

تفريغ لاب عقاير

اسم الموضوع: Exp 3 : Barks and woods

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لجان الرفعات

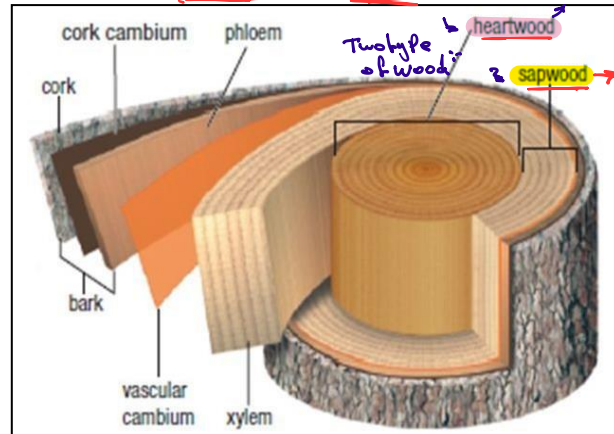
اللَّهُمَّ إِنِّي أَعُوذُ بِكَ مِنْ عِلْمٍ لَا يَنْفَعُ
وَمِنْ قَلْبٍ لَا يَخْشَعُ وَمِنْ نَفْسٍ لَا تَتَّعِبُ
وَمِنْ دَعْوَةٍ لَا يُسْتَجَابُ لَهَا
وَبَاعِدْ بَيْنِي وَبَيْنَ خَطَايَايَ كَمَا بَاعَدْتَ
بَيْنَ الْمَشْرِقِ وَالْمَغْرِبِ
أَبُو بَكْرٍ

Experiment (3)

Microscopical Identification of Different Barks and Woods

The layers of mature woody stem include (ordered from outside to the inside):

1. Cork
 2. Cork cambium
 3. Cortex
 4. Phloem
 5. Vascular cambium
 6. Xylem → **Wood**
- Bark** (includes 1, 2, 3, 4)
- Wood** (includes 5, 6)
- Handwritten notes:
 - Cork comb بنقل واد
 - Phloem عناد
 - function unit in bark
 - (Transport nutrients to the plant)



1. Xylem:

* Vascular system composed two type of tissue

One of the two types of transport tissue (vascular tissue) in plants, phloem being the other. It is the principal water-conducting tissue of the plant. Xylem is a compound tissue made up of parenchyma, fiber, and tracheary elements (tracheids and vessel members). Tracheids and vessel elements are distinguished by their shape; vessel elements are shorter, and are connected together into long tubes that have pores at each end, while tracheids have no pores.

2. Phloem:

Is a compound tissue and is responsible for the transport of food. It contains parenchyma, sclerenchyma and sieve element. The sieve tubes are the most highly specialized cell composed of a vertical series of elongated cells, interconnected by perforation in their walls in areas known as sieve plates. Sieve elements are usually broken during powdering while phloem scleride (stone cell) are important in the identification of certain barks.

Handwritten notes:
 - Function:
 - by:
 - sieve tubes:
 - Key element
 - we can see under microscope.

We are going to examine three selected plants:

Cinnamon Bark and Quassia Wood

I. Cinnamon Bark:

القرفة

الاسم العلمي

Dried bark of Cinnamomum zeylanicum B. (Lauraceae).

➤ Physical characters:

- **Color:** reddish brown
- **Odor:** pleasant and aromatic
- **Taste:** warm, sweet and aromatic

➤ Constituents:

- Cinnamaldehyde (60-75 %)
- Volatile oils (up to 4%)
- Eugenol
- Tannins

➤ Uses:

- Uses described in Pharmacopeias:

Dyspeptic conditions, fullness, flatulence, and loss of appetite, also used to treat abdominal pain with diarrhea.

- Experimental pharmacology:

Antibacterial and antifungal (O-methoxy cinnamaldehyde).

ant antiseptic

Carminative activity (essential oil).

Antispasmodic (Cinnamaldehyde).

