



MSA UNIVERSITY
معة أكتوبر للعلوم الحديثة والآداب

Pharmacognosy

PHG 112

Spring 2026

Pharmacognosy

PHG 112



potato tubers



ginger rhizome

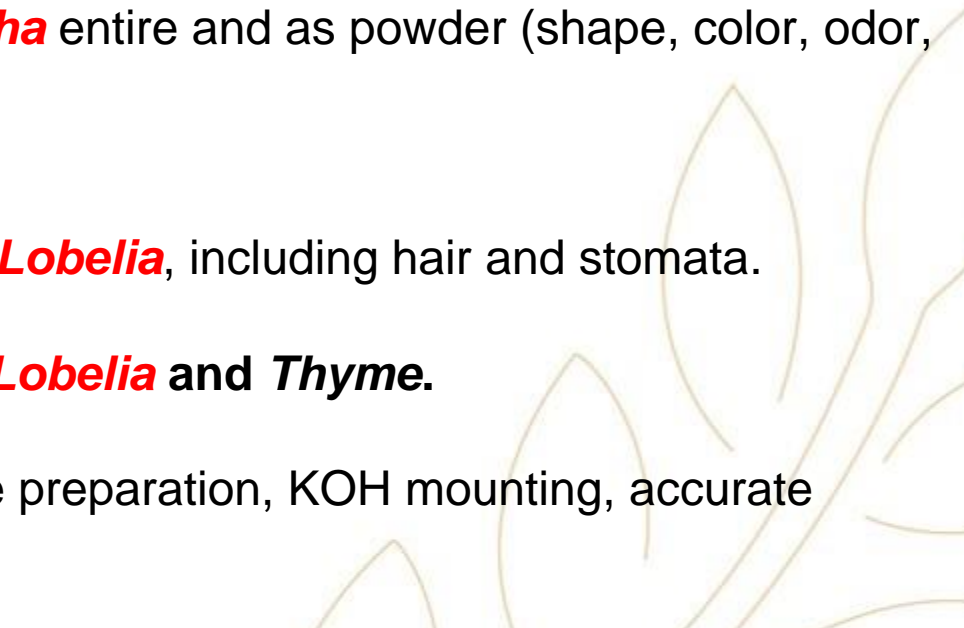
Spring 2026

Lab 7



Intended Learning Outcomes (ILOs)

By the end of this laboratory session, students will be able to:

1. **Describe the macroscopic morphology of *Lobelia* and *Mentha*** entire and as powder (shape, color, odor, taste and surface characters).
 2. **Identify the microscopic diagnostic features of *Mentha* and *Lobelia***, including hair and stomata.
 3. **Differentiate the shape of different herbs**, including *Mentha*, *Lobelia* and *Thyme*.
 4. **Apply proper laboratory skills and safety rules**, including slide preparation, KOH mounting, accurate drawings, waste disposal, and lab conduct.
- 

HERBS



Peppermint

عشب النعناع الفلفلى



Origin:

Dried leaves and flowering tops of *Mentha piperita*, Family Labiatae (Lamiaceae).



Morphology:

1- Stem

Quadrangular 1-3 mm thick

Green to dark purple tinge

Why???



Morphology:

2- Leaves

Ovate, lanceolate, petiolate , opposite decussate with dark green, nearly glabrous upper surface and light green hairy lower surface.



Morphology:

3- Flowers

Small

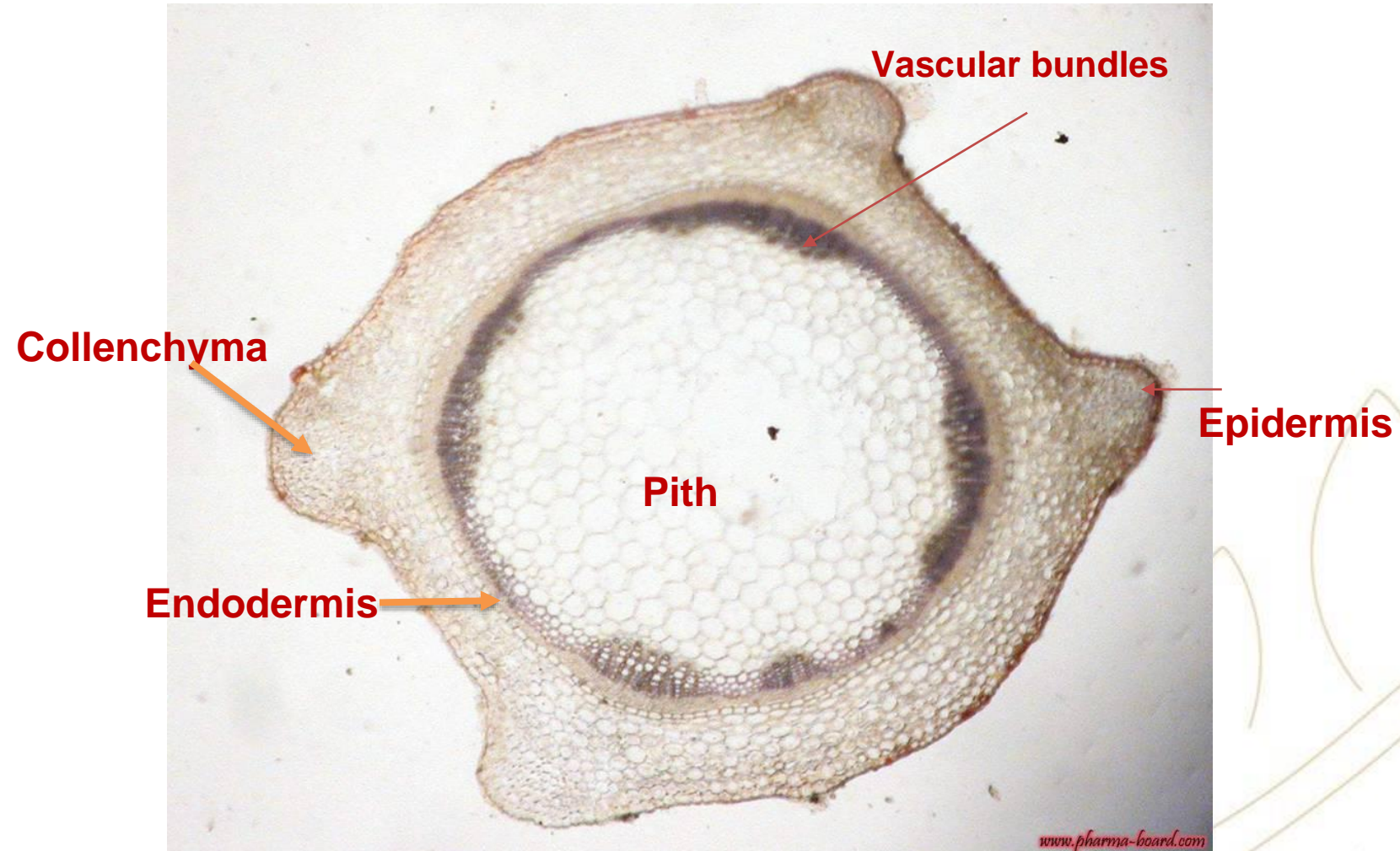
Purple

Zygomorphic

Bilabiate



T.S in stem:



Physical characters:

Condition: Fine powder.

