Microscopical Examination of

Barks & Fruits Containing Volatile Oil

Lab No. 5

Volatile Oil Containing Plants (2)

The Bark is all the tissues of the stem and root that are exterior to the cambium.

Shapes of barks:

Flat	**Curved**	**Double quill**	**Compound quill**
e.g.: Quillaia	**e.g.: wild cherry**	**e.g.: Frangula**	**e.g.: Cinnamon**
			

Transverse Section of a bark:

1- Phyllem = Cork

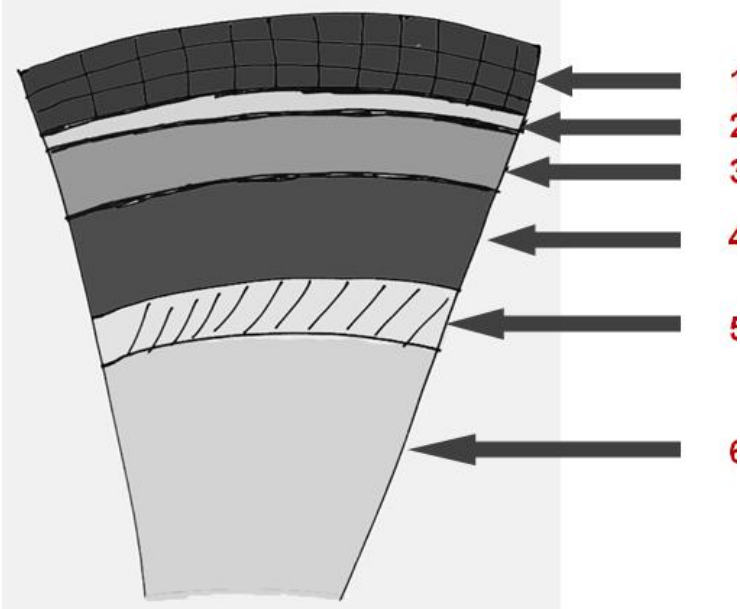
2- Phyllogen =Cork cambium

3- Phylloderm =Secondary Cortex

4- Primary cortex

5- Pericycle (fibers, collenchyma or parenchyma)

6- Secondary phloem



Example of powdered bark containing volatile oil:

Cinnamon: See Table

Fruits

Fruits are developed ovary (or ovaries) of a single flower or of a whole inflorescence. Fruits protect and nourish the seeds during their development.

(**P.S:** inflorescence is a cluster of flowers)

Types of fruits:

1- True fruit:

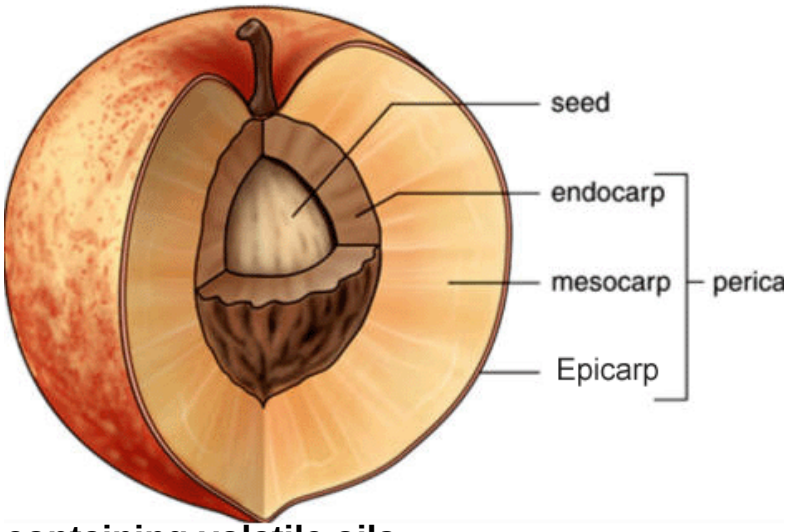
When the fruit is formed from gynaecium alone. **True fruits can be:**

- . **Simple:** Fruit formed from single ovary
- . **Aggregate:** Fruit formed from apocarpus *(gynaecium of separated carpels)*
- . **Composite:** Fruit formed from whole inflorescence

2- False fruit:

When other parts of flower take part in fruit formation

Structure of the fruit:

