



MSA UNIVERSITY  
معة أكتوبر للعلوم الحديثة والآداب

# *Pharmacognosy*

PHG 112

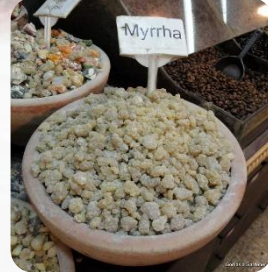
Spring 2026

# Pharmacognosy

PHG 112



potato tubers



ginger rhizome

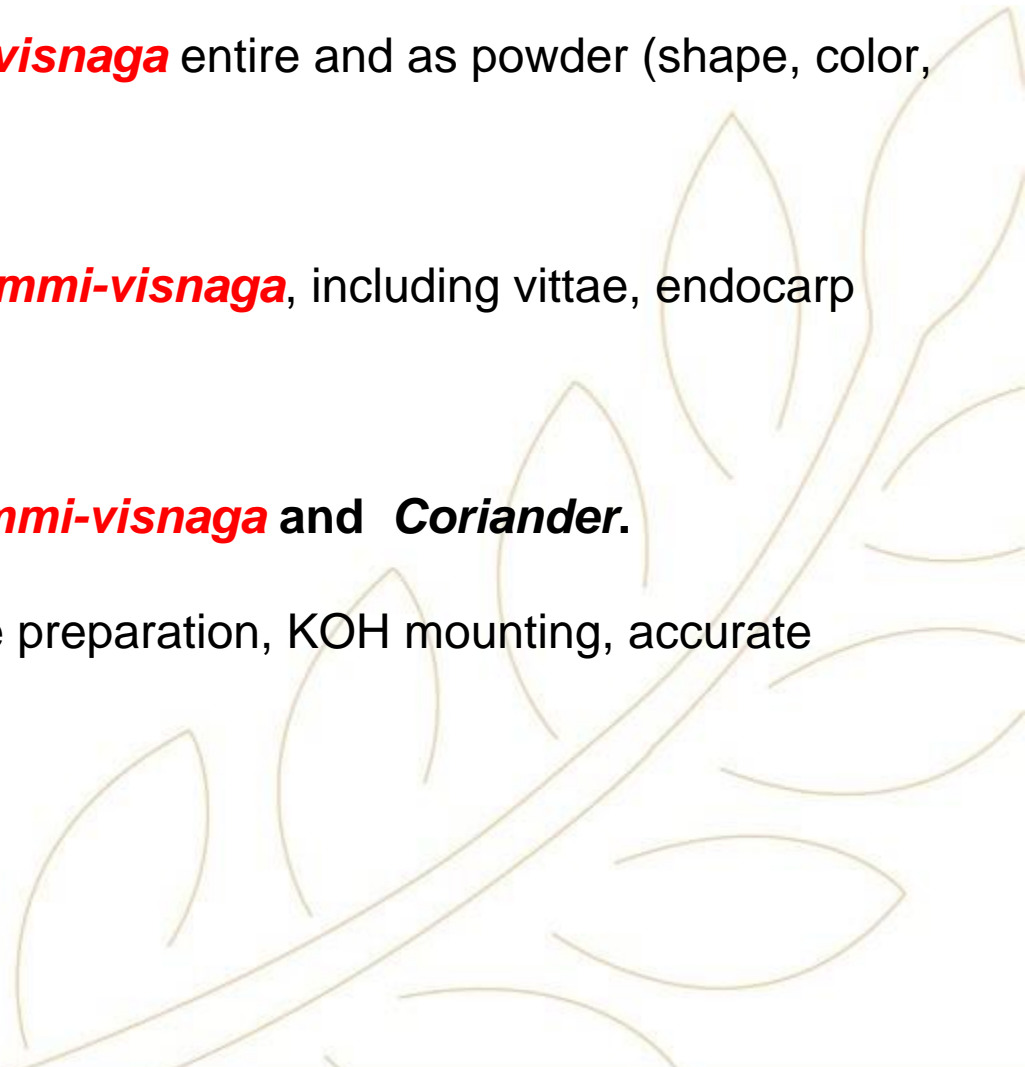
Spring 2026

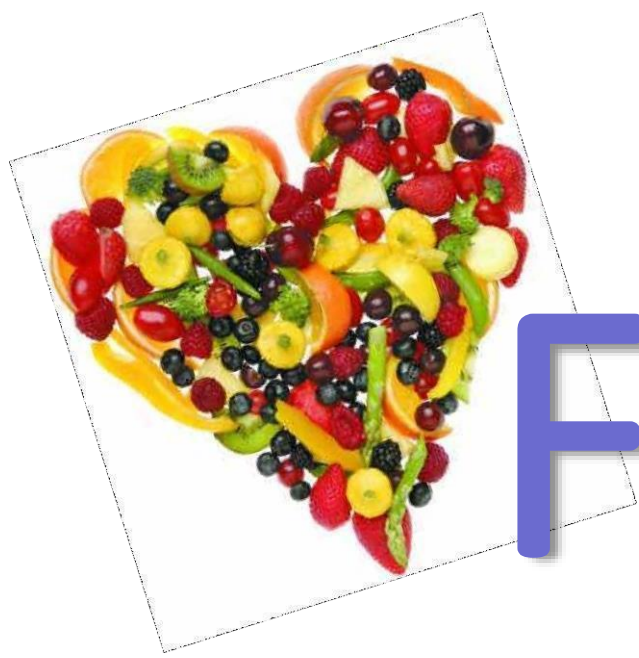
# Lab 4



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



# Fruits



# Anise

## Origin:

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



## **Morphology:**

**Shape: Pear shaped, large base and tapered ends**

**Size: Small**

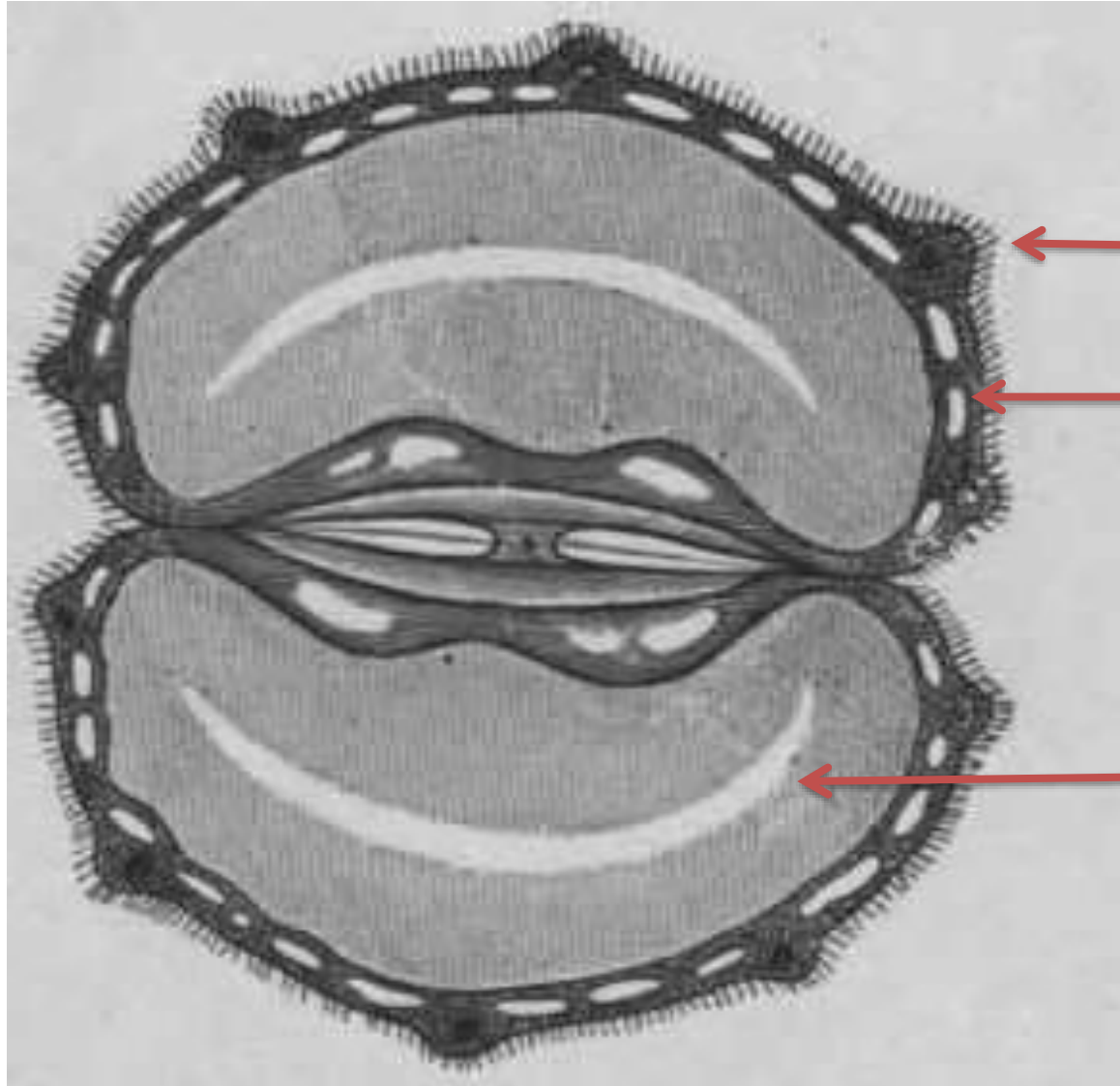
