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

Pharmacognosy

PHG 112
PG 102

Professor Mahitab Helmy
Associate Professor Dr Soumaya Saad Zaghloul
Dr Ibrahim Ezz

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Faculty of **Pharmacy**

Lecture 5

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

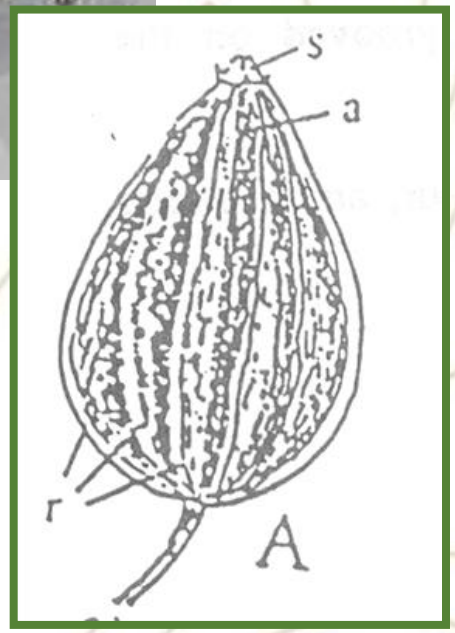
- ***Family Umbellifereae as important nutraceutical and cosmeceutical fruits***

Fruits Having Nutraceutical Applications

ANISE FRUIT

The dried ripe fruit of *Pimpinella anisum* L. (Fam. Apiaceae).

It contains not more than 3 % of foreign organic matter, and yields not less than 1.5 % v/w of volatile oil



Powder:

Color: ***Powdered Anise is greenish-brown or yellowish-brown,***

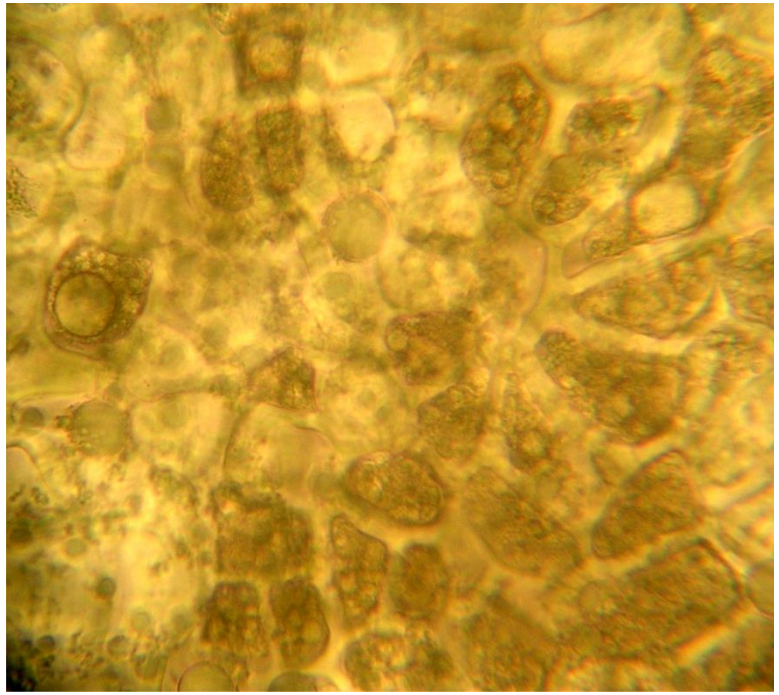
Odour: ***having a strong aromatic agreeable***

Taste ***: a sweet strongly aromatic.***

1- Fragments of pericarp with yellowish-brown branching vittae, usually crossed by the cells of the parallel endocarp.

Powder:

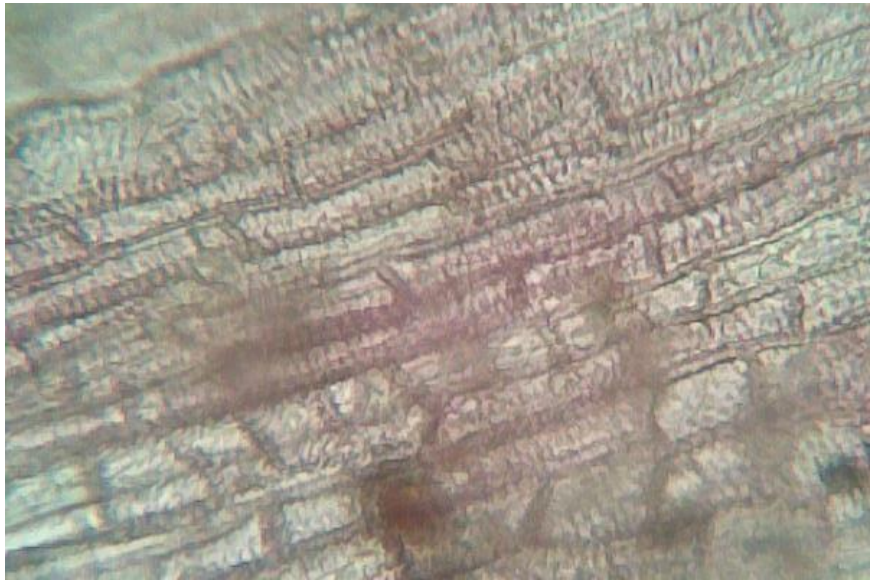
2- Numerous fragments of endosperm.



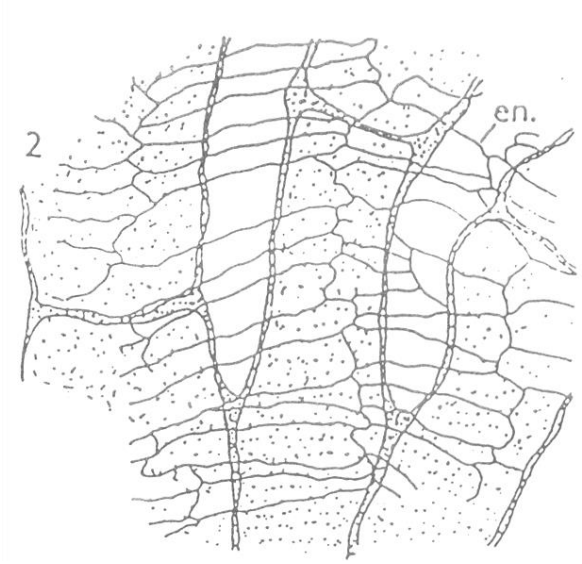
3- Numerous warty simple hairs

Powder:

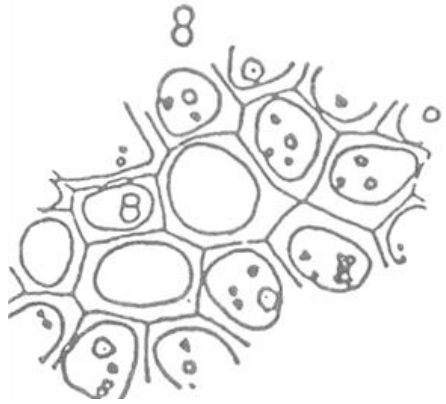
4- Few fibers and very scanty pitted lignified parenchyma



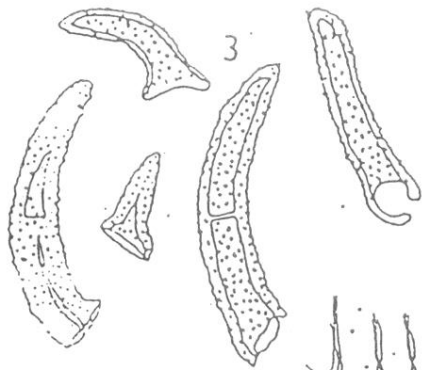
5- Epicarp cells with striated cuticle and non glandular hairs



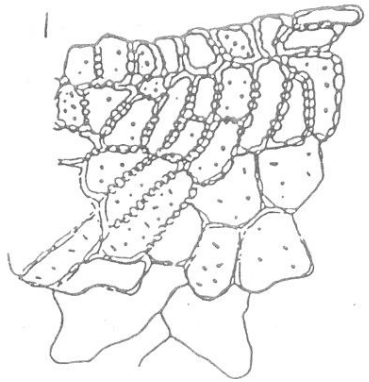
Branched vittae crossed by parallel endocarp



