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

Pharmacognosy

PHG112

Lab 7



Faculty of
Pharmacy

REMEMBER

Lab evaluation → 5:

-Attendance:

-(only 15 min late is allowed)

-(sign for yourself).

-Lab coat:

-(not allowed to be in the lab without it).

-(take it on and off before and after you get to the lab).

-(during the lab time).

-Drawing:

-(in a specific note using pencil).

SAVE YOUR MARKS

Lab evaluation → 5:

-Work place and tools:

- (waste disposal → don't throw anything in the Sink).
- (microscope → switch it OFF).

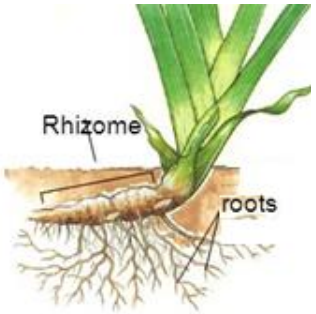
-Behavior:

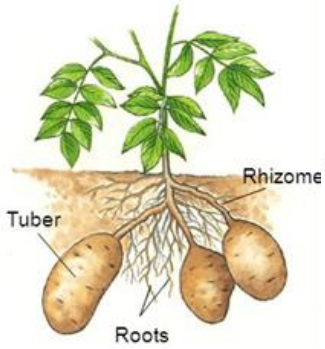
(may get you to loose the whole 5 marks).

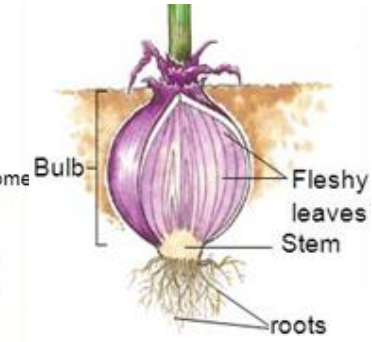
Subterranean Organs

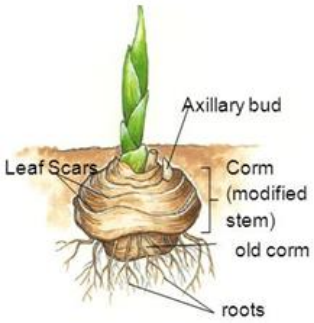
Subterranean organs

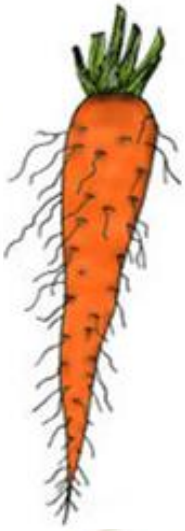
- **Subterranean stems**
  - **Rhizomes**
  - **Stem tubers**
  - **Bulbs**
  - **Corms**
- **Subterranean roots**
  - **Roots**
  - **Root tubers**

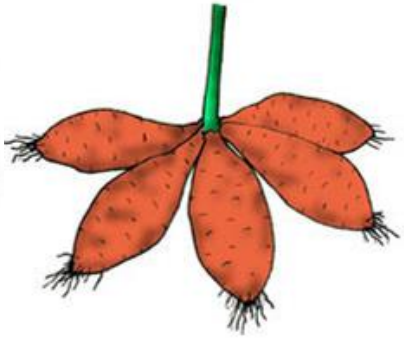












Subterranean Organs

All underground organs

Root origin

Characterized by

1- Never develop leaves

2- No nodes and internodes

3-No buds

Stem origin

Characterized by:

1-Bearing scaly leaves

2-Has nodes and internodes

3- Axillary buds with scaly leaves

Liquorice العرقسوس

Liquorice

Origin:

Dried peeled or unpeeled roots and rhizomes of *Glycyrrhiza glabra var typica* known as Spanish liquorice, or *Glycyrrhiza glabra var glandulifera* known as Russian liquorice Family Leguminosae.

Why peeled?