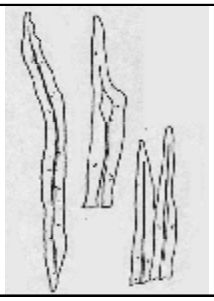


Example of powdered fruits containing volatile oils:

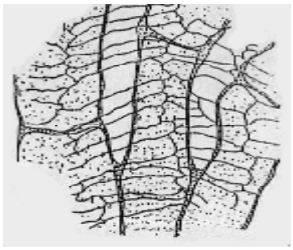
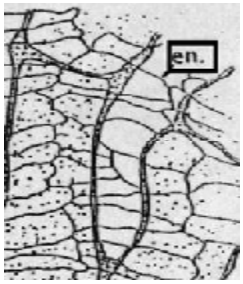
Anise, caraway & coriander (See Table)

	Cinnamon	Anise	Caraway	Coriander
Origin	Dried **bark** of *Cinnamomum zeylanicum*	Dried ripe **fruits** of *Pimpinella anisum*	Dried ripe **fruits** of *Carum carvi*	Dried ripe **fruits** of *Coriandrum sativun*
Family	Lauraceae	Umbelliferae	Umbelliferae	Umbelliferae
Odour	Aromatic	Aromatic	Aromatic	Aromatic
Taste	Sweet	Sweet	Sweet	Aromatic
Color	Reddish brown	Greenish brown	Greenish brown	Light brown
Microscopical examination	• Mount: chloral hydrate then staining • Pericycle fiber • Sclereids	• Mount: chloral hydrate • Warty simple hair • Branched vittae • Pitted cells from mesocarp • Endocarp	• Mount: chloral hydrate • Pitted parenchyma from mesocarp • Endocarp cells with parallel arrangement • Fragment of vittae	• Mount: chloral hydrate • Sclerenchymatous • Endocarp with innermost layer of mesocarp

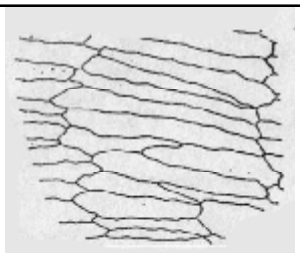
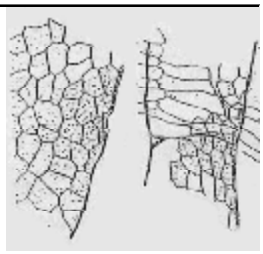
Cinnamon

Pericycle fiber	Sclereids
	

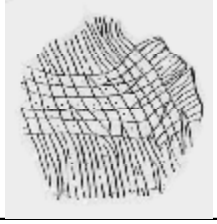
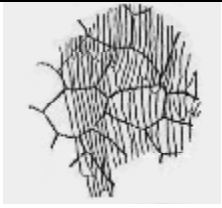
Anise

Warty simple hair	Branched vittae	Lignified pitted cells	Endocarp
			

Caraway

Pitted parenchyma from mesocarp	Endocarp cells with parallel arrangement	Fragment of vitta
		

Coriander

Sclerenchymatous cells crossed fibers	Endocarp with innermost layer of mesocar
	

Gall

- Abnormal outgrowth of the plant and can be caused by various parasites, insects, mites….etc
- Rich in resins and tannic acid

Origin:

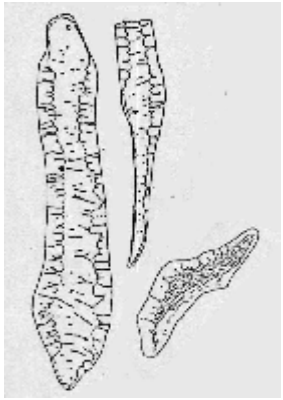
Dried excrescence (pathological outgrowth) resulting from deposition of the eggs of *Cynips gallae rinetoria*, family cyneipideae in the young twigs of *Quercus infectoria*, family agaceae.

Description:

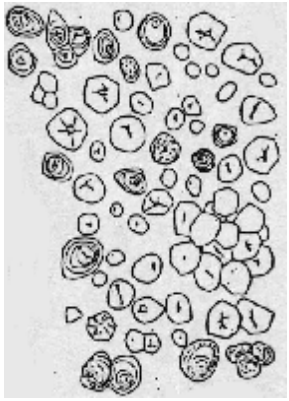
- Odour: very slight or odourless
- Taste: intensely astringent followed by slight sweetness
- Color: brownish yellow

Microscopical Examination

Sclerides



Starch



Globular masses of lignin bodies