Endosperm



Non glandular hairs



Pitted lignified parenchyma

Epicarp

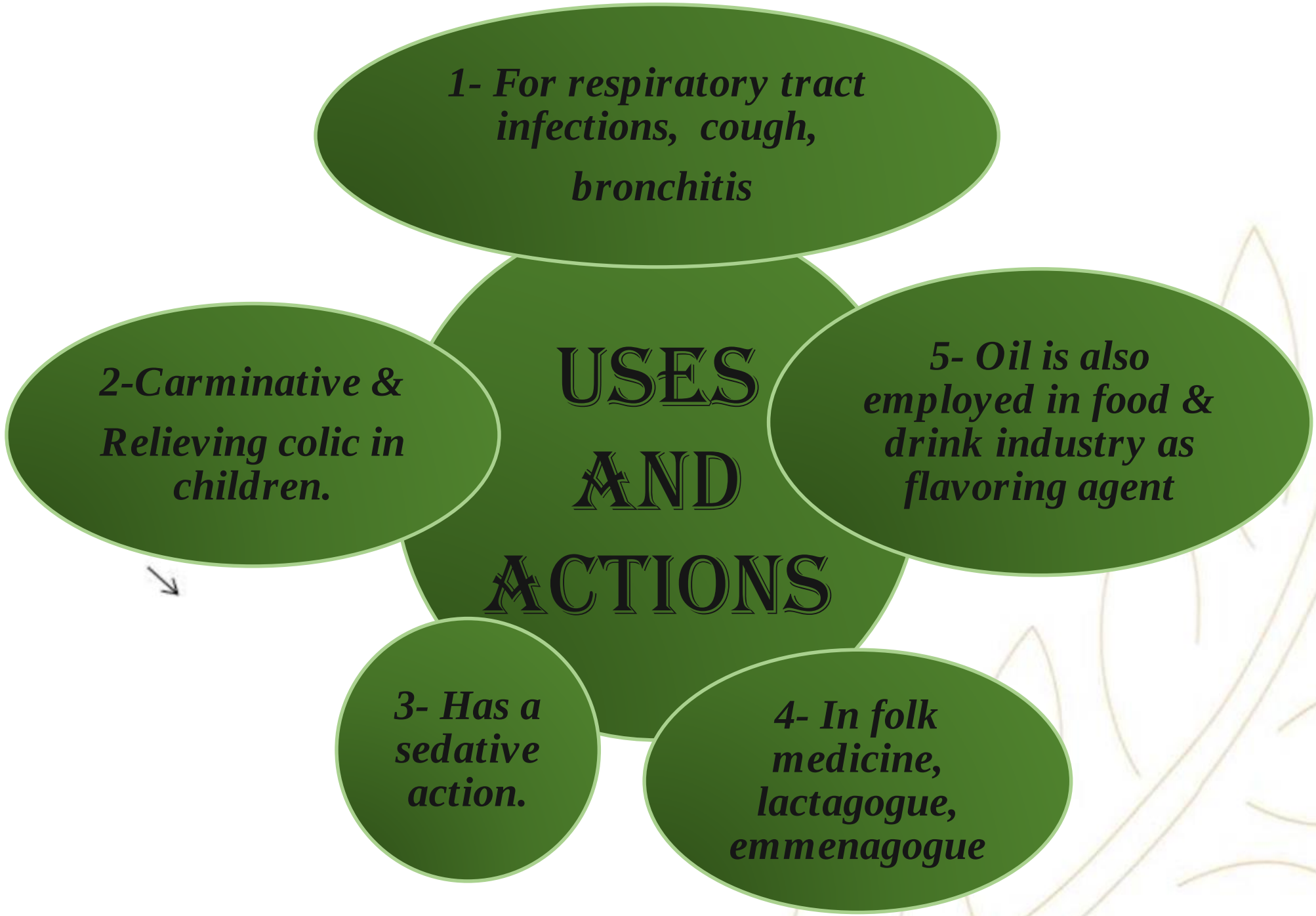
ACTIVE CONSTITUENTS

1-Essential oil (1.5-5%) containing:

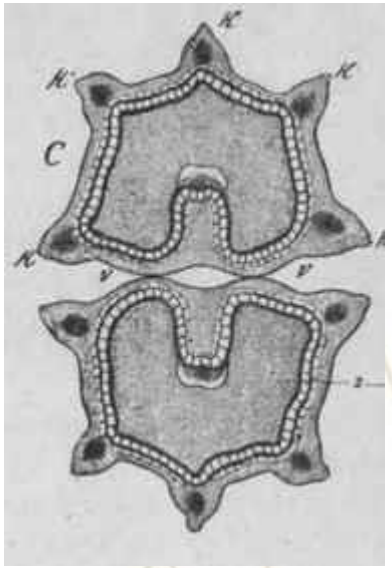
- ***Trans- anethole (80-90%) ,responsible for the taste and smell.***
- ***Methyl chavicol (1:2%), which also smells like anise but doesn't taste sweet.***
- ***Anisaldehyde (1%).***
- ***Sesquiterpene hydrocarbons (2%) and less than (1%) monoterpene hydrocarbons***
- ***The dimers of anethole (dianethole) and anisaldehyde (Dianisidine)***