Colour: Olive Green.

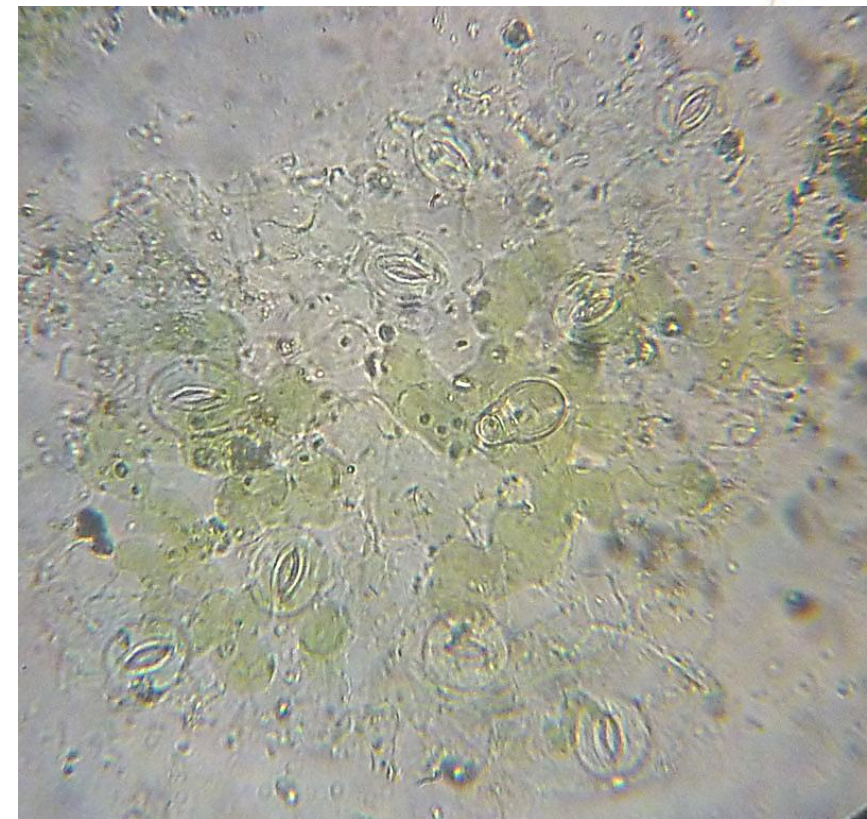
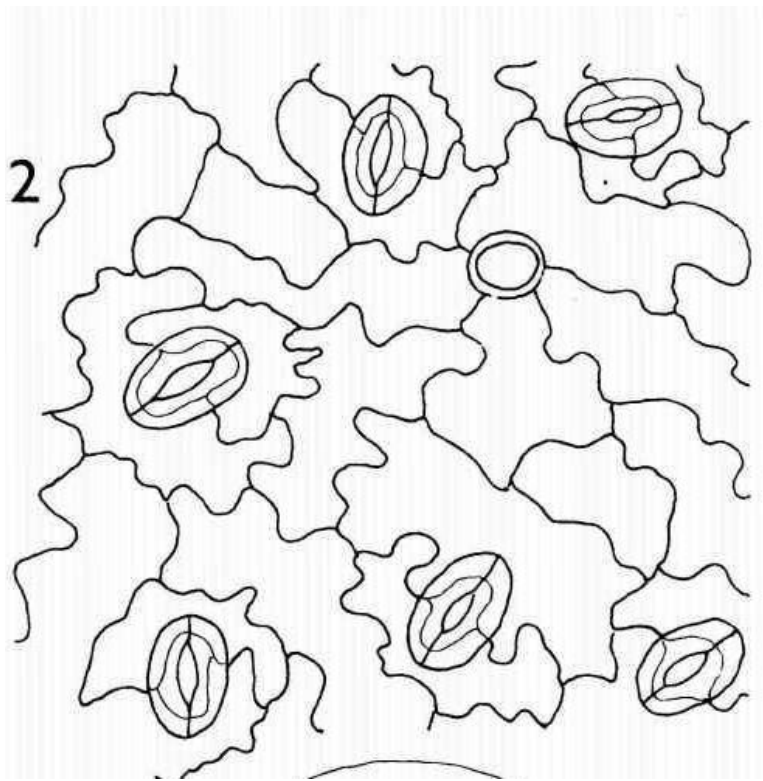
Odor: Aromatic.

Taste: Aromatic followed by cold sensation



Key Elements

1- Epidermal cell: Wavy wall, diacytic stomata

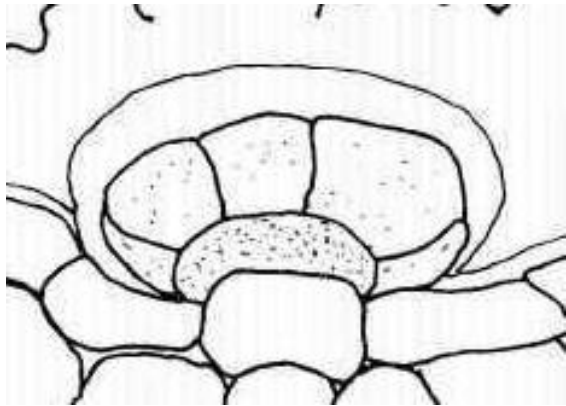


Key Elements

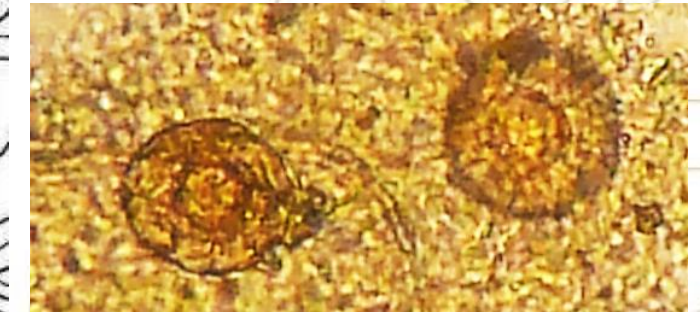
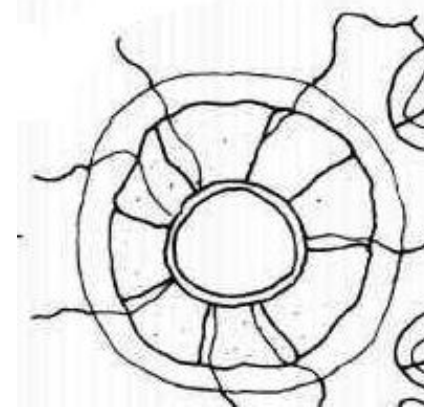
2- hairs:

a- Glandular Hairs:

Labiaceous glandular hair.