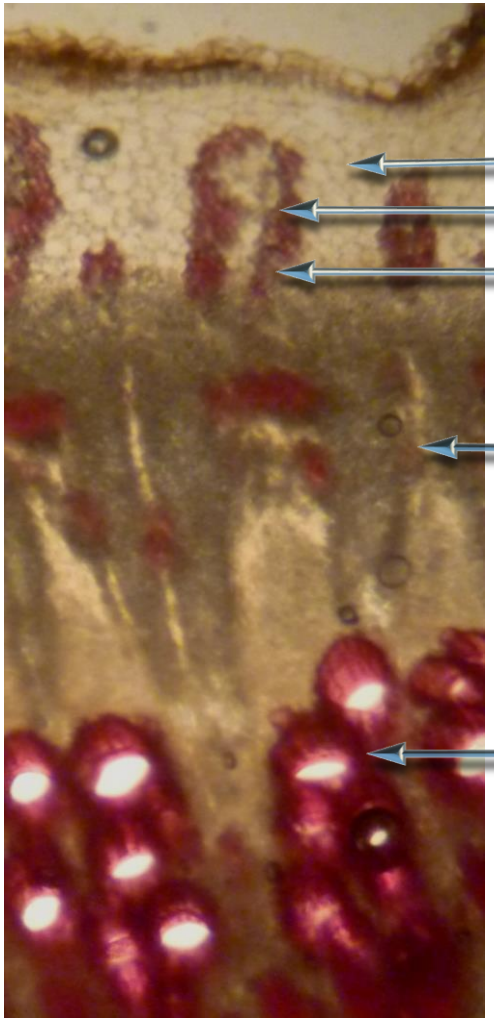
The Cork:

1- Less Amount of active constituents.

2-Increasing the weight.

3-Having un desirable taste.

Transverse section:



Cork

Parenchyma

Pericyclic fibers

Phloem

Medullary rays

Xylem

Powder:

Physical Characters:

Homogeneity: Heterogenous

Condition: Ash like

Color: Yellow

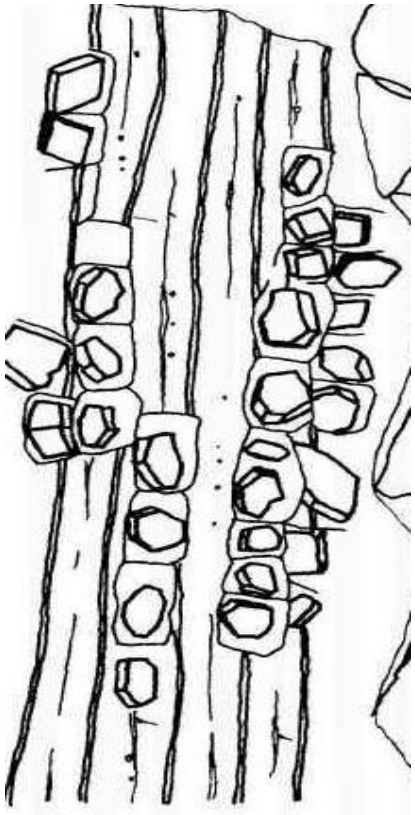
Odor: Faint odor

Taste: Very sweet free from bitterness

Key elements:

1- Crystal sheath

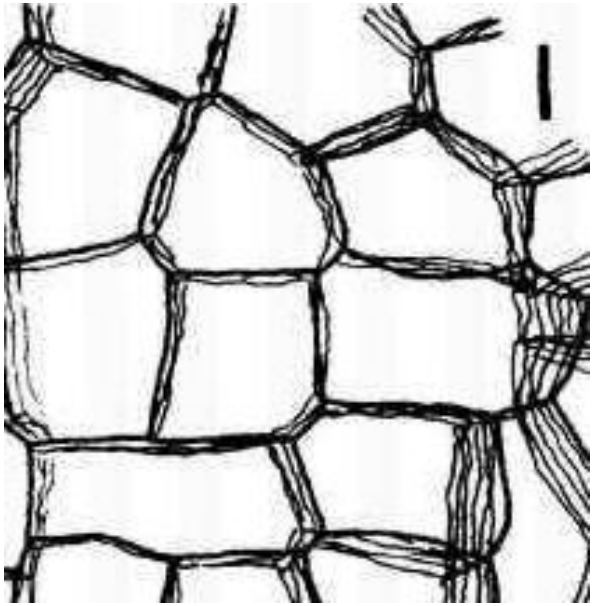
Parenchyma cells containing prisms of CaOX arranged on fibers

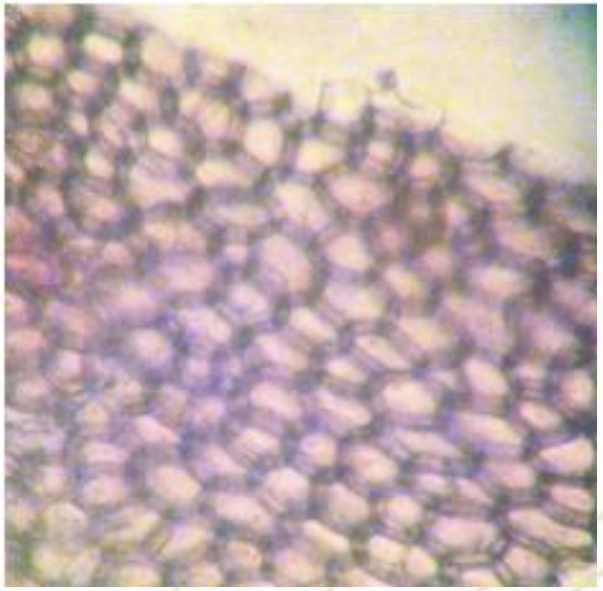


Key elements:

2- Cork cells

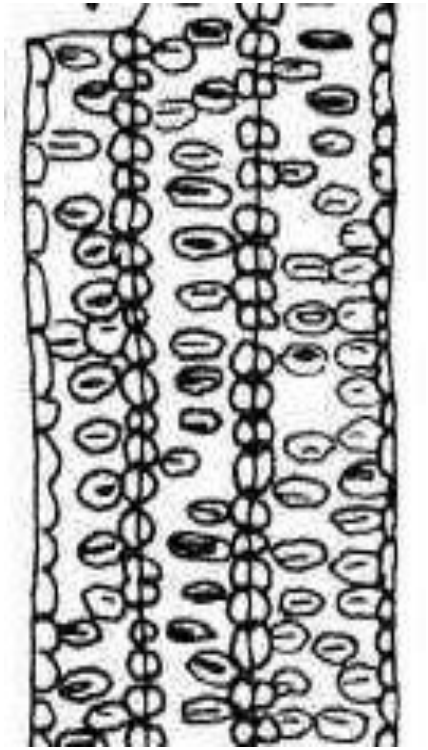
Thick, brown, formed of several layers of flattened polygonal cells.





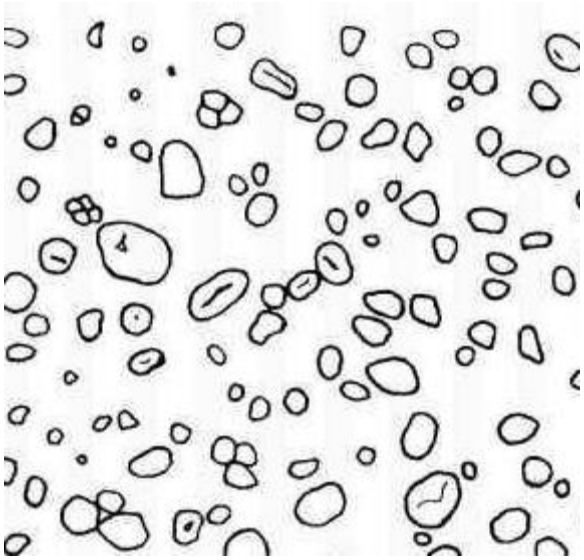
Key elements:

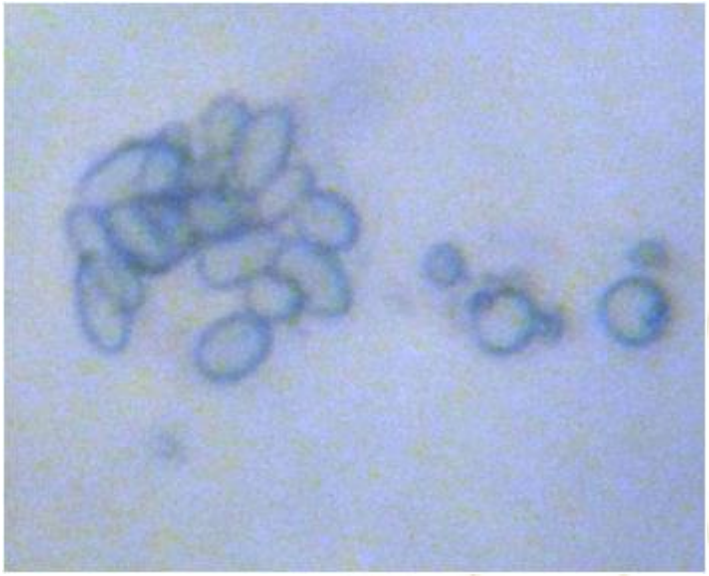
3- Bordered pitted lignified xylem vessels



Key elements:

4- Starch granules





Chemical test:

Froth test:

Pd. + Water in a test tube and shake well → Persistent froth stable for more than 1 min.

