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Discussion of Midterm exam model answer



HERBS (HERBA)

V

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

- Herb; definition, function, morphological and histological features.
- Examples of medicinal herbs:

Herbs containing alkaloids e.g. lobelia & ergot.

Herb containing resin e.g. cannabis.

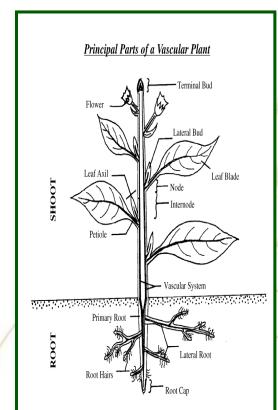
HERBS (HERBA)

What is Herb?

In Pharmacognosy

Herb is a drug composed usually of the tender parts of the plant axis.

(the stem + leaves +flowers + fruits).





- 1- Flowering tops (young stem, leaf, flower, fruit)
- 2- Aerial parts (old stem, young stem, leaf, flower and fruit)
- 3- Whole plant (aerial parts plus root)

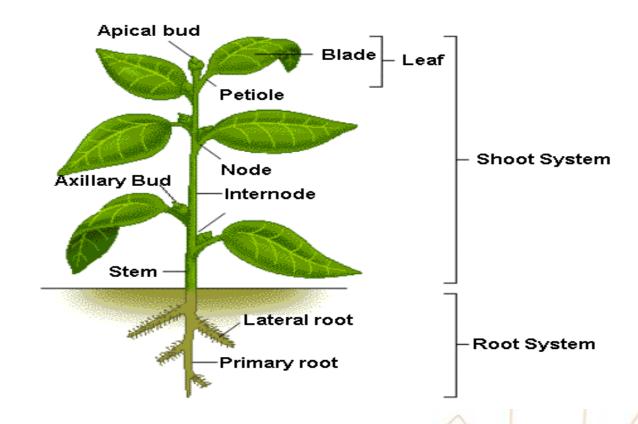
Herbs are classified according to life duration into

Annual
Herbs live one season and dies.

Perennial
Plants live
more than two
years

Biennial
Herbs live two
seasons and dies.

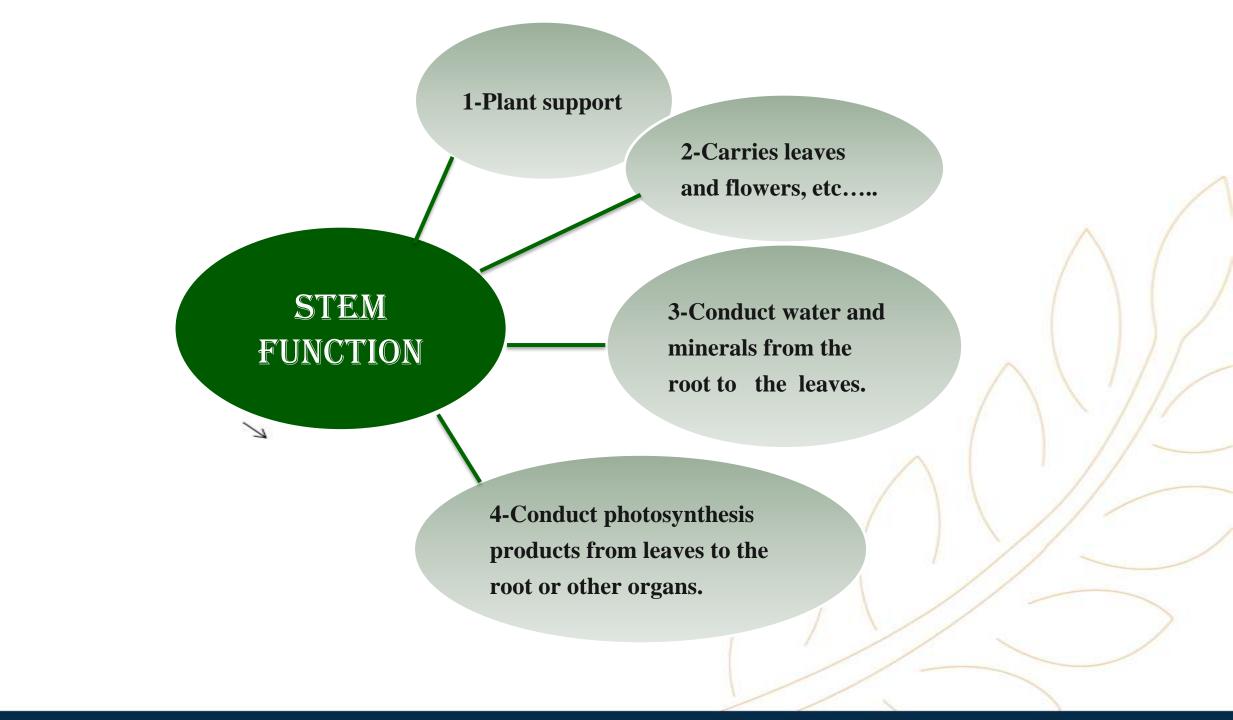




Definition

Stem: - It is a part of the plant which carries the leaves and other plant organs.