**Colour: Greenish grey**

**Odour: Aromatic agreeable**

**Surface: Hairy on dorsal side**



**T.S.**



**Hairy pericarp**

**Branched vittae**

**Endosperm**

**T.S.**



← hairs

← Vascular bundle

← endosperm

← Branched vittae

← Pitted lignified parenchyma

# Powder:

**Physical characters:**

**Condition:** Fine powder

**Colour:** Yellowish green

**Odour:** Aromatic odour

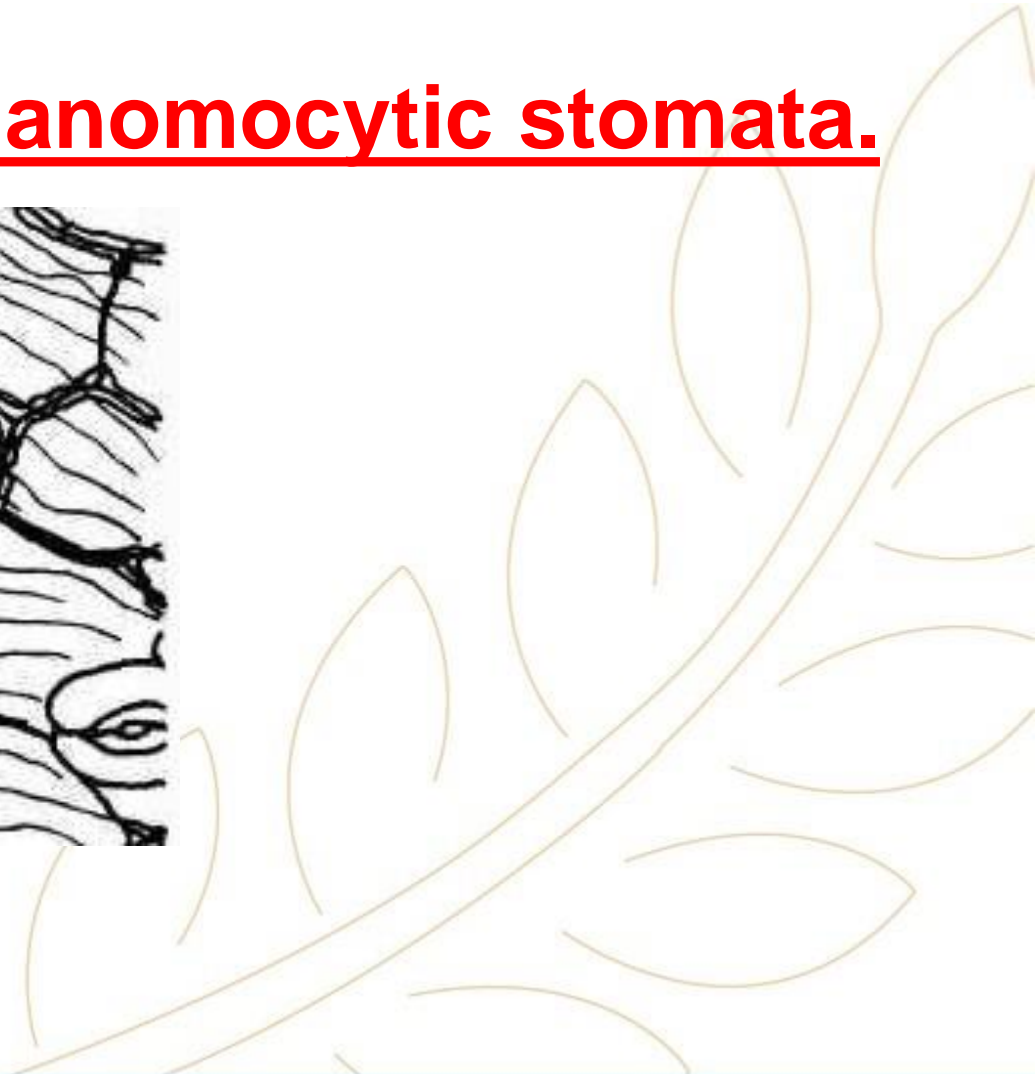
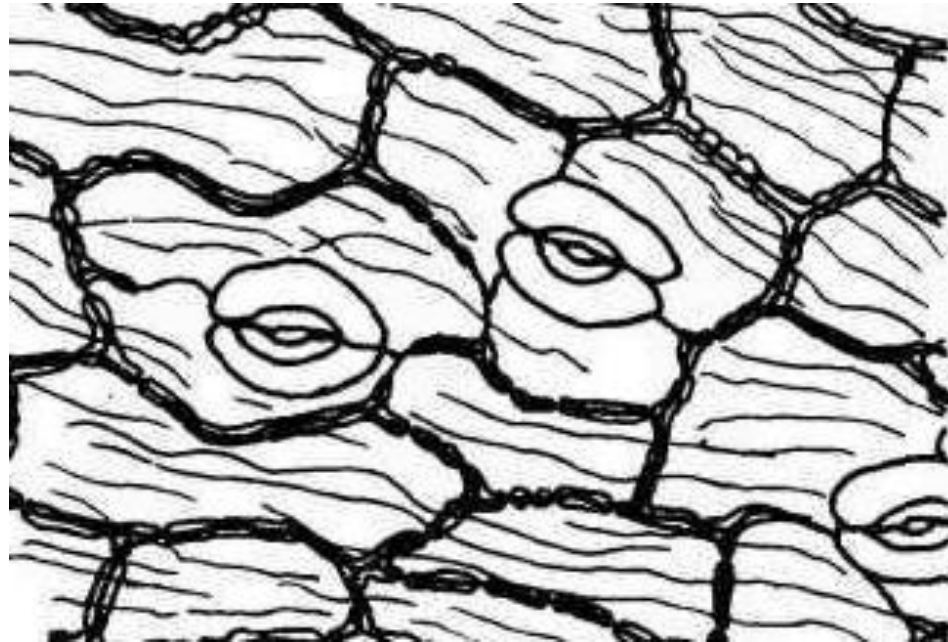
**Taste:** Sweet aromatic taste