Side view

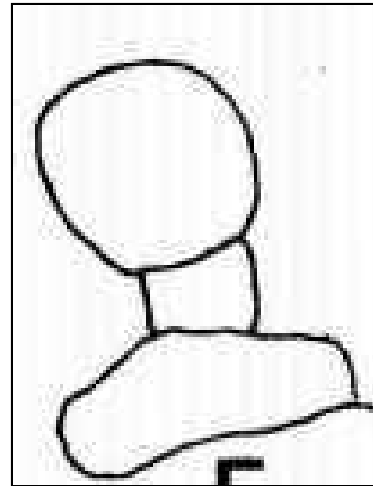


Top view

Key Elements

2- hairs:

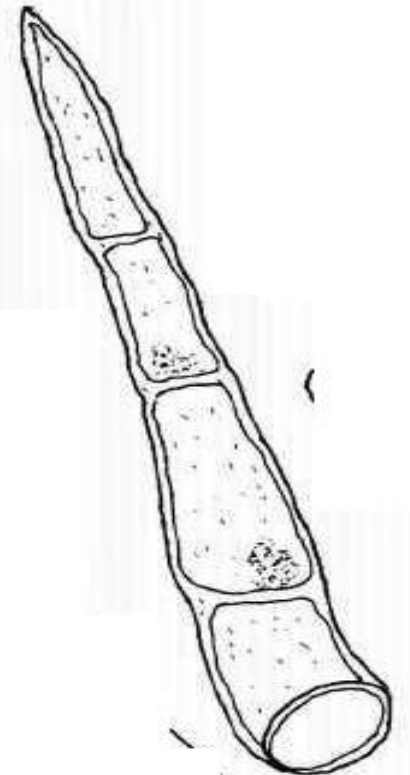
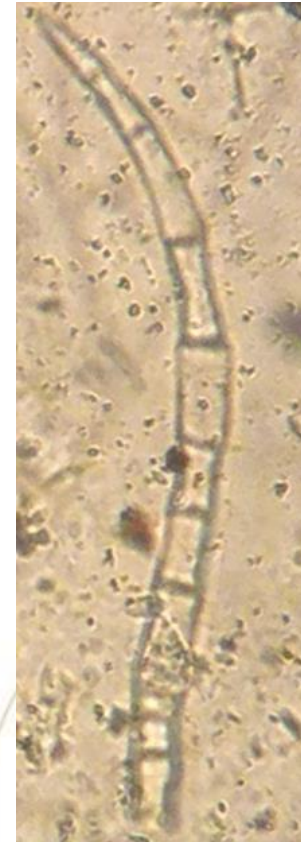
a- Glandular Hairs: Capitate hair



Key Elements

2- hairs:

b- Non- glandular hair

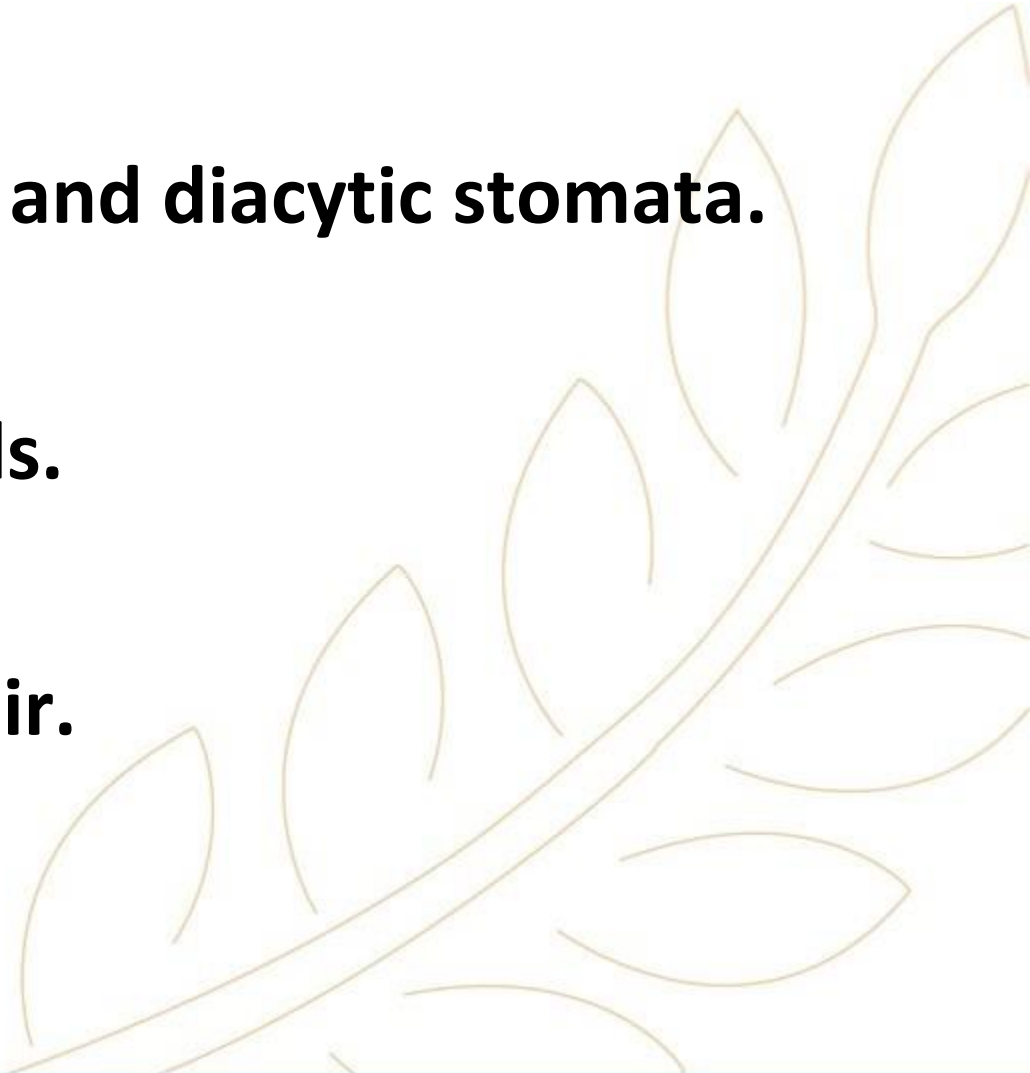


Microscopical Character:

Mount in KOH: Labiaceous glandular hair and diacytic stomata.

Mount in phloroglucinol : Xylem vessels.

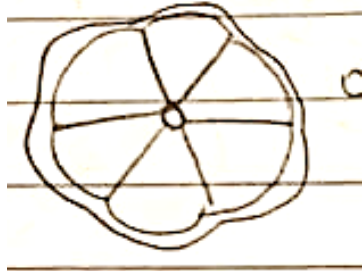
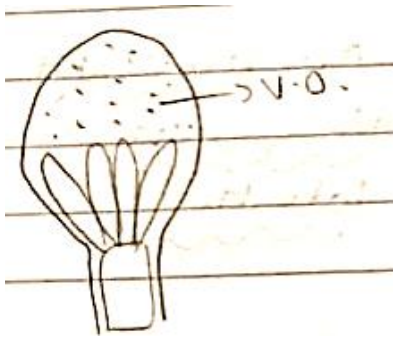
Mount in Water: Labiaceous glandular hair.



