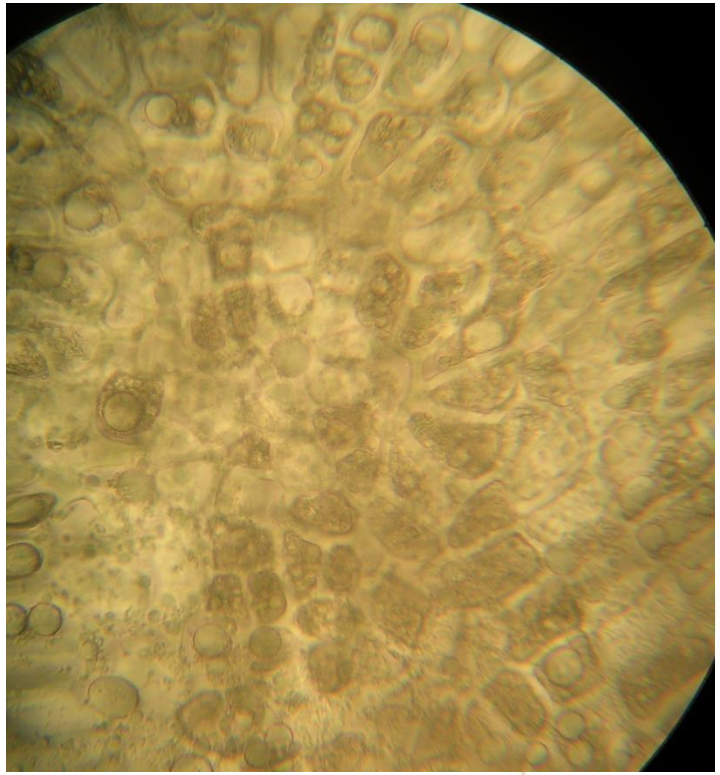


Club shaped vittae with radiating cells

Ammi-visnaga Fruit

Key elements:

3. **Numerous fragments of endosperm showing aleurone grains, containing micro-rosette crystals of calcium oxalate.**



Ammi-visnaga Fruit

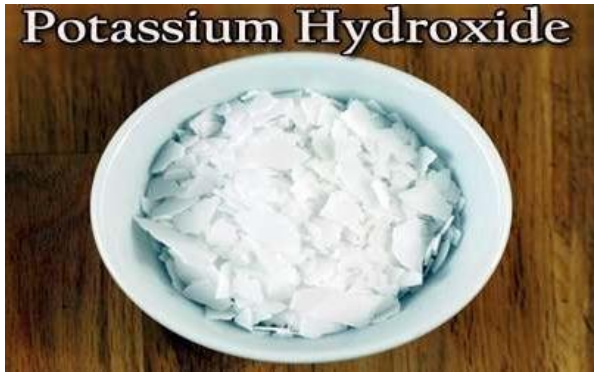
Microscopical Character:

- **Mount in KOH:** **innermost layer of mesocarp and parquetry endocarp.**
- **Mount in Phlouroglucinol:** **Vascular bundle and Reticulate lignified parenchyma**
- **Mount in Water:** **not applicable**

Ammi-visnaga Fruit

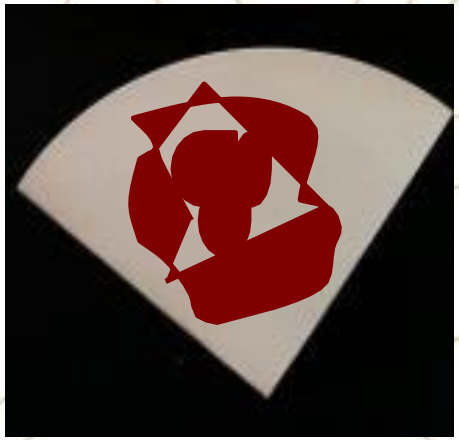
Special chemical test (Khellin test):

Put the ammi visnaga powder in a filter paper and add few specks of KOH solid (pellets).





after 1-2 mins



Ammi-visnaga Fruit

Uses:

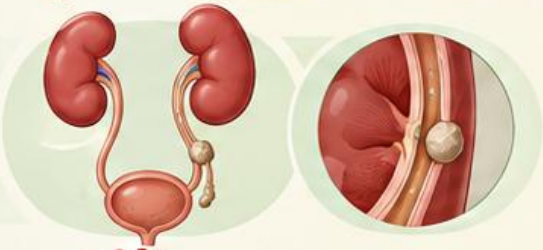
1. Whooping cough and bronchial asthma.