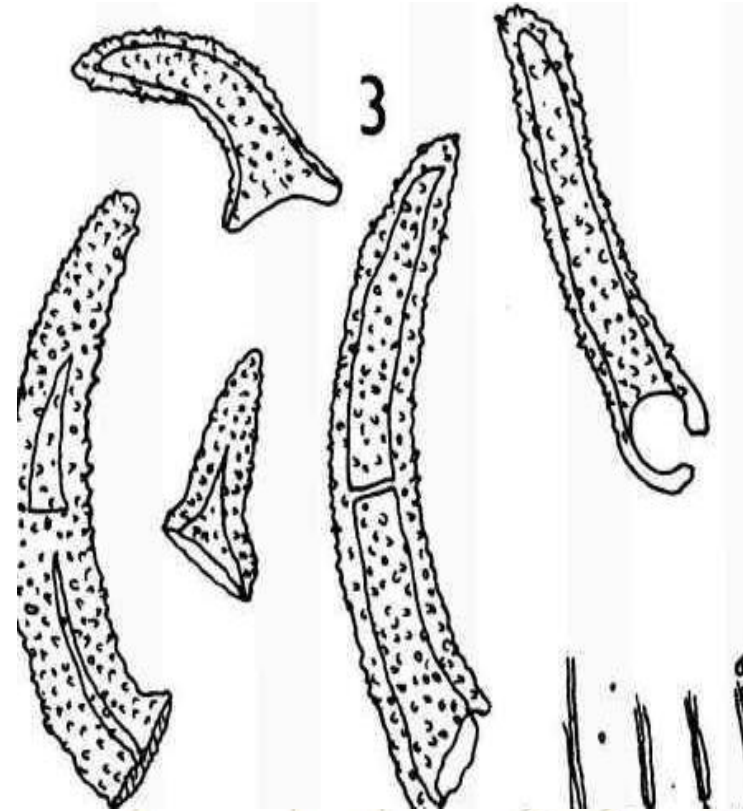
# Key elements:

## 1- Epicarp

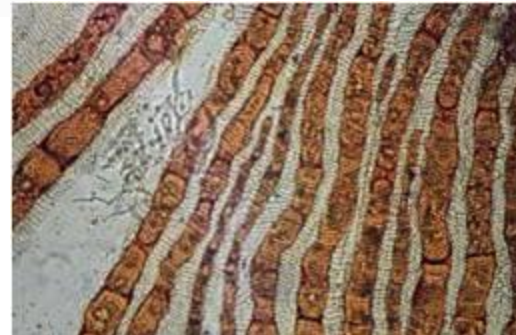
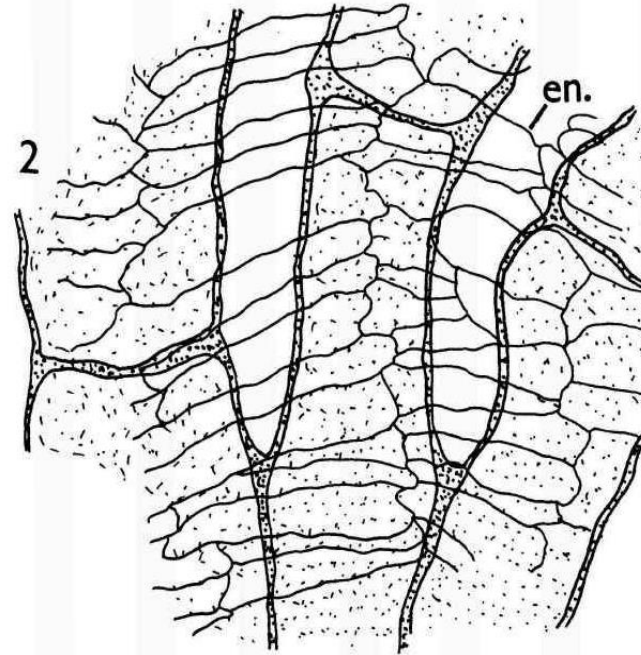
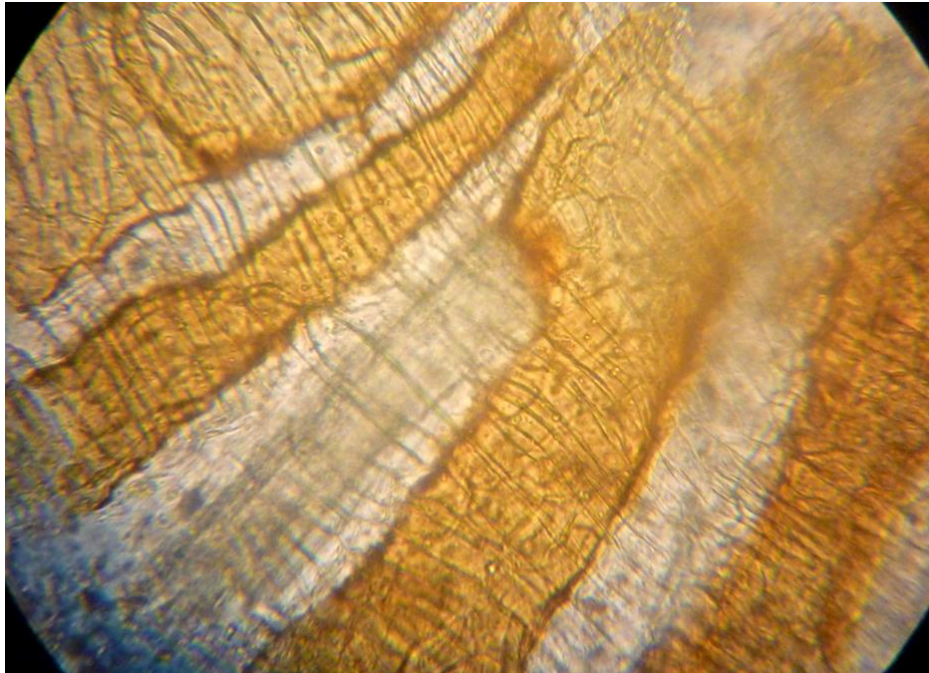
Slightly wavy wall, striated cuticle, anomocytic stomata.



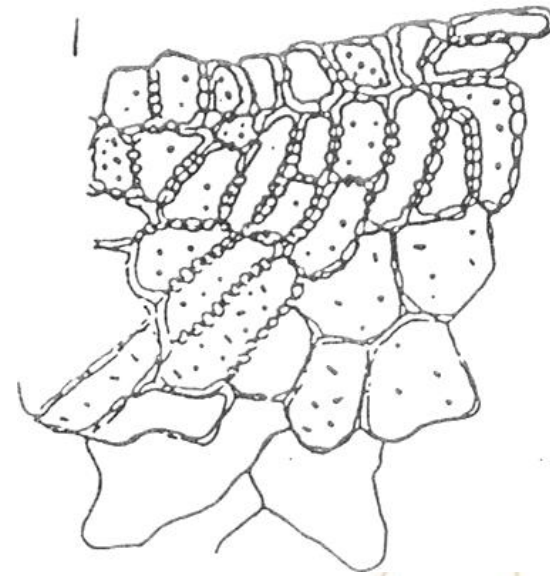
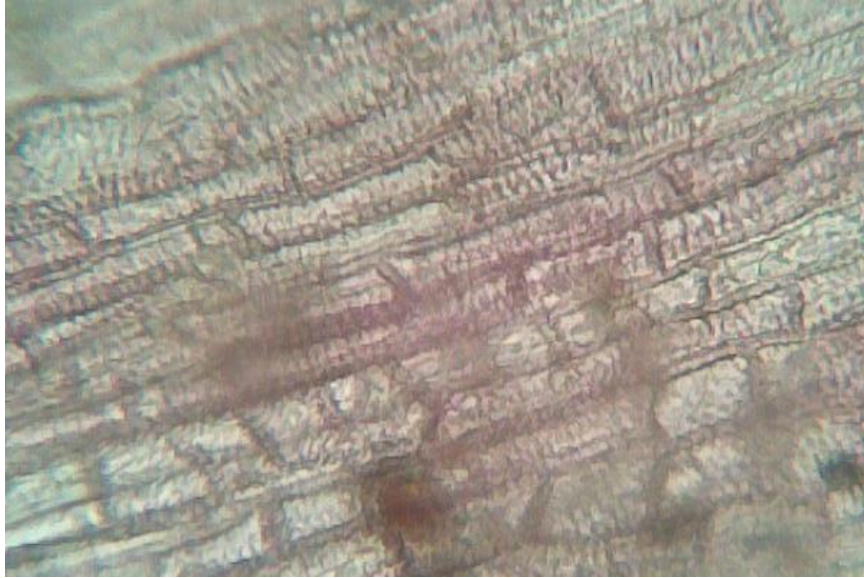
**2-Unicellular (occasionally bicellular)**  
**non glandular hair with warty cuticle**