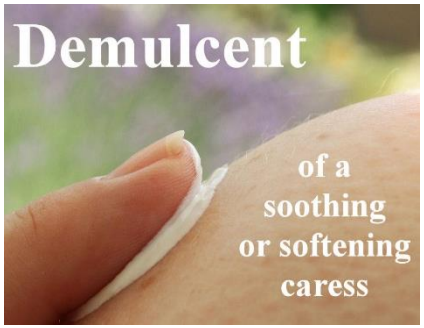
Vigorous Shaking

Microscopical Characters:

- **Mount in KOH: All key elements**
- **Mount in phlouroguçinol: Crystal sheath and Xylem vessels**

Mount in water: Starch granules

Uses



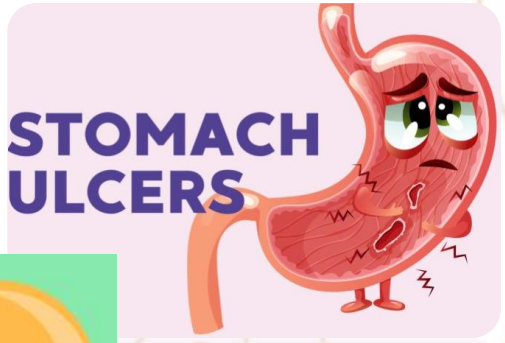
1- **Demulcent and mild expectorant.**

2- **Sweetening agent.**

3- **Anti-inflammatory for gastric and duodenal ulcer and rheumatoid arthritis (due to presence of cortisone like compounds).**

4- **Mild laxative.**

5- **Mouth wash for mouth ulcer.**



GINGER الزنجبيل

Ginger

Origin:

It is the fresh or dried rhizome of *Zingiber officinale* family Zingiberaceae.

It is deprived from the dark outer surface and collected as peeled ginger.

Liming:

It is coating with very thin protective layer of $CaCO_3$ to protect against insect attacks.

Powder:

Physical properties:

Condition: Powder

Colour: Yellowish brown

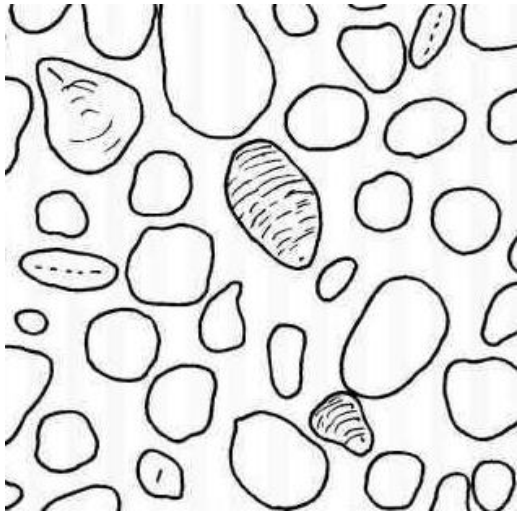
Taste: Pungent taste

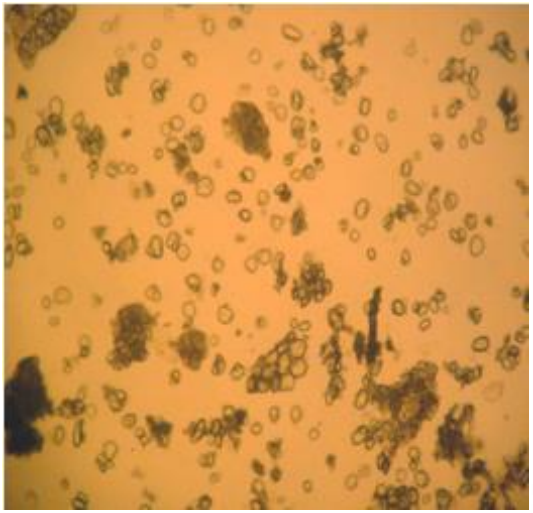
Odour: Aromatic

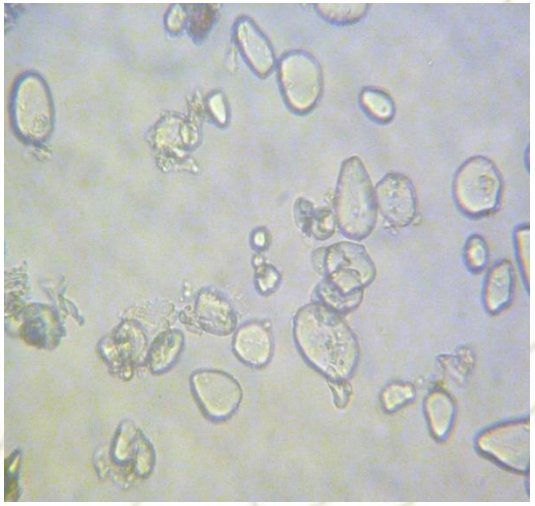
Key elements:

1)Scitaminaceous starch granules with transverse striation.