2. Treats cramp-like conditions of the gastrointestinal tract, biliary colic, and painful menstruation.



3. Relieves ureteric muscle spasm and has traditionally been used to help passage of gallbladder and kidney stones.



4. Relaxes coronary arteries, improving blood supply to the heart muscle and helping ease angina.



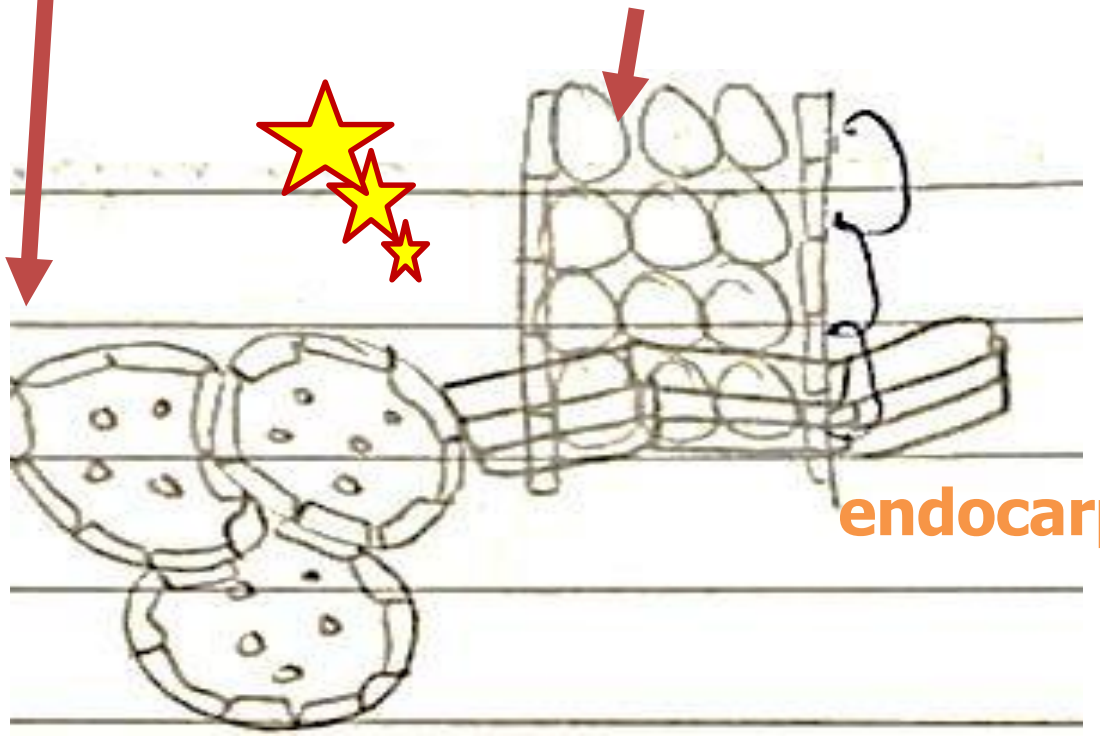
5. Antispasmodic, especially for smooth muscles of the bronchial, urinary, gastrointestinal, and coronary systems.



Main Key Eelements Drawings:

1

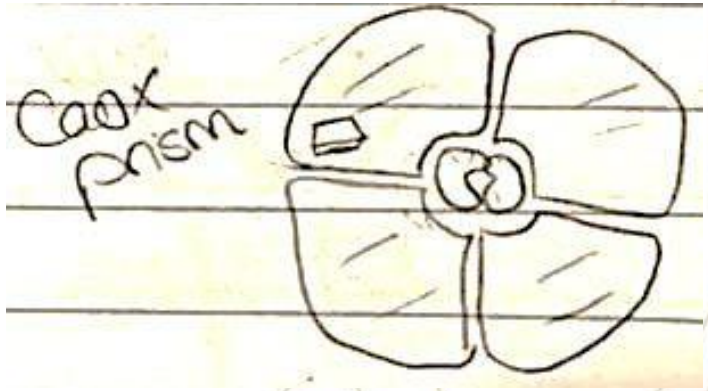
Porous innermost layer of mesocarp accompanied by slightly parquetory endocarp and club shaped vittae.