Main Key Elements Drawings:

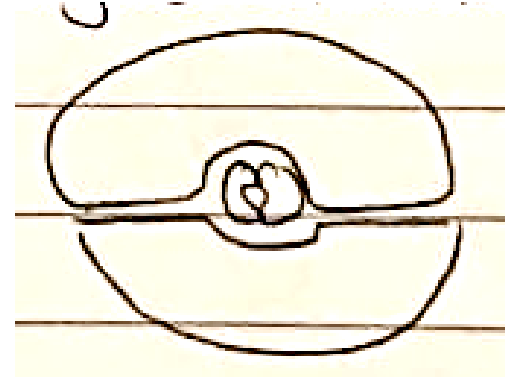
1

Labiaceous glandular hair



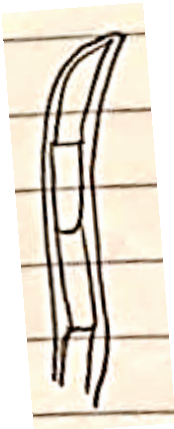
2

Epidermal cell: Wavy wall, diacytic stomata



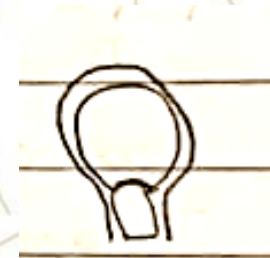
3

Non glandular hair multicellular



4

Glandular capitate hair



Uses

- **Local action: antipruritic, mild local anesthetic and antiseptic.**
- **Systemic action: carminative and gastric sedative.**
- **Flavouring agent in:**



Candies & chewing gums



Mouth wash



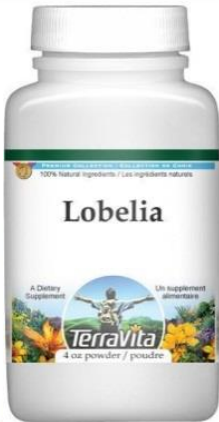
Tooth paste



Lobelia "Indian tobacco"

Origin:

The dried aerial parts of *Lobelia inflata*, Family: Campanulaceae.



Respiratory System Support

RECOMMENDATION
Add to baths, relaxant poultices, or other external preparations.

This bottle was sealed for your protection. Do not use if outer label band is missing or damaged. Return 2 quantities used external means or materials in any products that are subject to color variation.

NATURE'S SUNSHINE PRODUCTS, INC.
Stock No. 1765-8
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LOBELIA ESSENCE
Liquid Herbal Extract
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GUARANTEED PURE
Product of U.S.A.

A natural and pure extract of the finest lobelia aerial parts (*Lobelia inflata*) in alcohol, water, and apple cider vinegar.

0 99904 01765 8

Morphology of stem:

Shape: Winged, hairy

Color: Pale green-light green



Physical characters:

Condition: Fine powder.

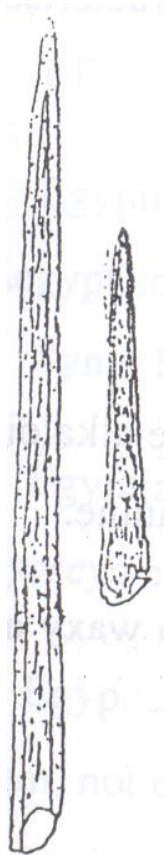
Colour: light Green.

Odor: Irritant odor.

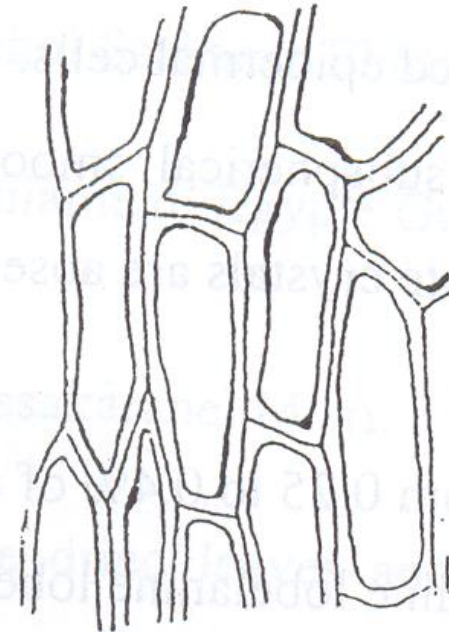
Taste: Burning acrid.