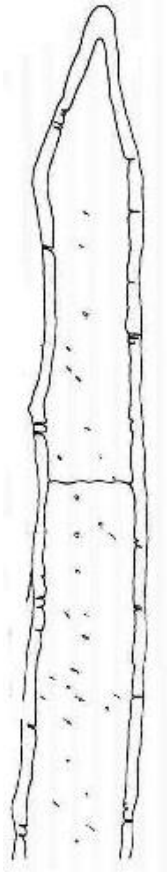
Mount in Water

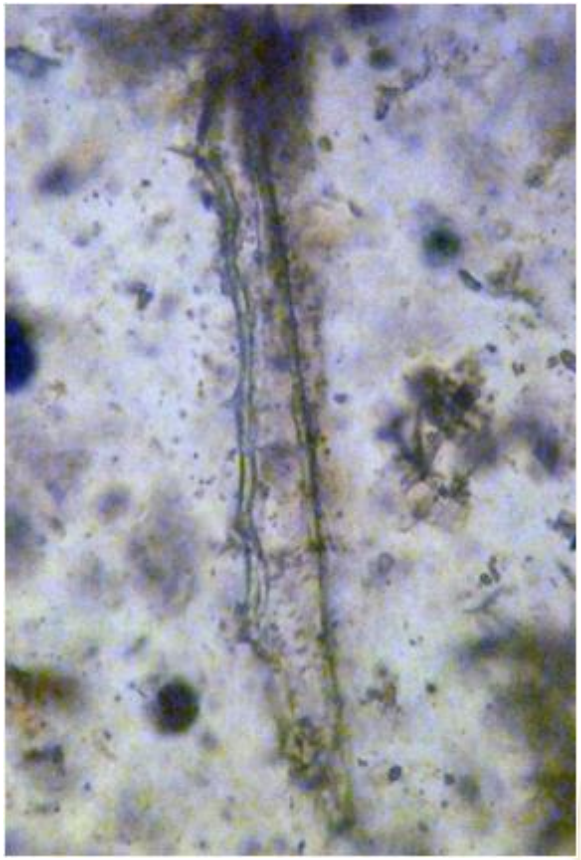


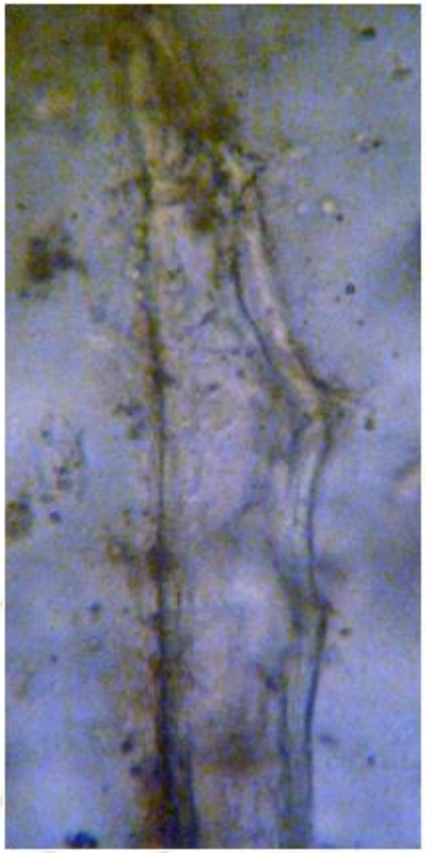




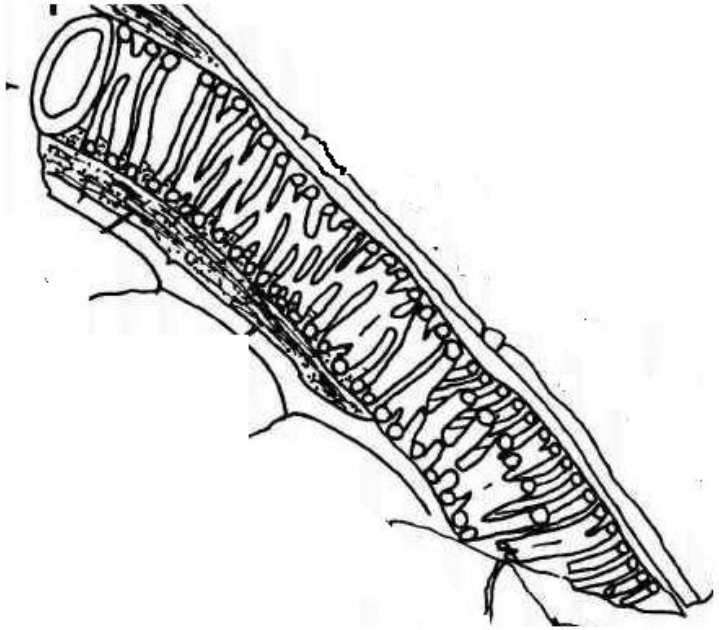