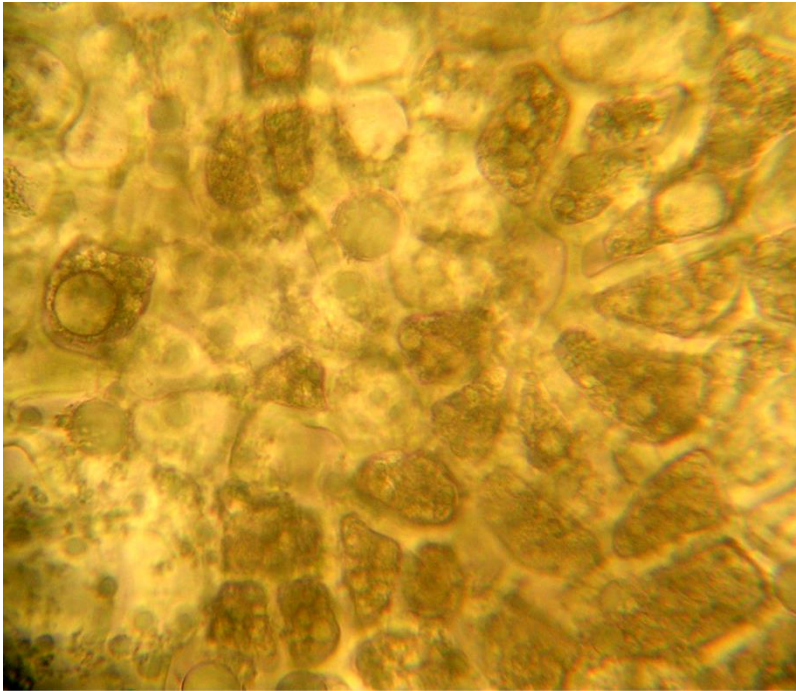
# 3-Branched vittae overlapped by non-parquetory endocarp



# 4-Lignified pitted parenchyma



## 5-Numerous fragments of endosperm.

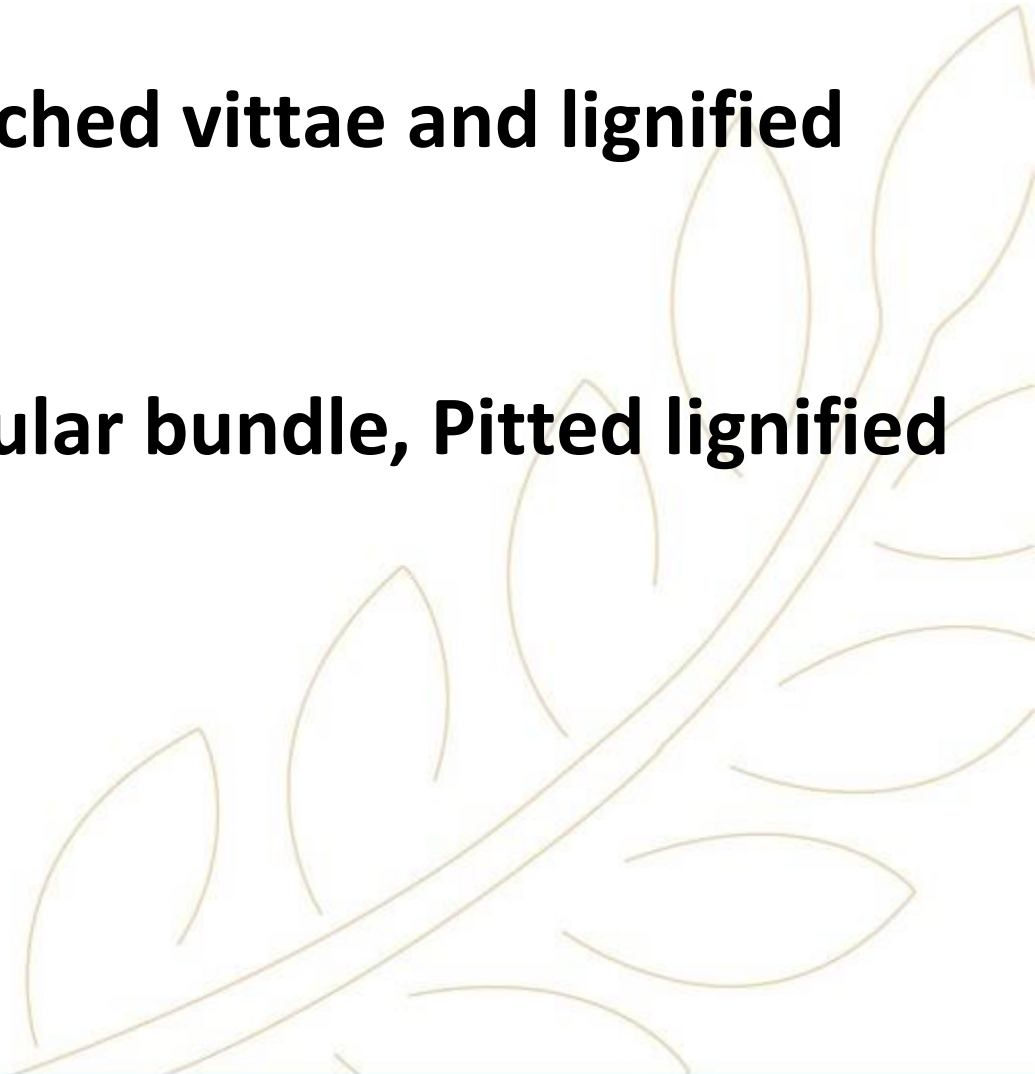


## Microscopical Character:

**Mount in KOH:** non glandular hair, branched vittae and lignified pitted parenchyma

**Mount in phloroglucinol :** Raphe, Vascular bundle, Pitted lignified parenchyma and Carpophore

**Mount in Water:** non glandular hair



# Uses

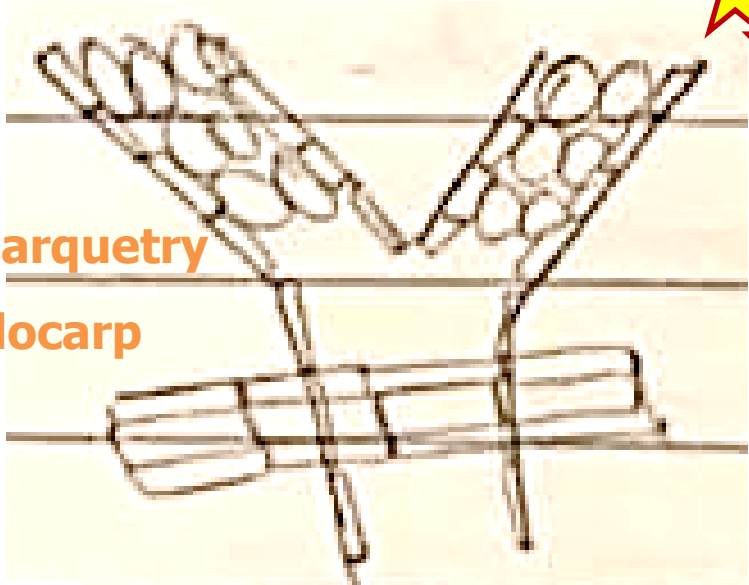


1. Treat respiratory tract infections as cough and bronchitis
2. Carminative and Relieving colic in children.
3. Lactagogue.
4. Has a sedative action.
5. Oil is also employed in food & drink industry as flavoring agent.