للمغزى

في بعض الأحيان

Flavoring agent in spices

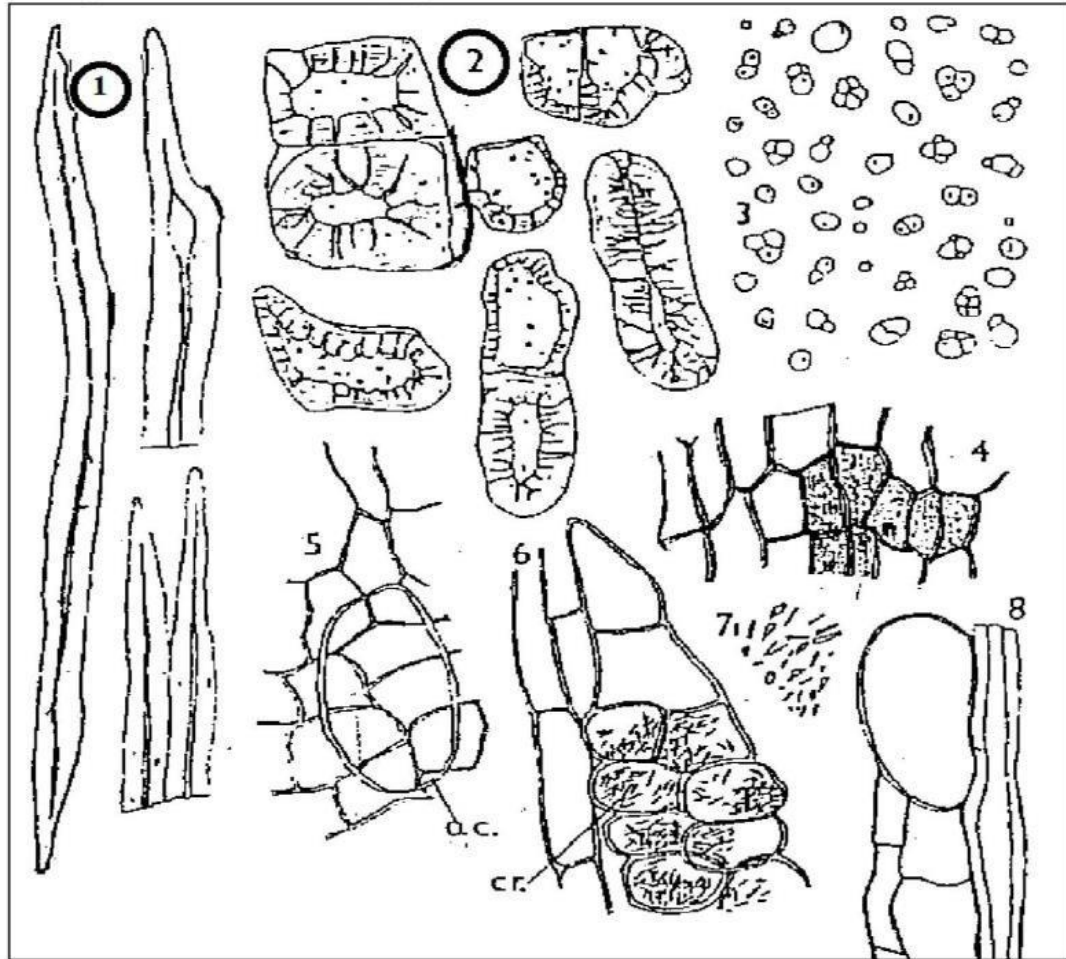
ant sweetening agent

تستخدم

❖ Identification test of tannins:

- Cinnamon + FeCl₃: dark green color produced.

❖ Examination under microscope:



1. Fibers (SKE)
2. Sclereids (KE) *very distinctive for cinnamon bark*
3. Starch granule
4. Cork
5. Phloem parenchyma and an oil cell
6. Part of medullary ray with some of cells containing acicular crystals of calcium oxalate
7. Calcium oxalate crystals
8. Part of fiber

II. Quassia Wood: *or bitter wood.*

خشب المرّة

Dried wood of *Picrasma excels* P. (Simaroubaceae).