2) Septate fibers with tortuous margin and transverse peptosic septa (pectin)
(non lignified except middle lamella)



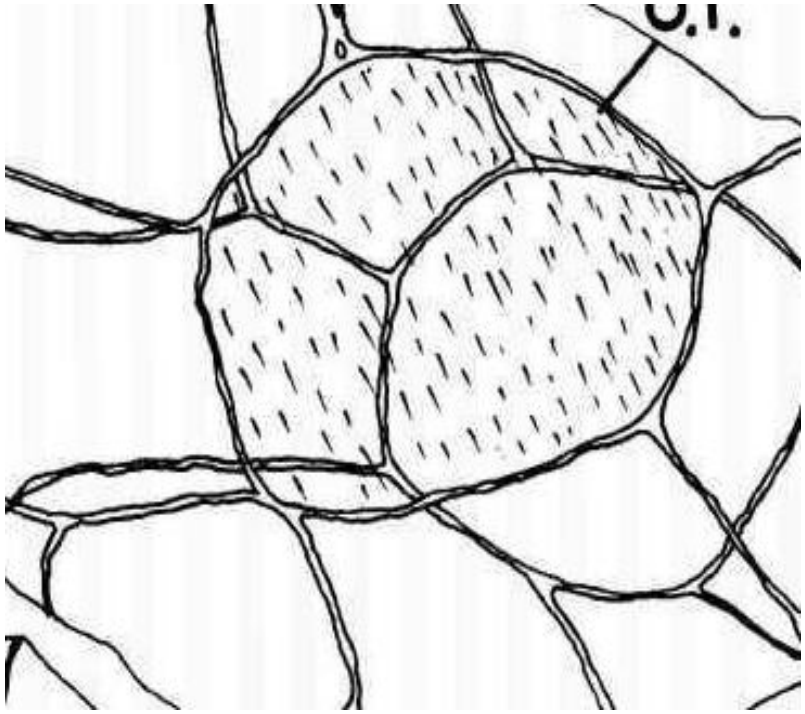


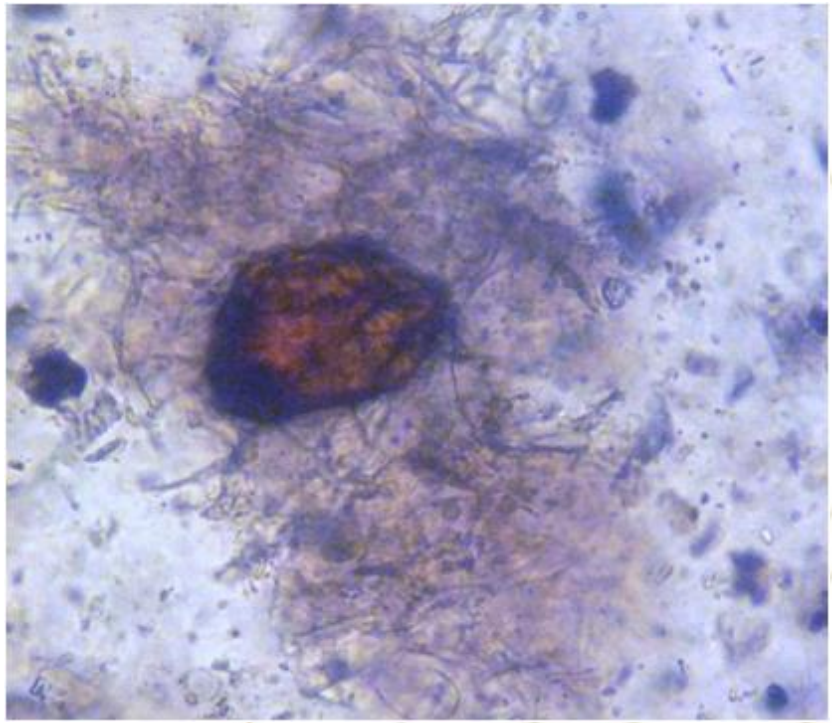


3)Reticulate, non lignified xylem vessels.