2- Fixed oil & proteins

3- Coumarins


1- For respiratory tract infections, cough, bronchitis
2-Carminative & Relieving colic in children.
USES AND ACTIONS
5- Oil is also employed in food & drink industry as flavoring agent
3- Has a sedative action.
4- In folk medicine, lactagogue, emmenagogue

ANISE ADULTERATION



Anise may be adulterated by Hemlock fruits [Conium maculatum F. Apiaceae]

Comparison between Anise & Hemlock

Anise	***Hemlock***
❑ Larger in size	❑ Smaller in size
❑ Strong aromatic, agreeable odor	❑ Slight odor and taste
❑ Branched vittae, non glandular hairs	❑ Absence of vittae and hairs
❑ Essential oil, Fixed oil, protein & coumarins	❑ Coniine alkaloid which is highly toxic
❑ Test for volatile oil	❑ Test for coniine

Actions of Coniine

- Coniine is a poisonous alkaloid found in poison and contributes to hemlock's fetid (mice-like) smell.
- It is a neurotoxin which disrupts the peripheral nervous system.
- Death is caused by respiratory paralysis (Socrates was put to death by means of this poison in 399 BC.)
- A poisoned person will recover if artificial ventilation (breathing) is maintained until the toxin is removed from the receptor.

Detection:

1-by chemical test for alkaloids (Mayer's test)

2-Rubbing the fruits with solution of caustic alkali, it develops a strong mice-like odor

STAR ANISE

The ripe fruits of Illicium verum or (Chinese star anise) F. Magnoliaceae

Japanese star anise (Illicium anisatum), a similar tree, is highly toxic and inedible

The fruit is an aggregate of follicles

Active Constituents:

Volatile oil mainly anethole more than 4.5%., which is the same ingredient that gives the anise (Pimpinella anisum) its distinctive odor

USES AND ACTIONS

1- Expectorant

& In hard dry cough, it may be used in bronchitis & in whooping cough

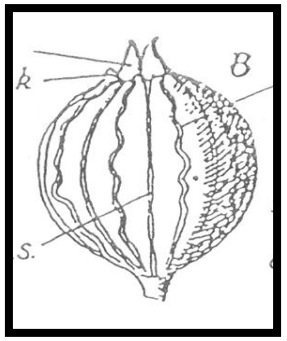
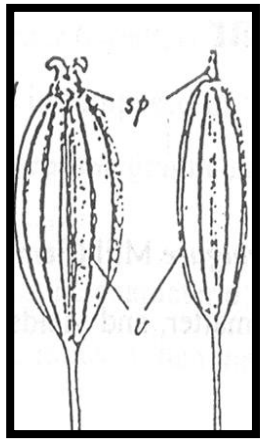
2-For digestive tract problems including upset stomach, loss of appetite & relieving colic in babies

It is a good source of shikimic acid, which is used in the manufacture of oseltamivir (Tamiflu), a flu treatment

3- Antimicrobial &Antiviral activity

4- Oil is also employed in food & drink industry as flavoring agent

OTHER IMPORTANT UMBELLIFEROUS FRUITS

Name	Activeconstituents	Uses
1-Coriander 	- *Volatile oil containing linalool ,α and β pinene, γ-terpenene, p-cymene, limonene, anethole, camphor, geraniol and geranyl acetate.* - *Fixed oil (up to 26%); its main fatty acids are oleic and linolenic acids* - *Flavonoid glycosides (quercetin, isoquercetin and rutin)* - *Proteins*	*1-Spice & flavoring agent.* *2- spasmolytic, carminative added to purgative preparations to prevent the gripping effect* *3- It has strong lipolytic activity* *4-The high percent of fats and protein makes distillation residues suitable for animal feed*
2- Fennel 	- *1- Volatile oil (4 - 6 %), containing fenchone, estragol (methyl chavicol)* - *2- Fixed oil (17-20%)* - *3- Flavonoids (Kaempferol, quercetin)* - *4- Protein (16-20%) & minerals (relatively high Ca and K)*	*1- Carminative. It regulates the peristaltic function of GIT and relieves the associated pain and cramping. Used with purgatives to allay their gripping effect* *2- Lactagogue* *3-Clears the lungs* *4-weight loss.*

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Thank You!

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26th July Mehwar Road Intersection with Wahat Road, 6th of October City, Egypt
Tel: 00238371113 Postal code: 12451 Email: info@msa.edu.eg
Hotline: 16672 Website: www.msa.edu.eg