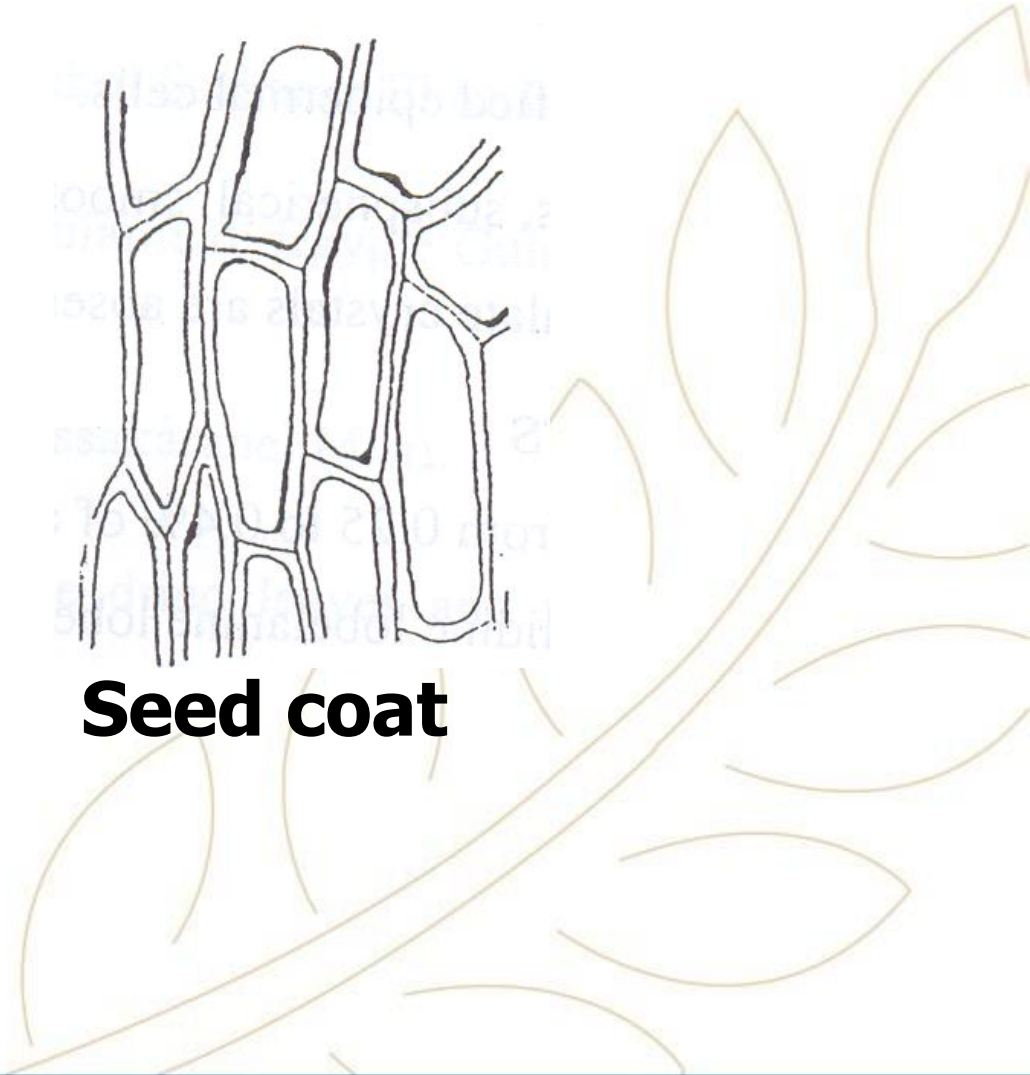
Key Elements



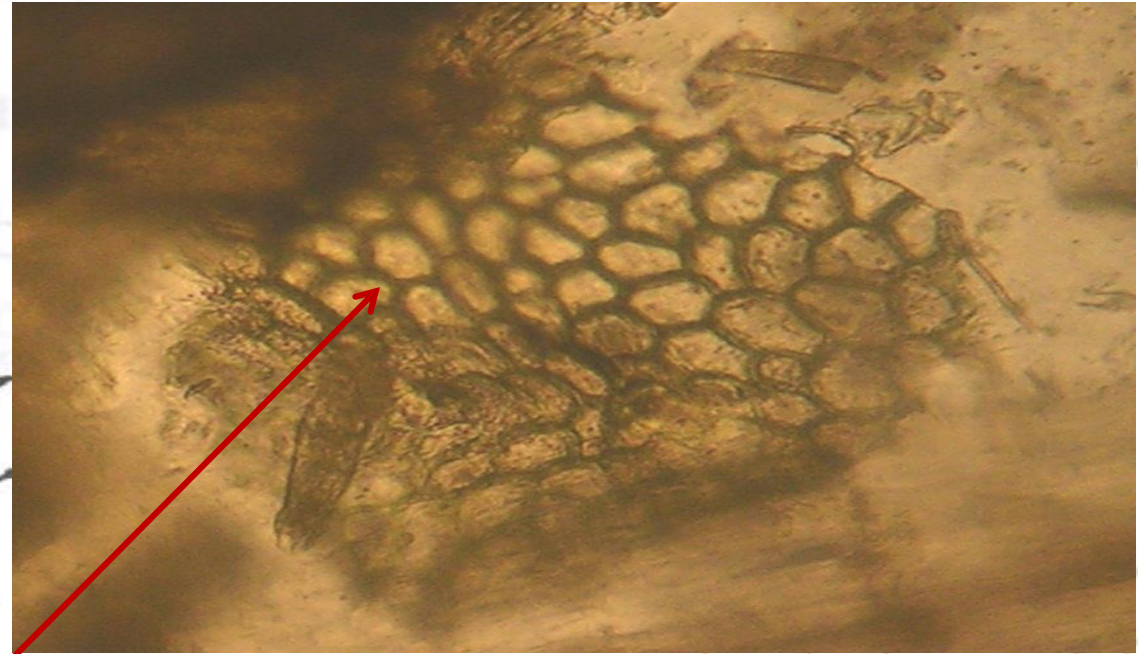
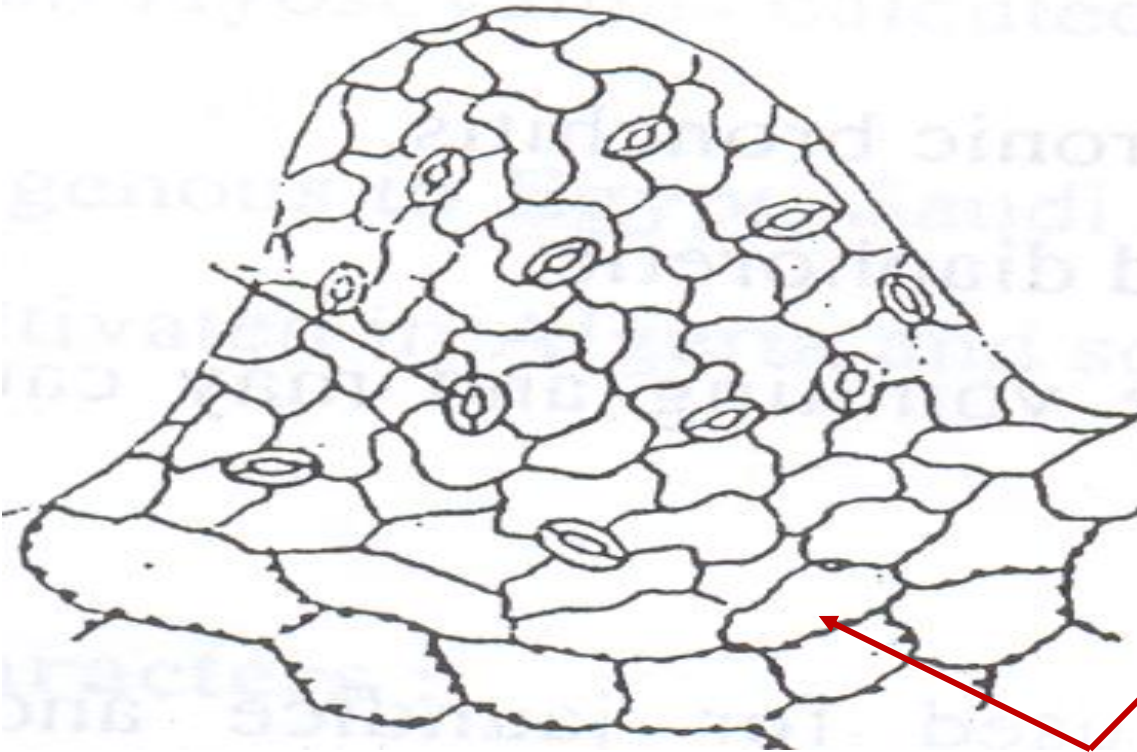
**Non glandular hair unicellular
with streaked cuticle**