4)Oleoresin cells with yellowish orange content





Microscopical Characters:

- **Mount in KOH: All key elements**
- **Mount in phlouroglucinol: -VE**
- **Mount in water: Scitaminaceous starch granules**

Uses

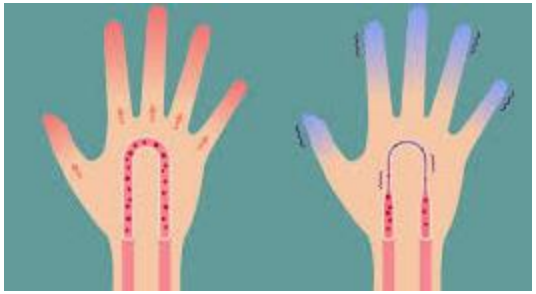
1- Powerful anti-emetic. In motion sickness.

2- Carminative & flavouring agent.

3- Improve circulation and antihypertensive

4- Cough mixtures

5- Antioxidant



RHUBARB الراوند

Rhubarb:

Origin:

It is dried rhizome and big roots of *Rheum palamtum, Rheum officinale* and all Rheum species except *Rheum raponticum* *Family Polygonaceae* deprived of cork and outer cortex.

Powder:

Physical characters:

Condition: Powder

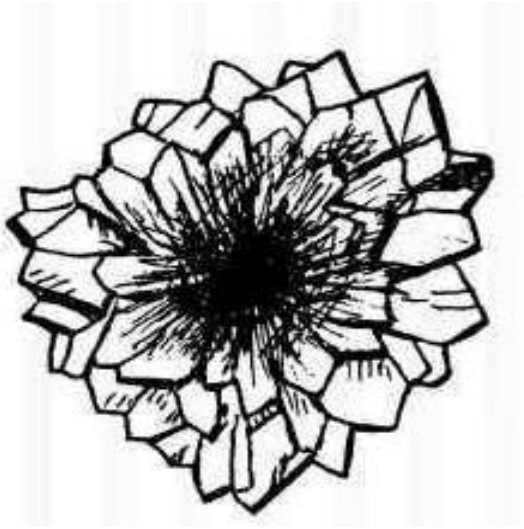
Colour : Reddish brown

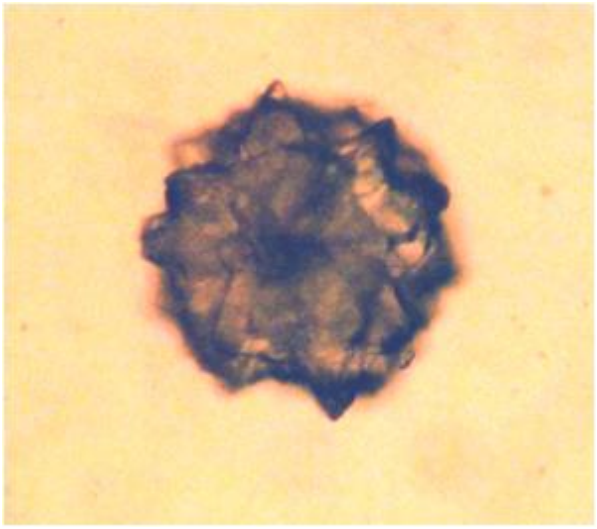
Odour: Aromatic odour

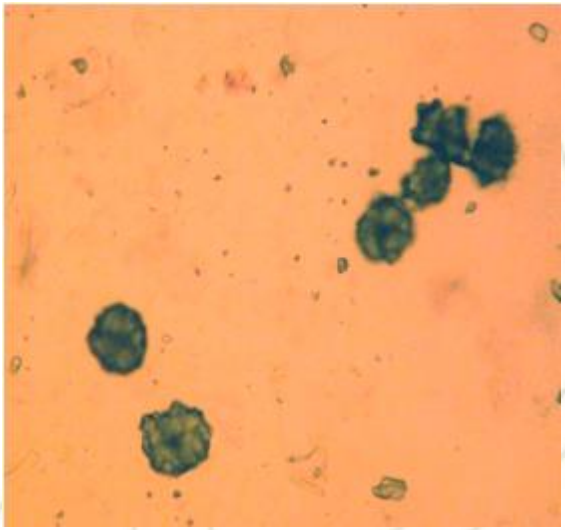
Taste: Bitter astringent with gritty taste