# Main Key Elements Drawings:

**1** Branched vittae

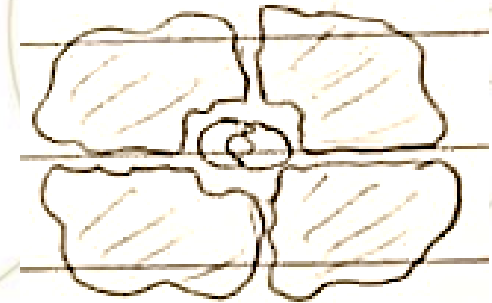


**2** Non glandular hair with warty cuticle

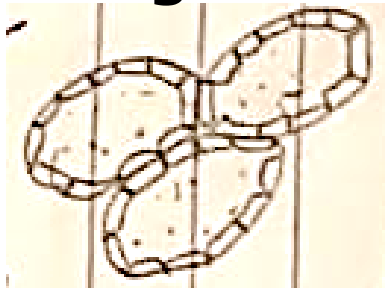


**Unicellular (occasionally bicellular)**

**4** Epicarp  
Slightly wavy wall,  
striated cuticle,  
anomocytic  
stomata.



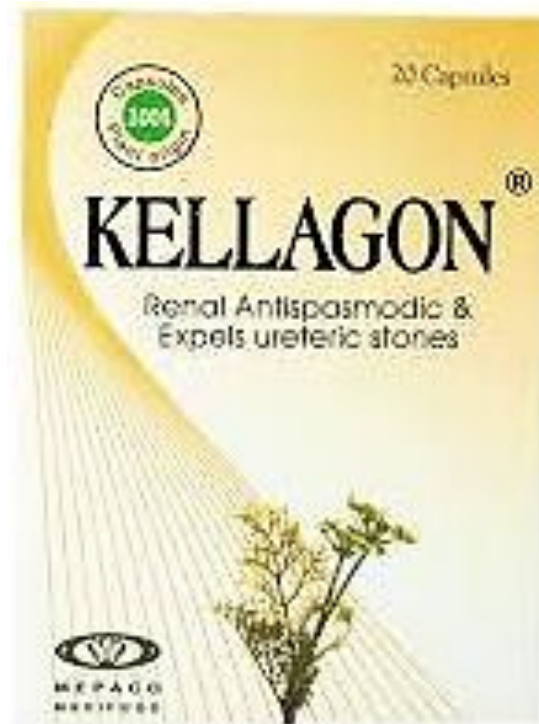
**3** Reticulate lignified parenchyma



# *Ammi visnaga*

**Origin:**

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



## **Morphology:**

**Shape:** Small ovoid

**Colour:** Brownish green with violet tinge

**Odour:** Slightly aromatic

**Taste:** Bitter

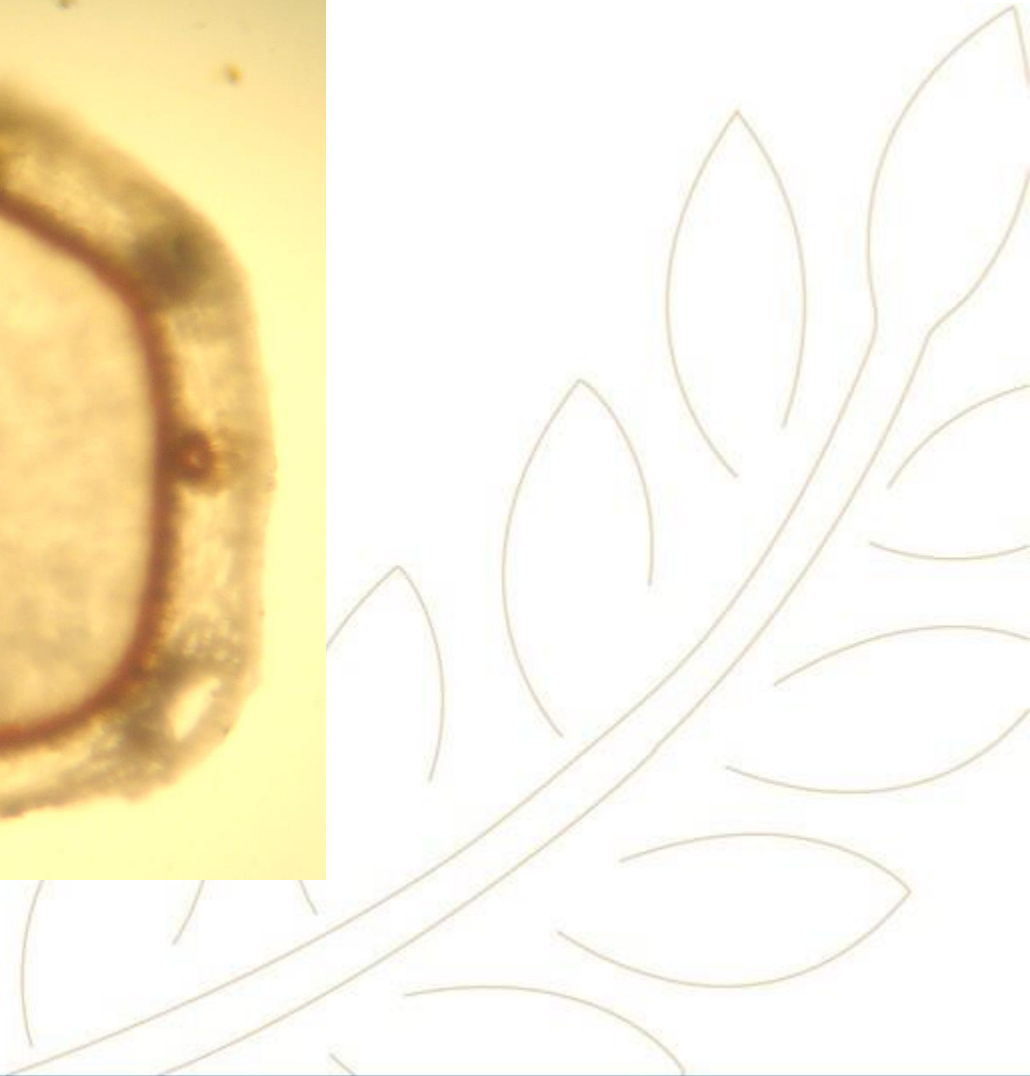
**Surface:**

**Primary ridge**

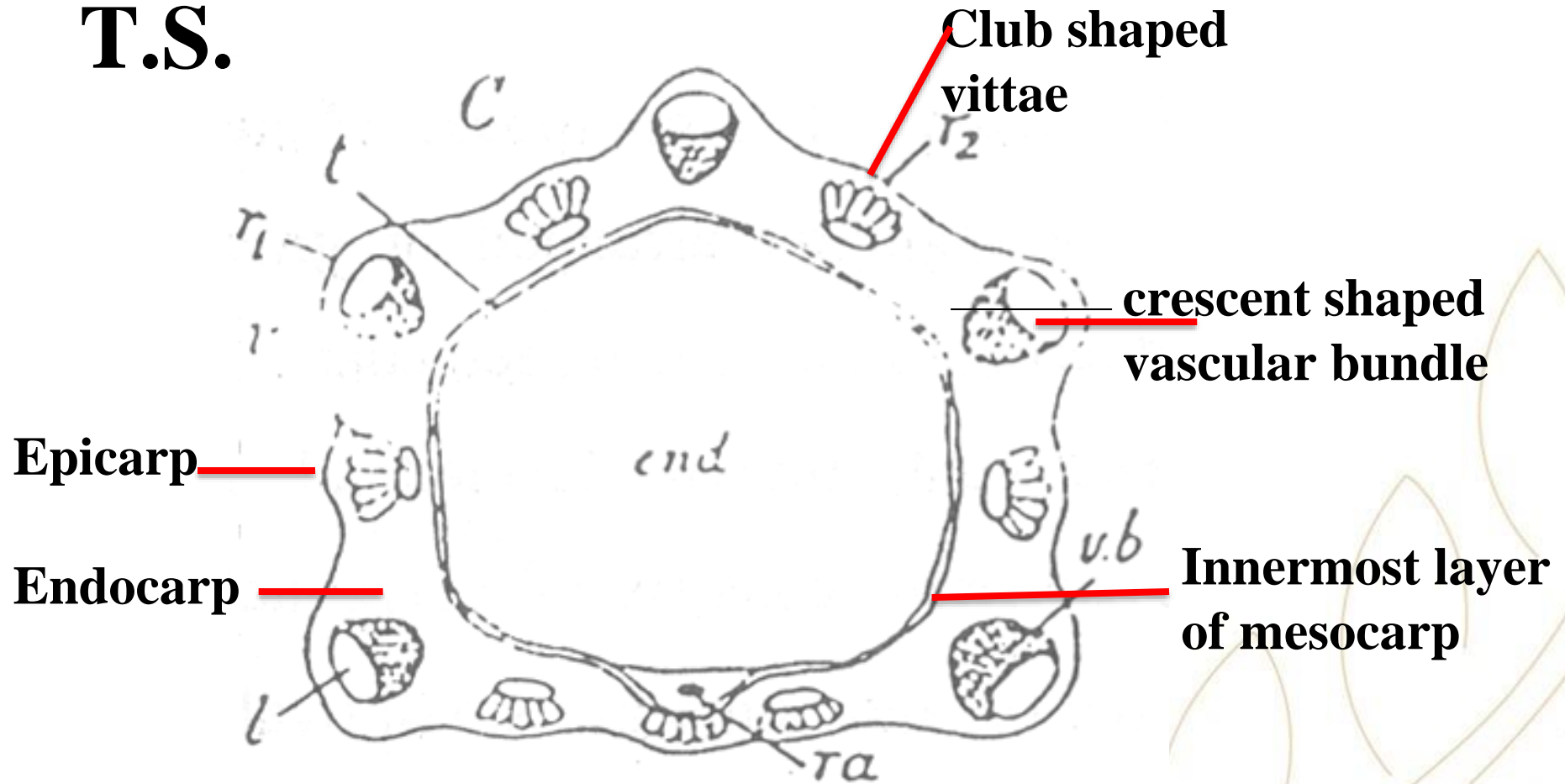