➤ Constituents:

- Bitter quassinoids: quassin, isoquassin and neoquassin

- Physical Characters:-

- color: *Pale yellow to bright yellow*
- odor: *odorless*
- taste: *very bitter* → *مرّ*

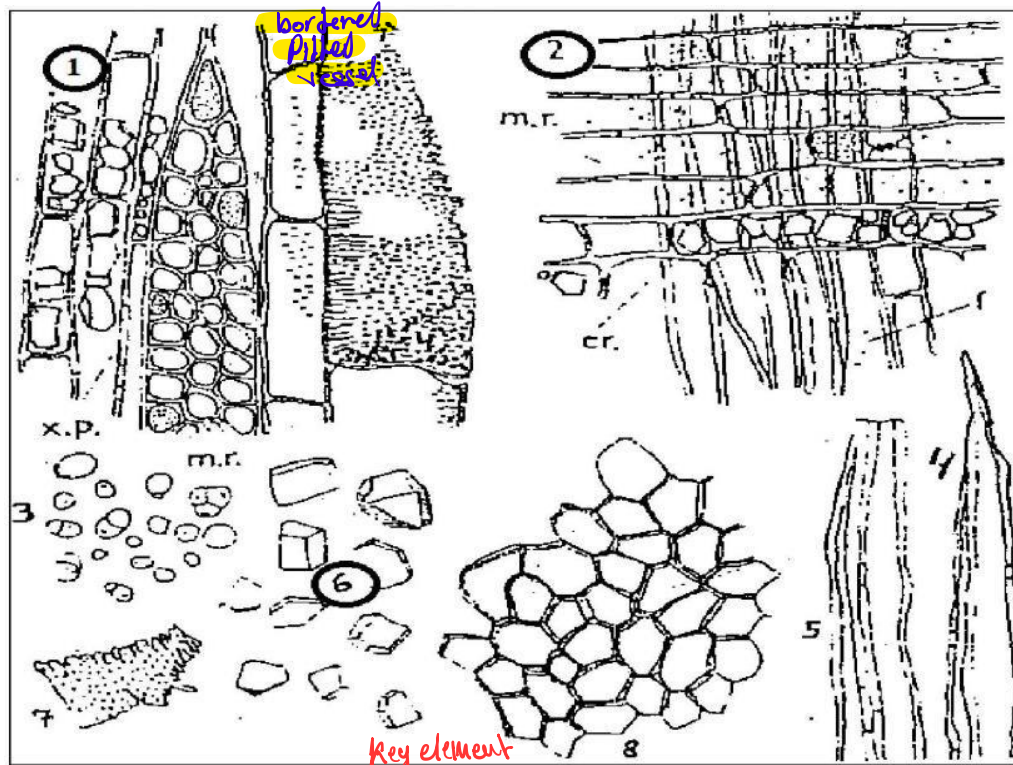
➤ **Uses:**

- Insecticide *مبيد الحشرات*
- Remedies for infestation of lice and warms (Anti Parasite) *نمل*

❖ Identification test for lignin:

- Quassia powder + Phloroglucinol + conc.HCL: Pink color on the walls of fibers and vessels.

❖ Examination under microscope:



1. Part of the xylem in tangential longitudinal section showing xylem parenchymatous cells (x.p.) some containing prisms of calcium oxalate part of a medullary ray (m.r.) and a bordered pitted vessel (KE)

↳ very distinctive for Quassia wood

2. Part of xylem in radial longitudinal section showing medullary cells (m.r.) containing prisms of calcium oxalate (c.r.) with underlying fibers (f.) and xylem parenchyma.

3. Starch granules

4. Fibers from phloem

5. Xylem fibers

6. Calcium oxalate prisms

7. Fragment of pitted vessel

8. Cork in surface view.

Practical work:

1. Observe the microscopical appearance of the studied plants.
2. Do the chemical testing for plant identification as following:

✓ Identification test of tannins:

- Cinnamon powder (in a test tube) + FeCl_3 → dark green color produced.

✓ Identification test for lignin:

- Quassia powder (on slide) + Phloroglucinol + conc.HCL → cover with cover slip and observe the pink color on the walls of fibers and vessels.

Practical Work

Materials & Chemicals Needed: - Two different Plants (<u>Cinnamon bark</u> and <u>Quassia wood</u>). ✓ - Purified water. - Chloral hydrate solution - FeCl_3 solution - (Phloroglucinol +conc. HCL) soln.	Glassware Needed: - Test tubes and Test tube clip. - Glass rod and spatula. - Dropper. - Microscope slide and coverslip. - Beaker (500ml).
Equipment & Instrument needed: - Microscope.	Notes:

دُعَاؤُكُمْ