Seed coat



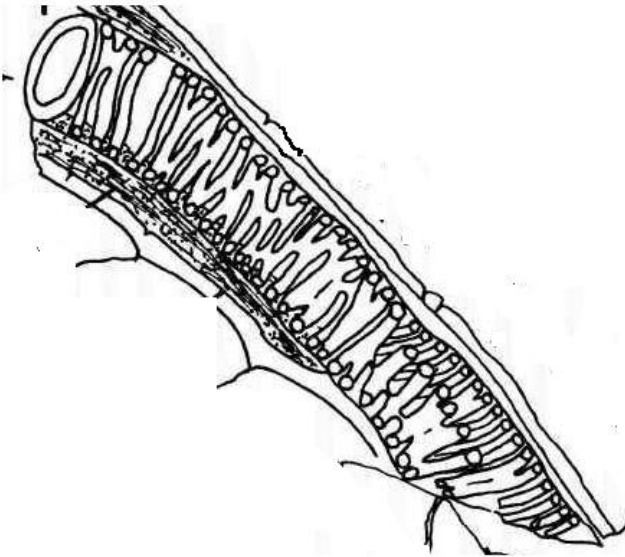
Key Elements



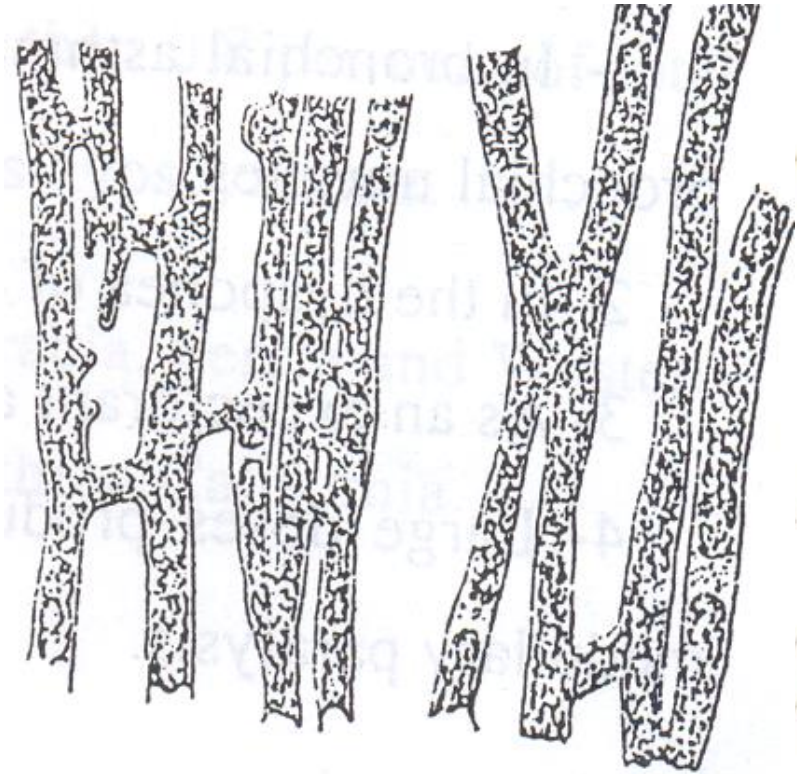
**Papillosed
cells**

Epidermal cells of leaf with anomocytic stomata and beaded anticlinal walls.

Key Elements



Xylem vessels



**Laticiferous vessels
contain latex**

Microscopical Character:

Mount in KOH: Epidermal cells of leaf with anomocytic stomata and beaded anticlinal walls, non glandular hair unicellular with streaked cuticle, xylem vessels and laticiferous vessels.

Mount in phloroglucinol : Xylem vessels.

Mount in Water: Epidermal cells of leaf with anomocytic stomata and beaded anticlinal walls, non glandular hair unicellular with streaked cuticle and laticiferous vessels.

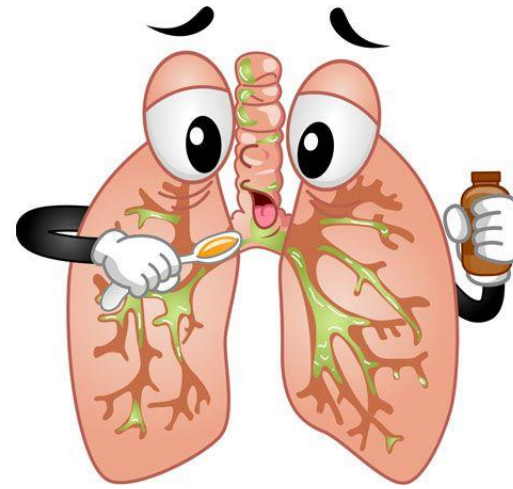
Uses

1-Expectorant.

2-An injection of lobeline HCl is used for resuscitation in newborn babies.

3-In treatment of bronchitis & bronchial asthma as it dilates the bronchioles.

4-Breaking of smoking habit.

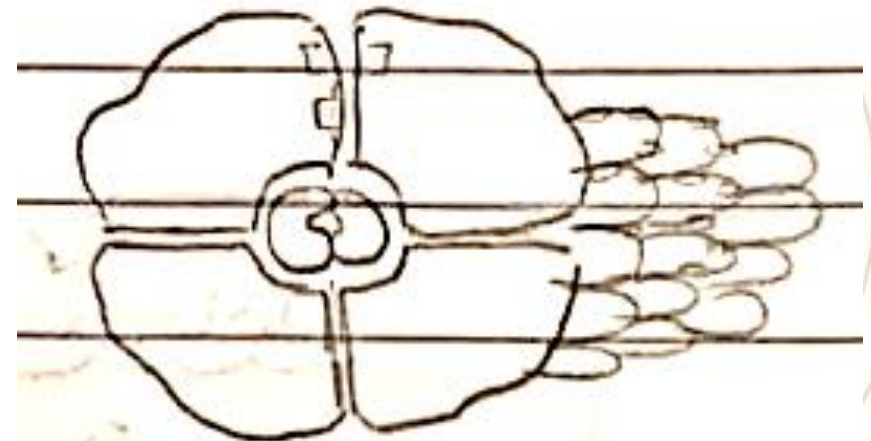


Main Key Elements Drawings:

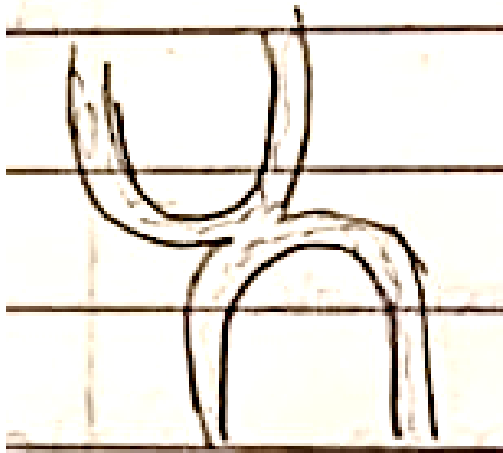
1 Non glandular hair unicellular with streaked cuticle.



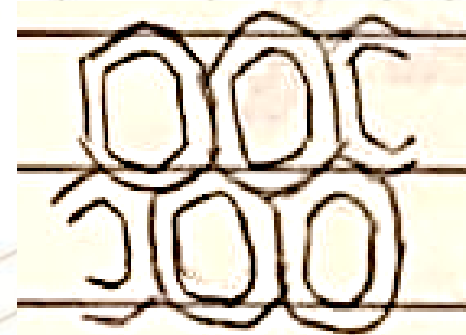
2 Epidermal cells of leaf with anomocytic stomata and beaded anticlinal walls.



3 Laticiferous vessels.



4 Seed coat.



Thyme

Origin:

It is the dried leaves and flowering tops of *Thymus vulgaris* Family Labiatae.



Uses

1- Used for bronchitis, whooping cough and upper respiratory tract infections.