**Secondary ridge**



**T.S.**



**T.S.**



**T. S. of Ammi visnaga mericarp (diagram)**

# Powder:

**Condition:** Fine powder

**Colour:** Brownish green

**Odour:** Slightly aromatic

**Taste:** Bitter

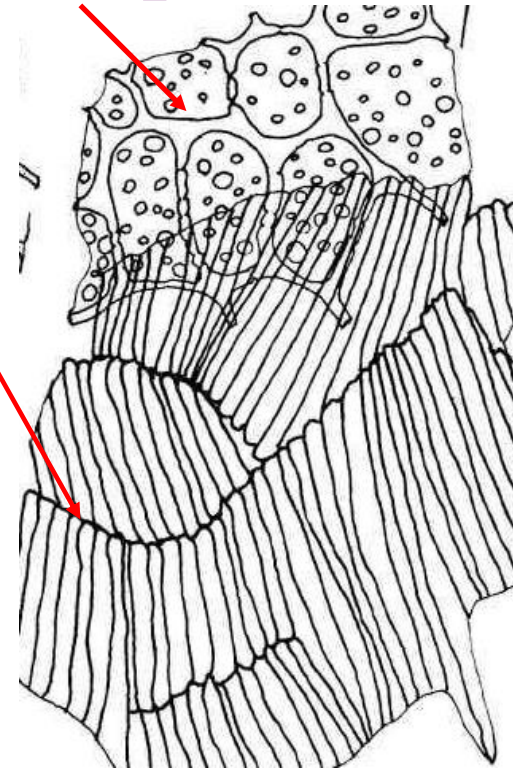
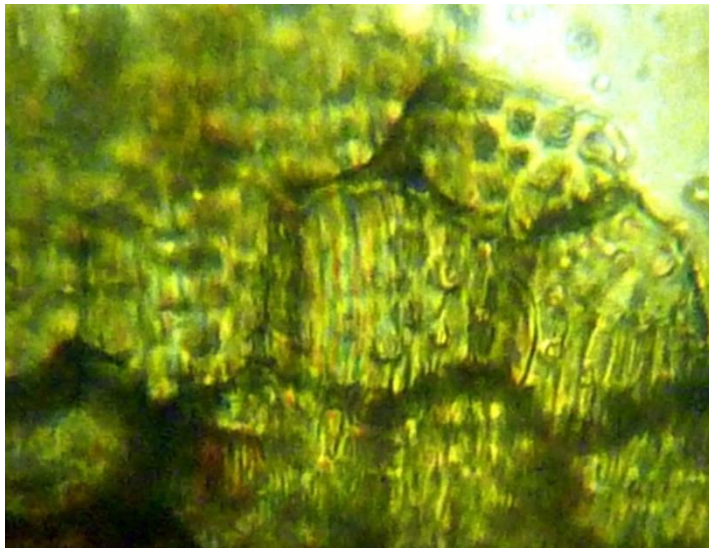


## Powder:

1- Fragments showing innermost layer of mesocarp (porous layer) accompanied by parquetry endocarp

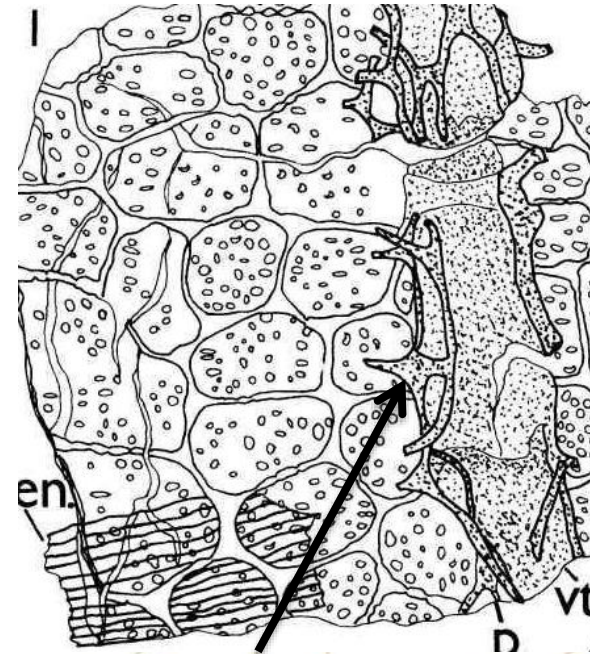
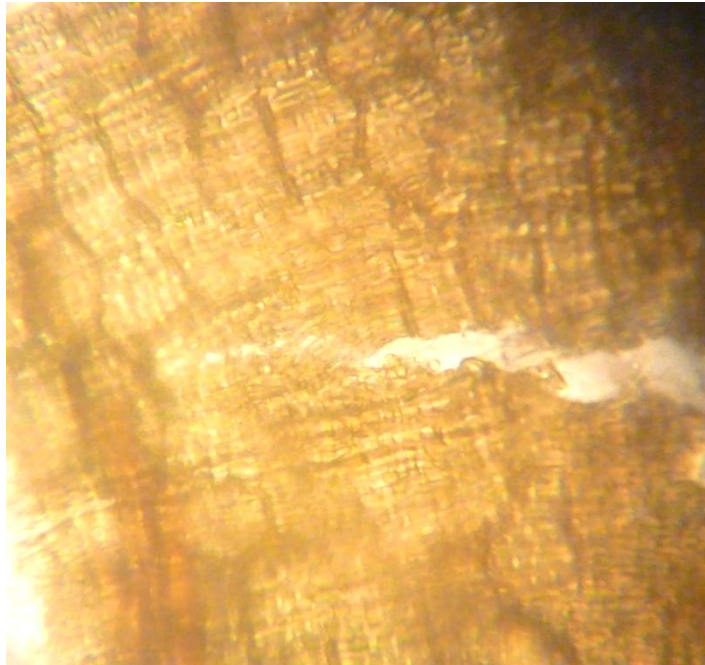
Inner most layer of mesocarp

Parquetry endocarp



## Powder:

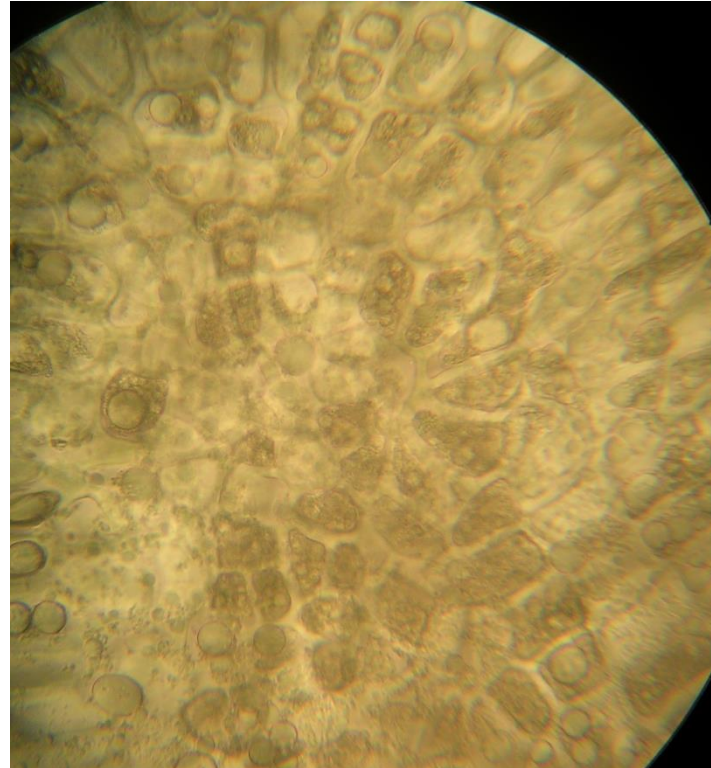
2- Fragments showing innermost layer of mesocarp (porous layer) accompanied by parquetry endocarp and club shaped vittae.