Epicarp

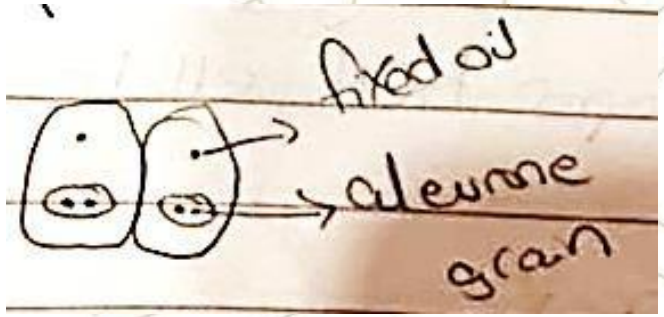
Striated cuticle, anomocytic stomata.

2



Endosperm

3





Coriander Fruit

Coriander Fruit

Origin

It is the dried ripe fruits *of* *Corandrum sativum* *family* Apiaceae.









Coriander Fruit

Uses





1. Spice & flavoring agent.



2. It has bactericidal and fungicidal properties.



3. It is useful for gastritis, and dyspepsia.



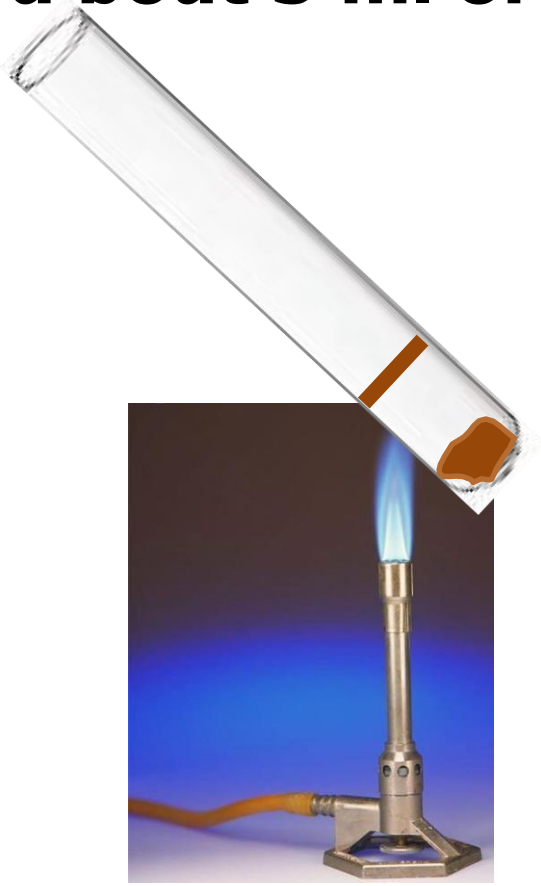
4. Spasmolytic, carminative added to purgative preparations to prevent the gripping effect.



5. It has strong lipolytic activity.

Practical work:

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





Boil

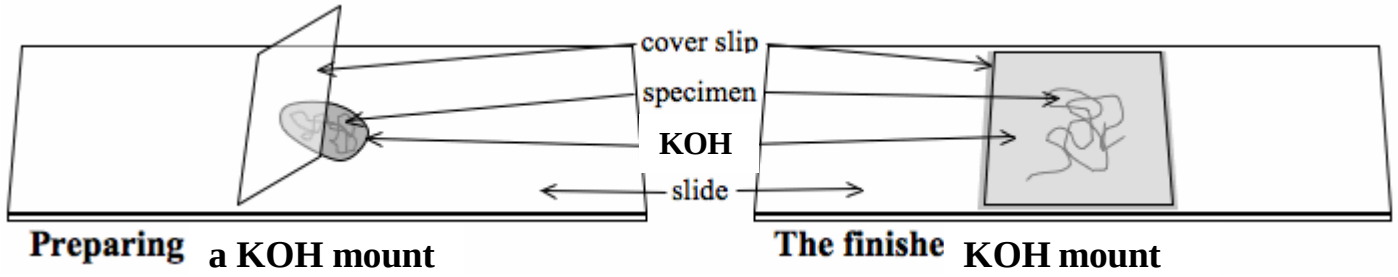


5 ml of KOH

¼ spatula of powder

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.

References:

1. Trease& Evans' Pharmacognosy by William Charles Evans, 2002.

2. Fundamentals of Pharmacognosy and Phytotherapy by Michael Heinrich, Joanne Barnes, SimonGibbons, and Elizabeth M. Williamson, 2004.

3. Botany :An introduction to Plant Biology, Third edditionby James D. Mauseth,2008.

Useful links:

https://www.researchgate.net/publication/356672838_Apiaceae_as_an_Important_Source_of_Antioxidants_and_Their_Applications

https://www.sciencedirect.com/science/article/abs/pii/S0926669017306258

https://www.preprints.org/manuscript/202212.0272

https://www.youtube.com/shorts/wC1zwod2ouA


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