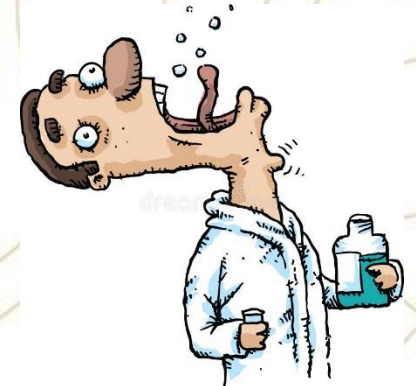
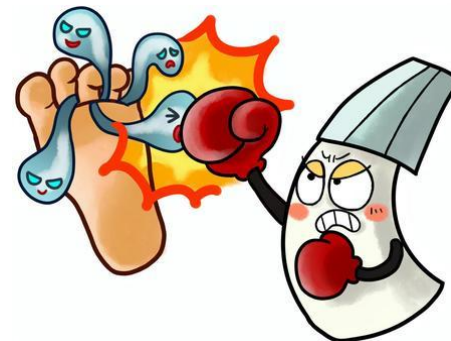
2- The oil is used as carminative, antispasmodic.

3- Flavouring agent and antiseptic in mouth washes, toothpaste and creams.

4- Antifungal for skin infection.



BRONCHITIS



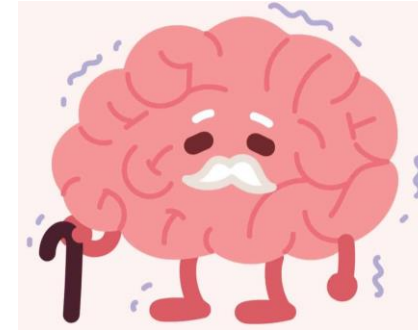
Rosemary

The dried leaves and flowering tops of
Rosmarinus officinalis L. Family Labiatae



Uses

- Antioxidants and anti-inflammatory compounds.
- Enhancing memory and concentration & prevent brain aging.
- Antioxidant and anti-inflammatory in the treatment of diabetes mellitus and its complications.

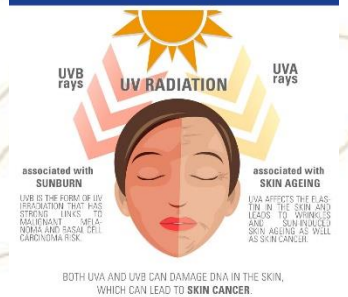


AS A COSMECEUTICAL

- Stimulates hair growth and reduce hair fall. It also helps to reduce scalp inflammation.
- Rosemary helps to balance sebum
- Protect skin cells from damage
- Acts against UV-induced and pollution-induced skin aging and against cutaneous inflammation.

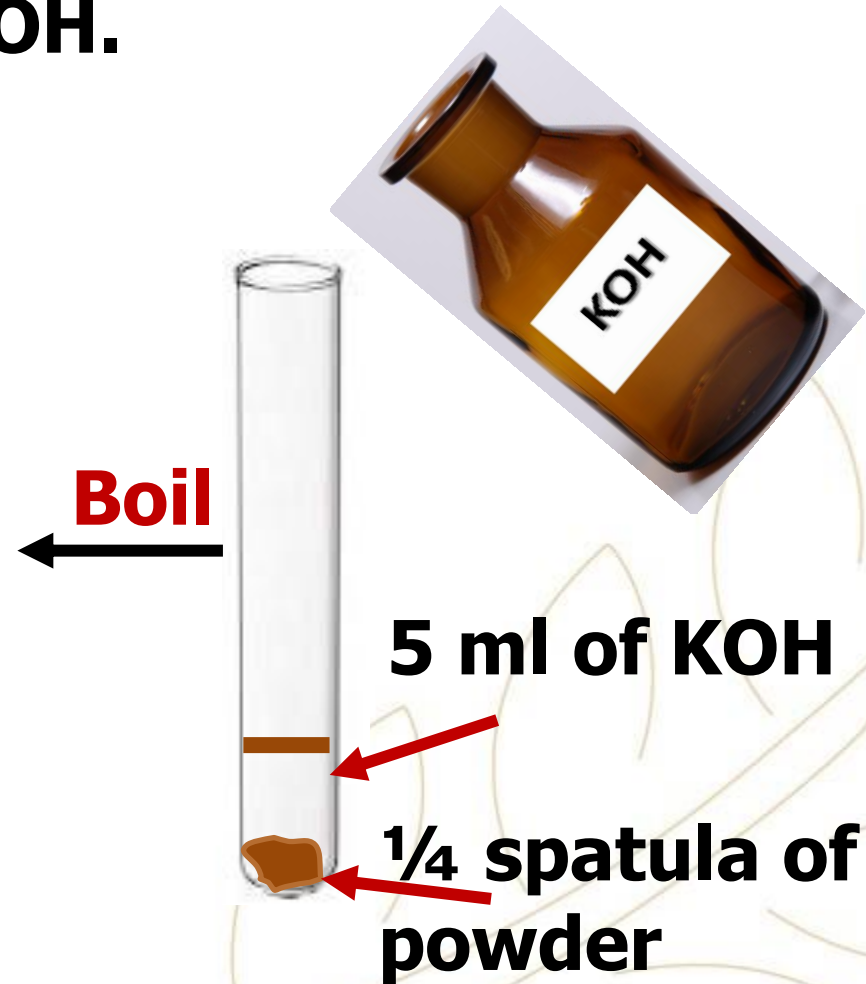


SKIN CONDITION: SUN DAMAGE



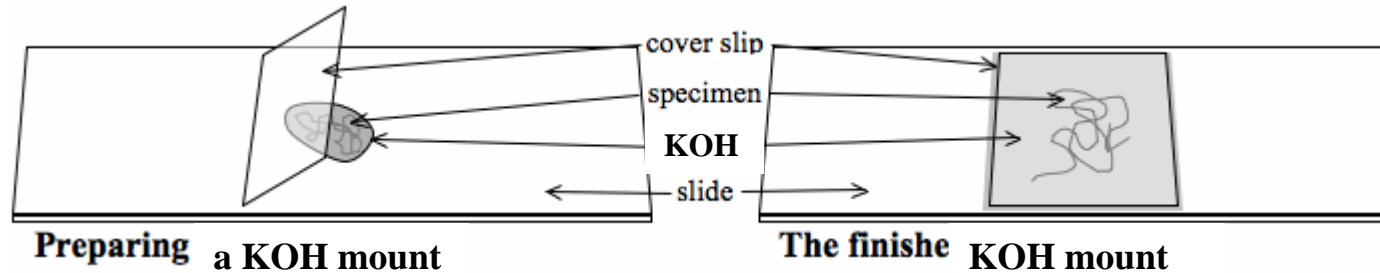
Practical work:

1- Boil a quarter spatula of the powdered seed in a bout 5 ml of KOH.



Practical work:

2- Prepare your slide and check the key elements.



3- Complete your drawings.

P.S.