Club shaped vittae  
with radiating cells

# Powder:

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

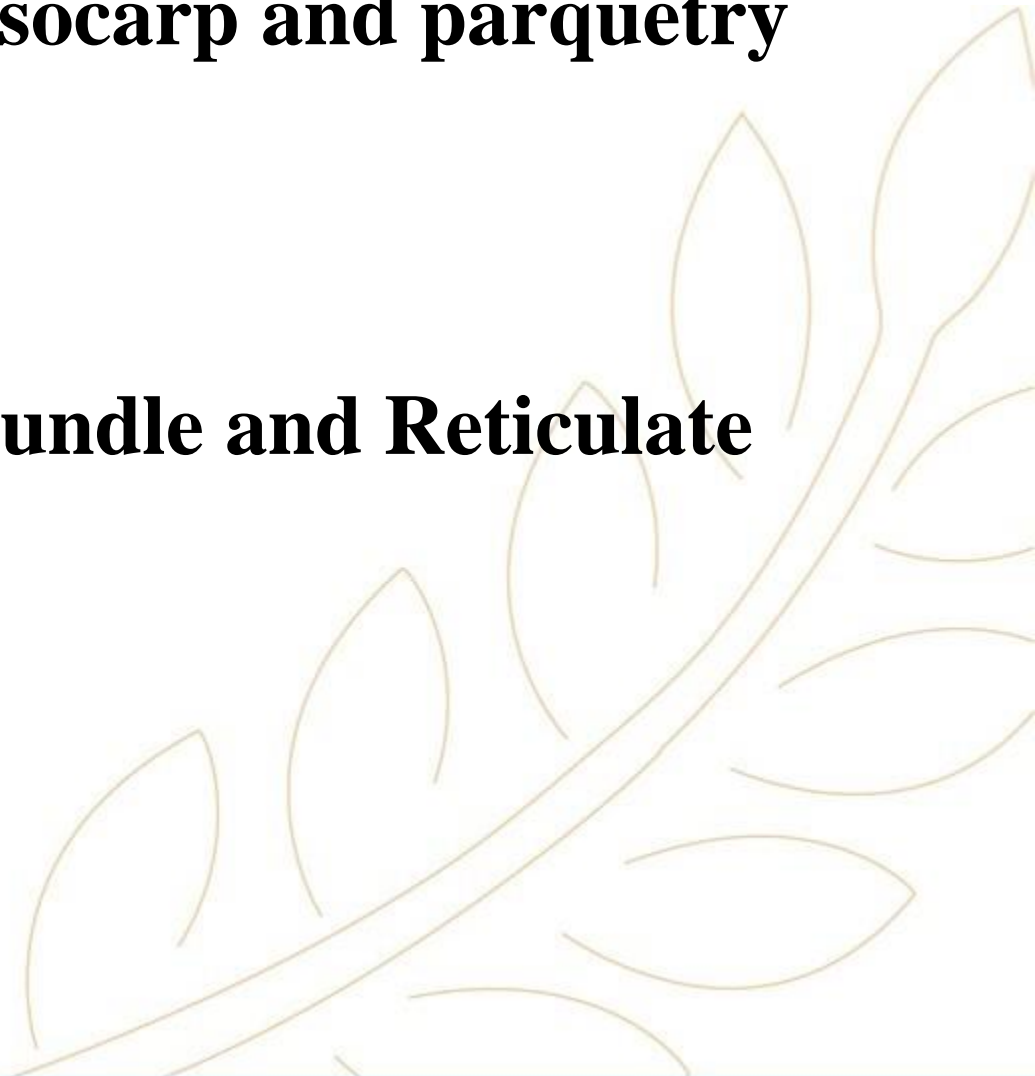


# Microscopical Character:

**Mount in KOH:** innermost layer of mesocarp and parquetry endocarp.

**Mount in Phlouroglucinol :** Vascular bundle and Reticulate lignified parenchyma

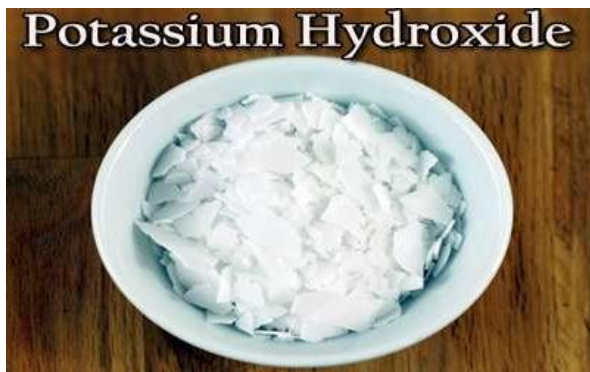
**Mount in Water:** not applicable



## 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



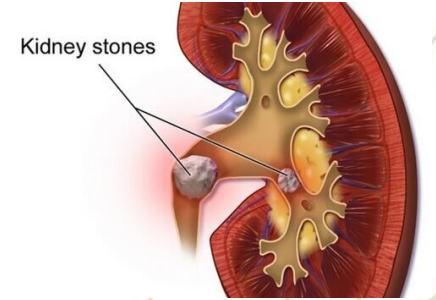
# Uses

1- Whooping cough and in bronchial asthma.



2- Treat cramp-like conditions of GIT, biliary colic, and painful menstruation.

3- 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.

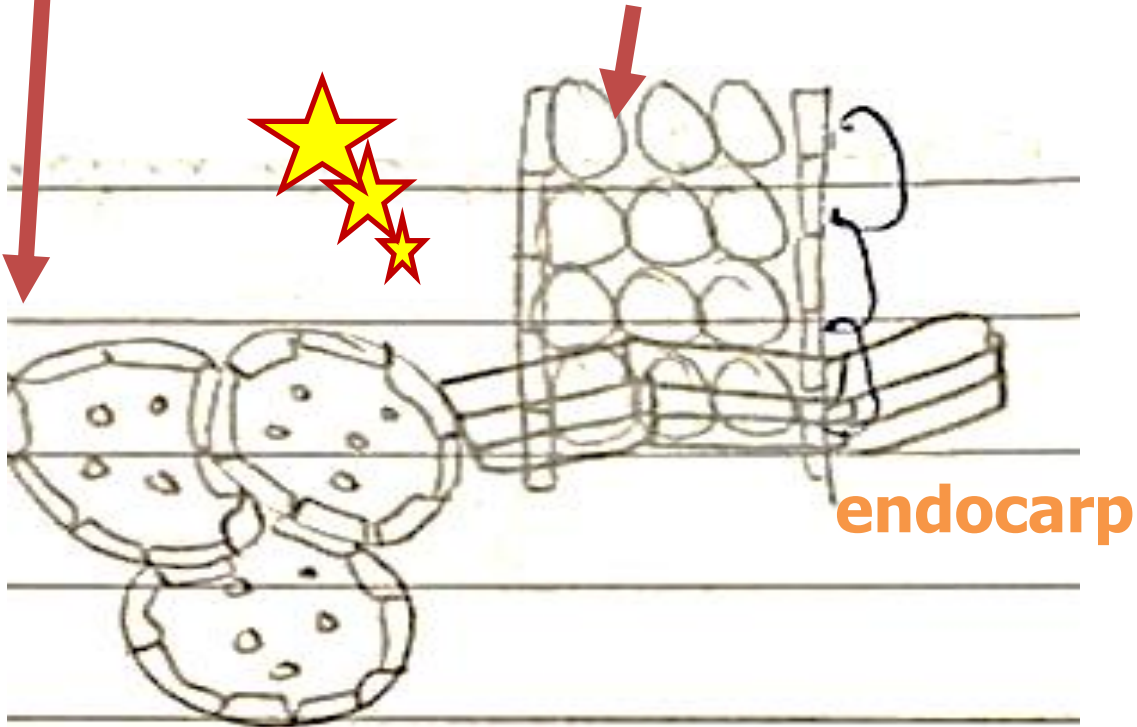


5- Spasmolytic especially on the muscles of the bronchi, GIT, biliary tract, urogenital system and the coronary vessels.