- It has nodes and internodes.





Epidermis: with cuticle, stomata and hairs

Endodermis:
inner most
layer of
cortex.

Pericycle: parenchyma, collenchyma, fibers, sclereids.

Pith: parenchyma; pitted lignified

Cortex:

Parenchyma,

Collenchyma

Cambium: Responsible for 2ry thickening giving 2ry phloem outside and 2ry xylem inside.

Phloem

Xylem: Vessels (Spiral,

annular, pitted.

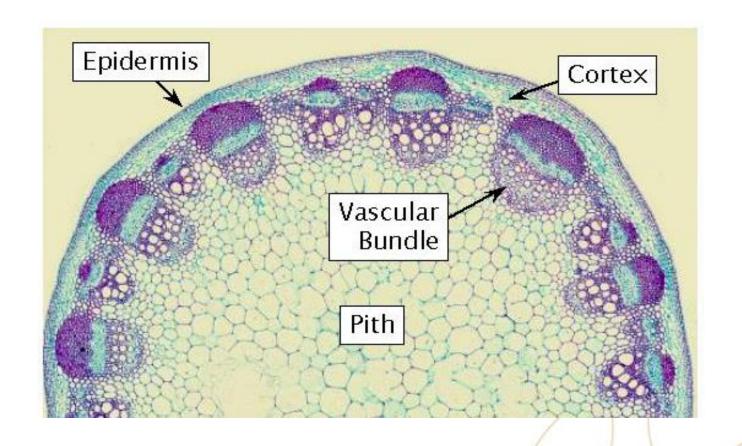
Fibers and wood

parenchyma)

N.B.

Stele: All tissues inside the endoderm.

T. S. in Young (herbaceous) stem of Dicotyledons:



[Vascular bundle is Open V.B.]

LOBELIA HERB

(Indian tobacco)
Asthma weed, Duchan Hindi

Origin: Is the dried aerial parts of *Lobelia inflata* F. Campanulaceae.

It is used by North American Indians as domestic medicine as a cigarette for asthma.



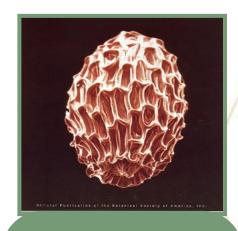
Macroscopical characters:



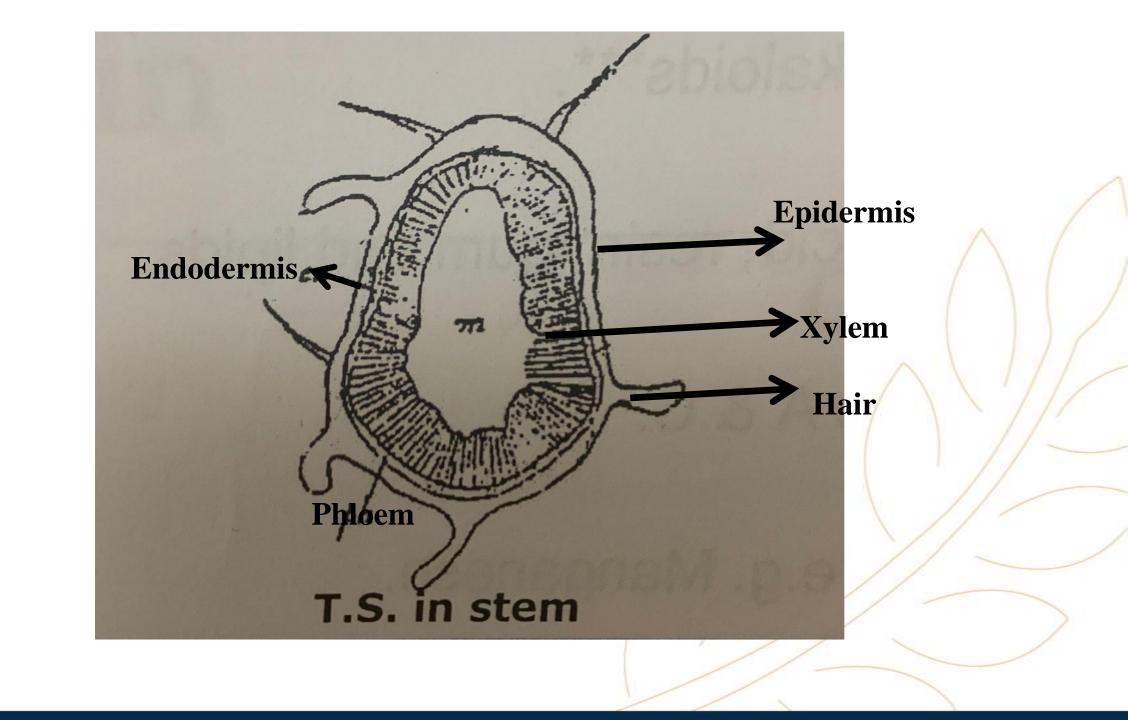
Flowers: Pale blue flowers



Fruits: Capsule containing about 500 small seeds.



Seeds: 0.5 mm long and 0.3 mm wide, reddishbrown with reticulate surface.



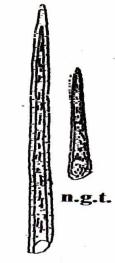
Powder:

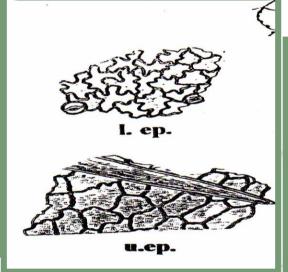
1- Non glandular hairs (conical, unicellular with lignified inner walls).

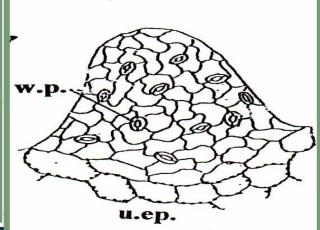
2- Fragments of leaves showing beaded papillosed epidermal cells, anomocytic stomata and hairs.

5- Fragments of upper epidermis of leaves showing water pores.



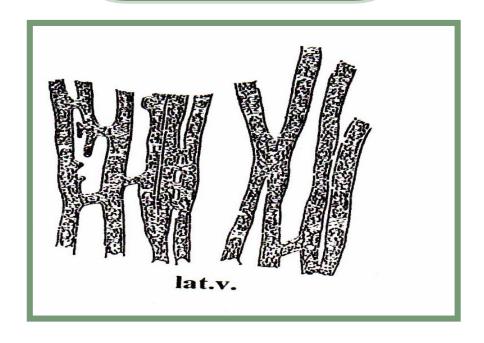




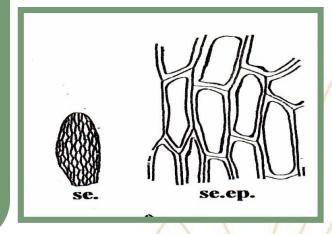


Powder:

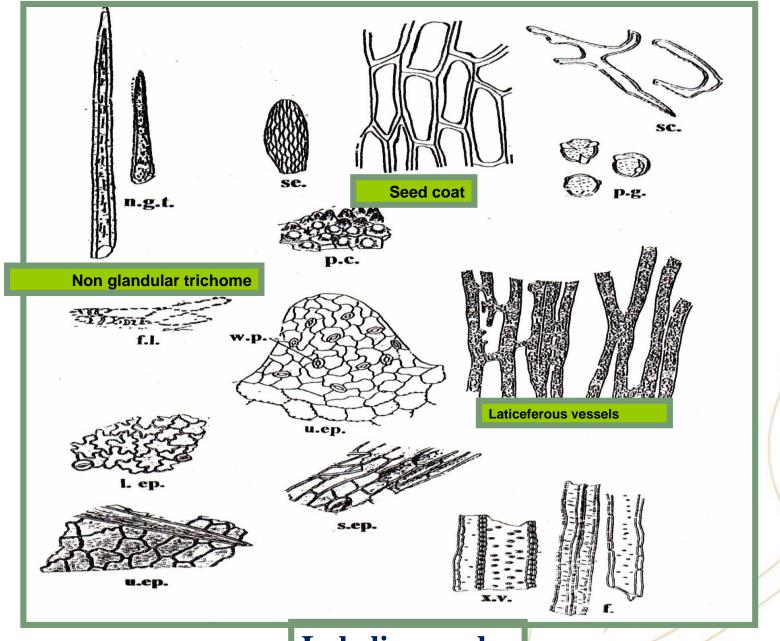
4-Laticiferous vessels



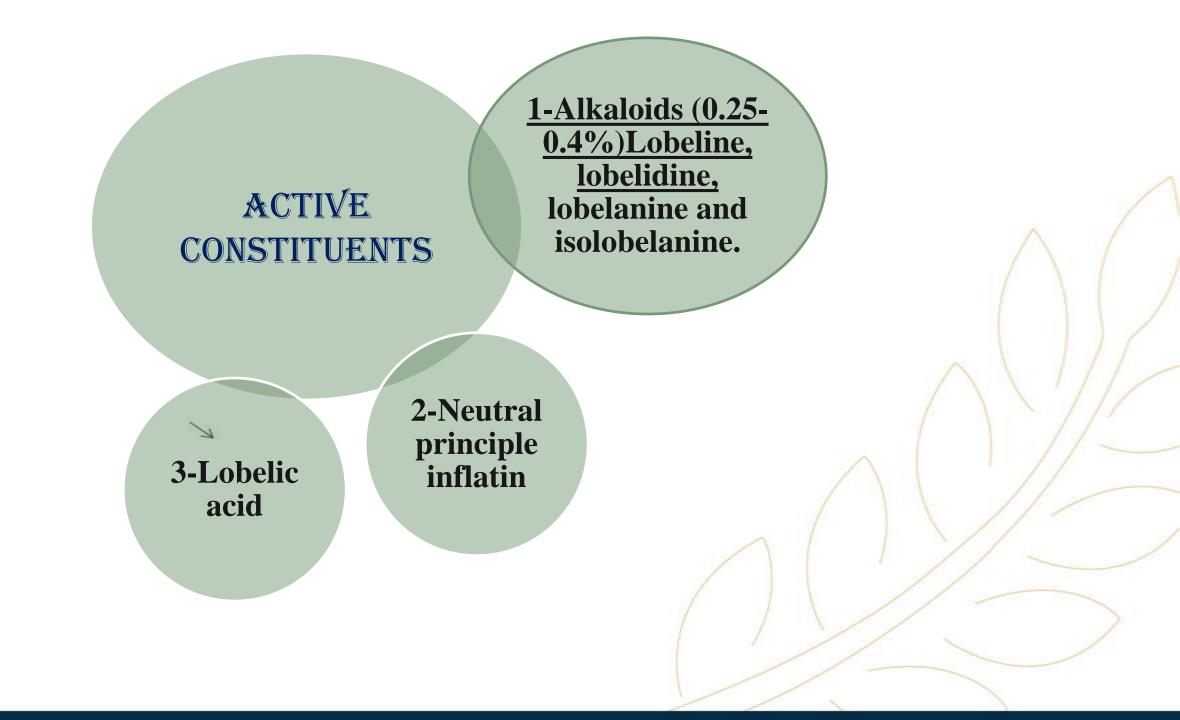
3- Fragments of seed coat showing the characteristic thick-walled, lignified cells.







Lobelia powder



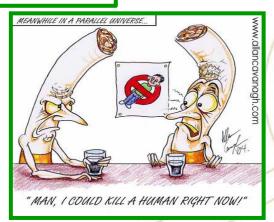
USES:

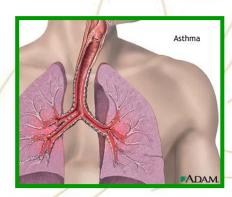
1-Expectorant

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



- 3-Inbronchitis& bronchial asthma as it dilates the bronchioles.
- 4-Breaking of smooking habbit