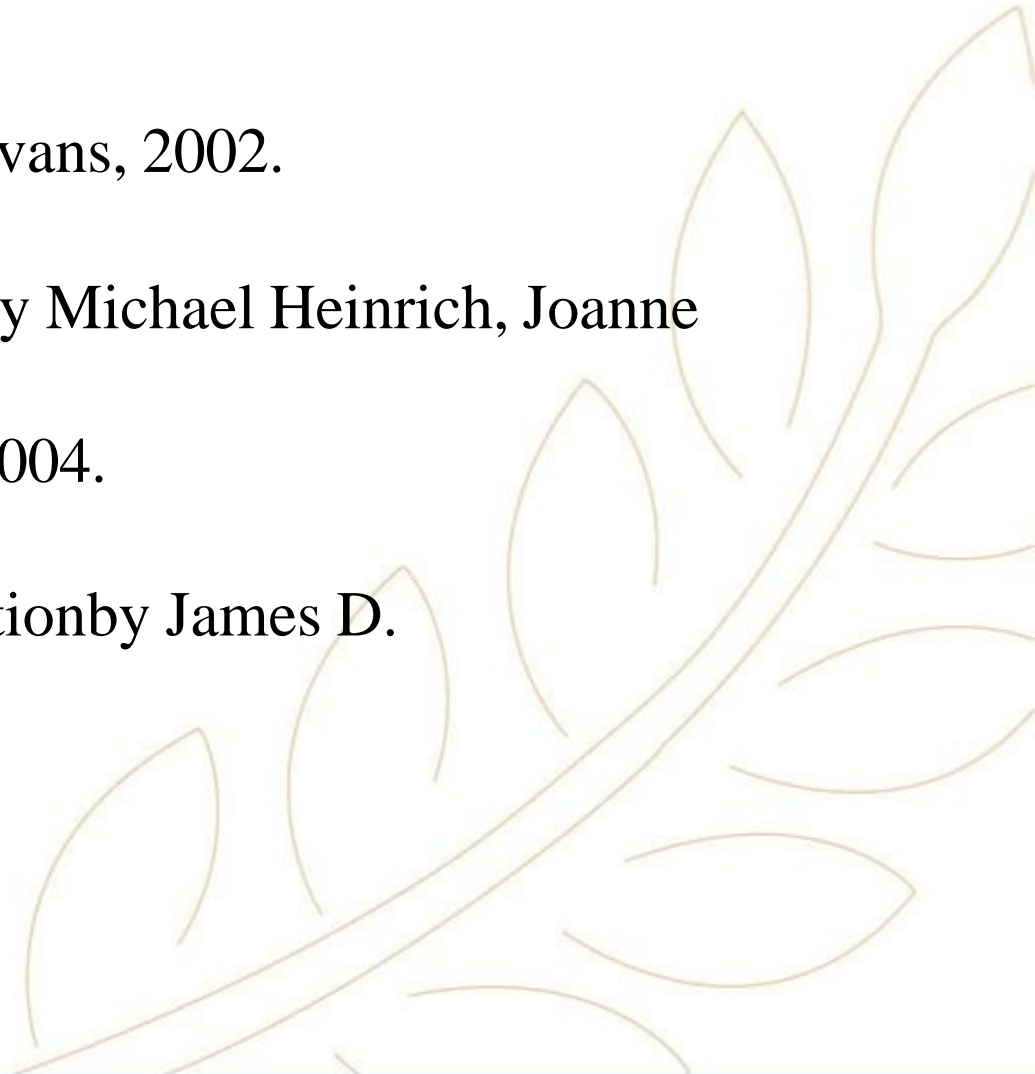


Keep your work place and tools clean.

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.



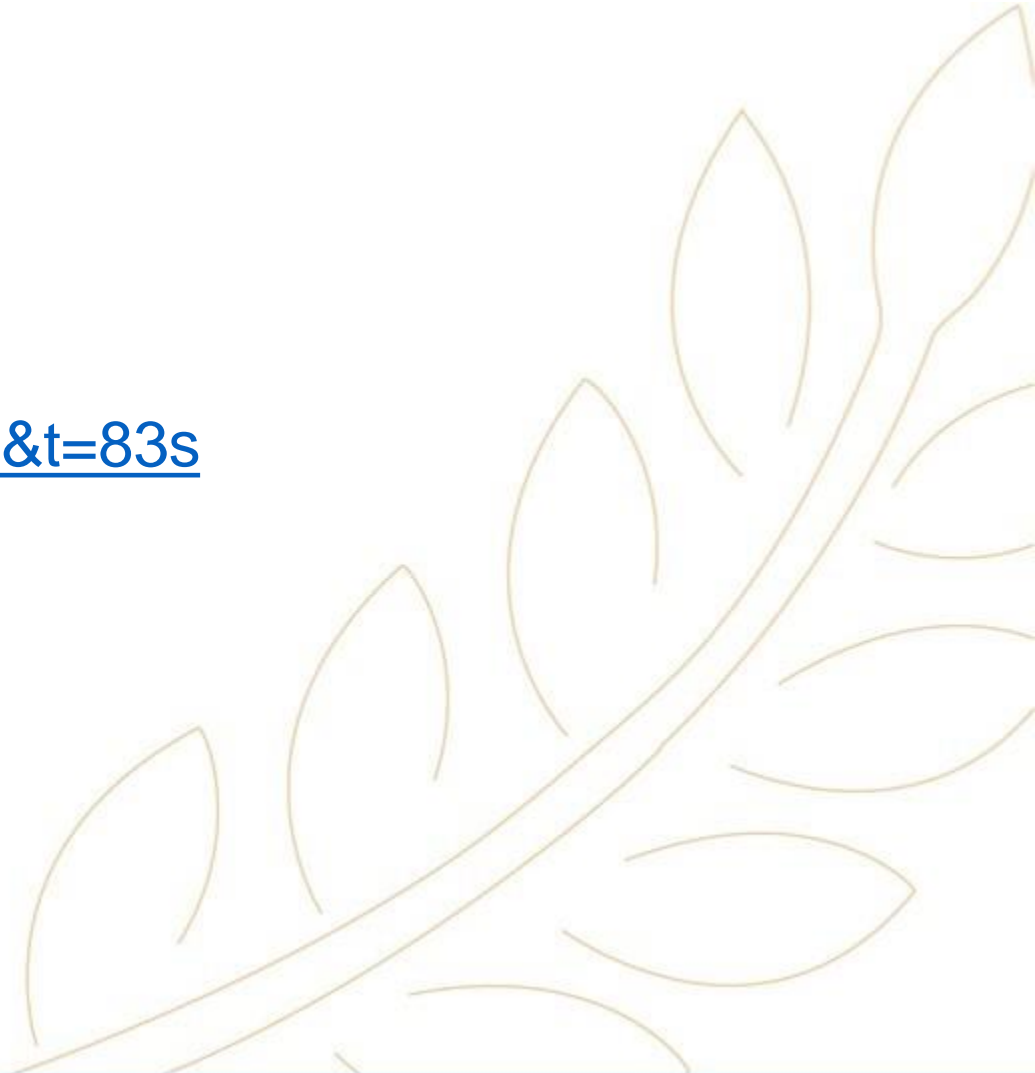
Useful links:

<https://www.youtube.com/watch?v=CWnhgUurAc0>

<https://www.youtube.com/shorts/tLLgwnYfTpA>

<https://www.youtube.com/watch?v=ONM5qLzA4s8&t=83s>

<https://www.youtube.com/shorts/p4761AODdoo>



THANK YOU!