# Main Key Elements Drawings:

1

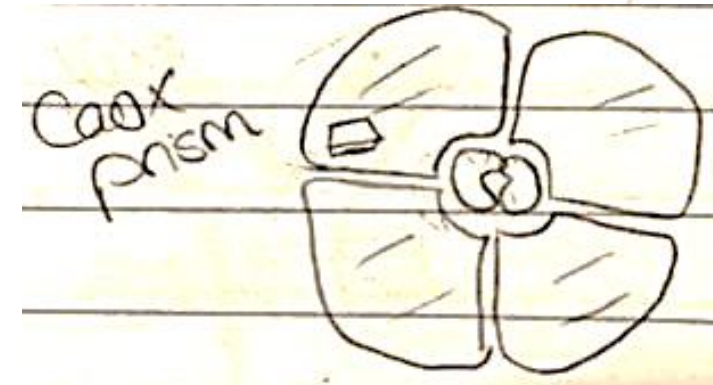
Porous innermost layer of mesocarp accompanied by slightly parquetry endocarp and club shaped vittae.



## Epicarp

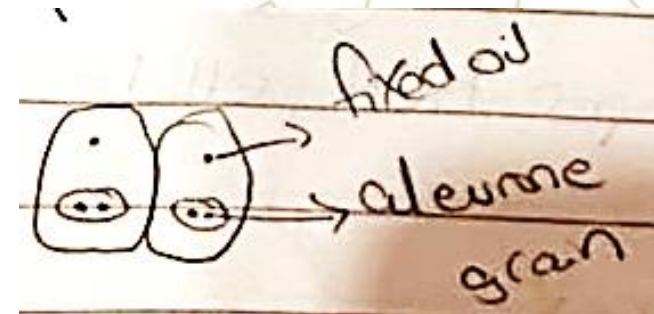
Striated cuticle, anomocytic stomata.

2



## Endosperm

3



# Coriander

## Origin:

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



# 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**



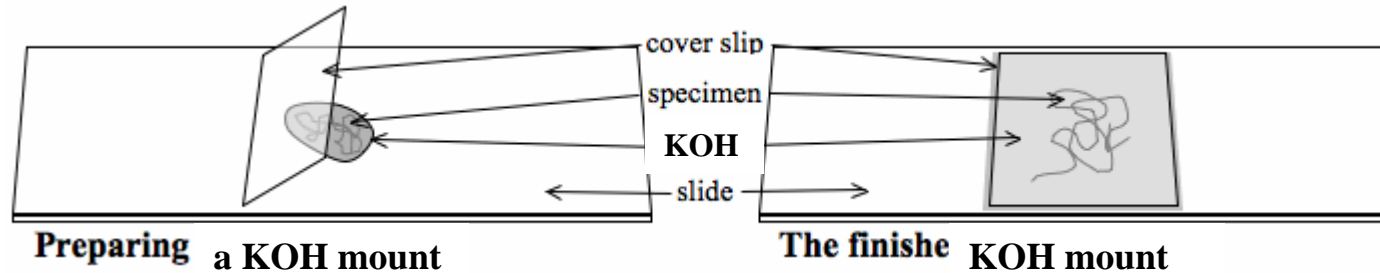
**5 ml of KOH**

**1/4 spatula of powder**



# Practical work:

**2- Prepare your slide and check the key elements.**



**3- Complete your drawings.**

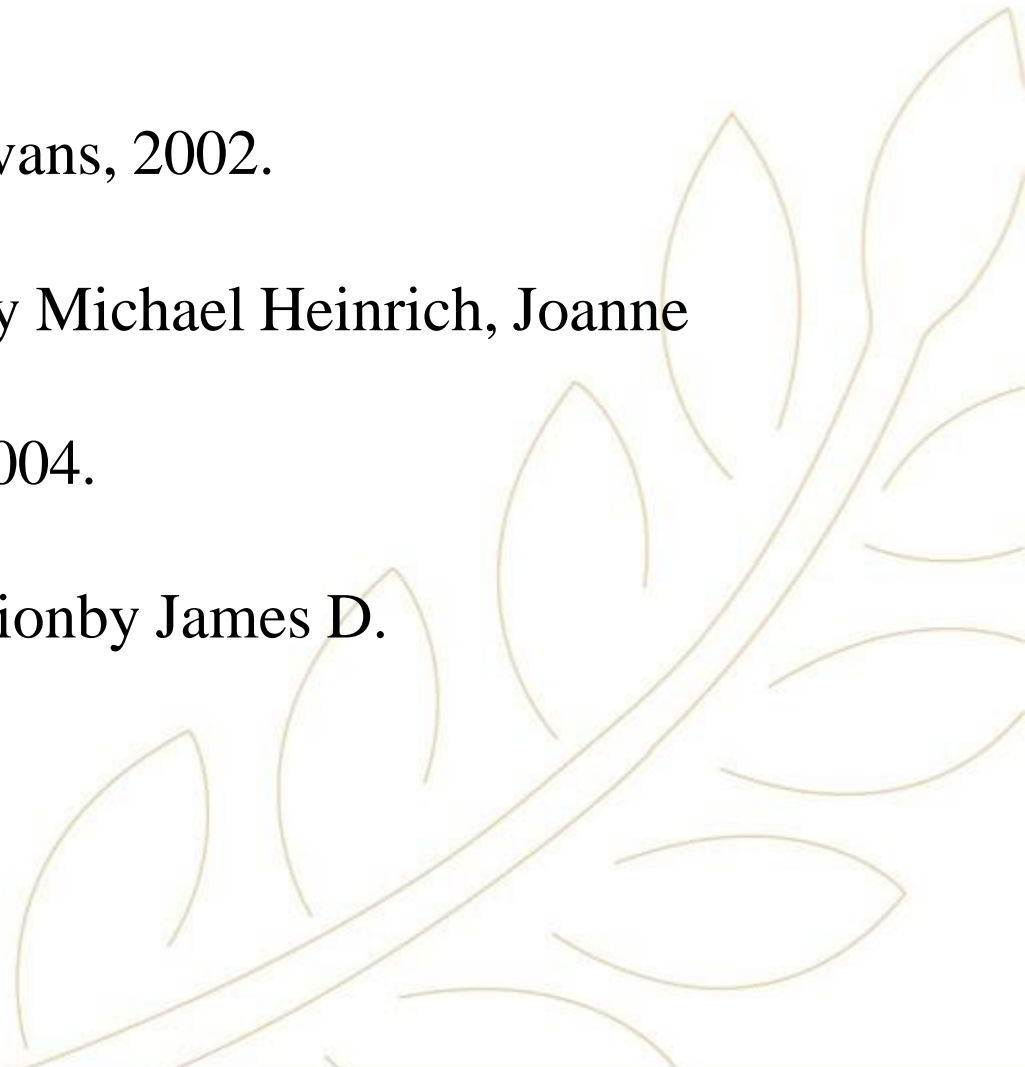
**P.S.**



**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, Simon Gibbons, and Elizabeth M. Williamson, 2004.
  3. Botany :An introduction to Plant Biology, Third edition by James D. Mauseth, 2008.
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## Useful links:

[https://www.researchgate.net/publication/356672838\\_Apiaceae\\_as\\_an\\_Important\\_Source\\_of\\_Antioxidants\\_and\\_Their\\_Applications](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>



**THANK YOU!**