Key elements:

1)Cluster crystals of CaOX coming from phelloderm

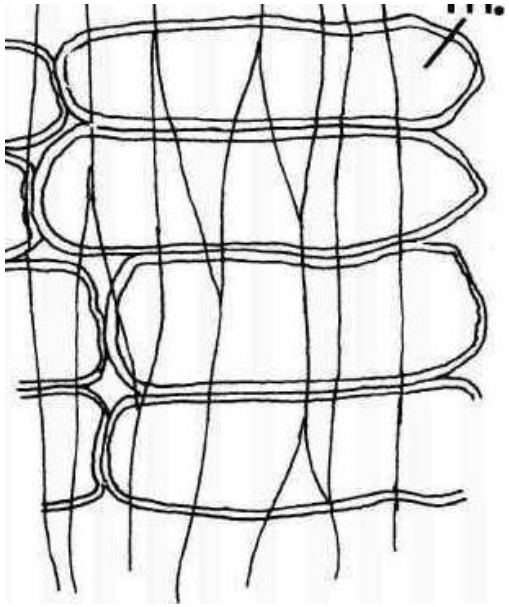






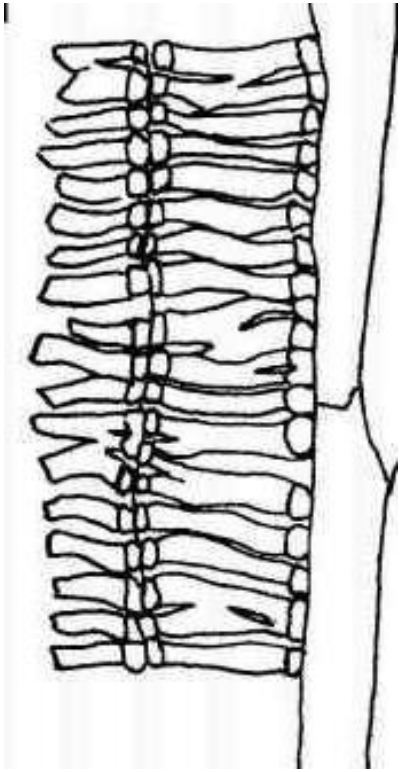
Key elements:

2) Medullary rays with reddish brown content



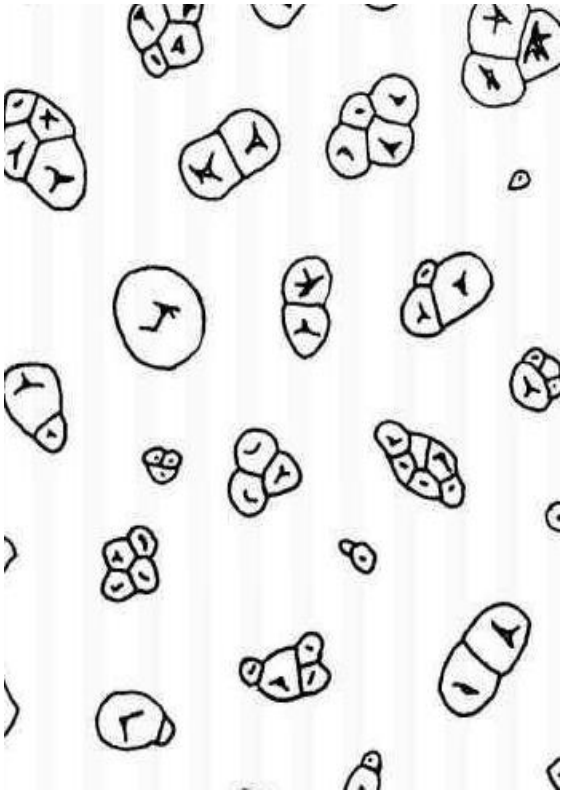
Key elements:

3)Broad non lignified reticulate xylem vessels



Key elements:

4) Mullar shaped starch granules with fissured hilum



Microscopical Characters:

- **Mount in KOH: All key elements**
- **Mount in phlouroguçinol: -VE**

Mount in water: Starch granules and Cluster crystals of CaOX

Uses

1- Laxative.

2- Antiinflammatory.

3- Effective in lowering blood sugar levels in type 2 diabetes patients.

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 eddition by James D. Mauseth,2008.

Useful links:

http://www.hort.purdue.edu/newcrop/med-aro/default.html

http://www.herbmed.org/

http://www.danish-schnapps-recipes.com/plants.html

http://www.botanical.com/

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Thank You!

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