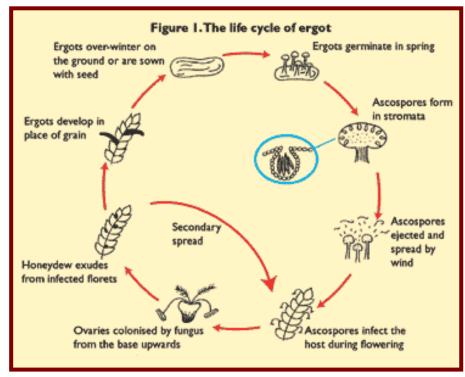
ERGOT

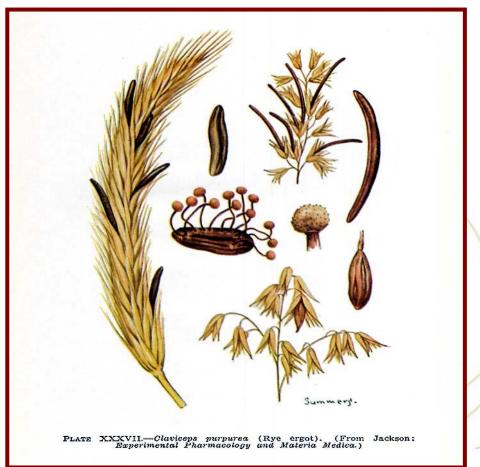
Ergot of Rye

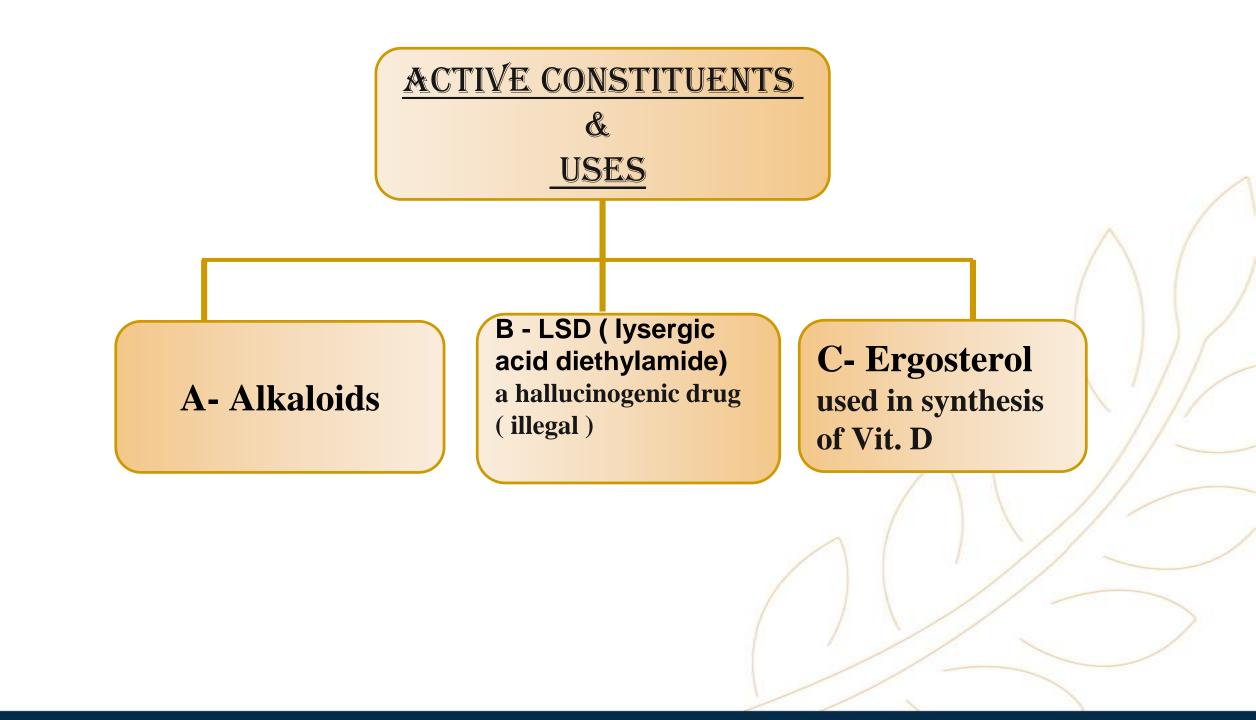
Ergot is the Sclerotium of Claviceps purpurea

Family Hypocreaceae, developed in the ovary

of rye plant, Secale cereale family Graminae.







A- Alkaloids

1- Ergometrine alkaloid: -It stimulates the uterus \rightarrow initiate delivery (labor) - It reduces postpartum haemorrhage

2- Ergotamine alkaloid: -Used for the treatment of migraine. - Used in combination with caffeine to treat headache

3- Ergotoxine alkaloid: It has antihypertensive action



Pharmaceutical Preparations Containing Ergot Alkaloids









CHEMICAL TESTS

1- Test for Chitin

2-Test for colouring substance

3- Test for ergotoxin (Van Urk)



Digest the sclerotium with NaOH to give chitosan, acetic acid and ammonia.

Chitosan + Iodine + H₂SO₄ gives violet colour.

Shake the ergot with ether &5 drops of H2SO4, add NaHCO3and shake well where a reddish violet colour is given in the aqueous layer (used to detect ergot in flour).

Shake the ergot with Na₂CO₃ and CHCl₃. Separate the chloroform layer and shake it with PDMAB and FeCl₃ in H₂SO₄ where a blue colour is developed in the acid layer.

CANNABIS HERB

(Indian Hemp, Hashish, Marihuana)

Origin: Is the dried pistillate plants
(leaves and flowering tops) of

Cannabis sativa Family Cannabinaceae.

- The plant is cultivated in tropical countries for resin production.
- In temperate region it produces less or no resin but more fibers.







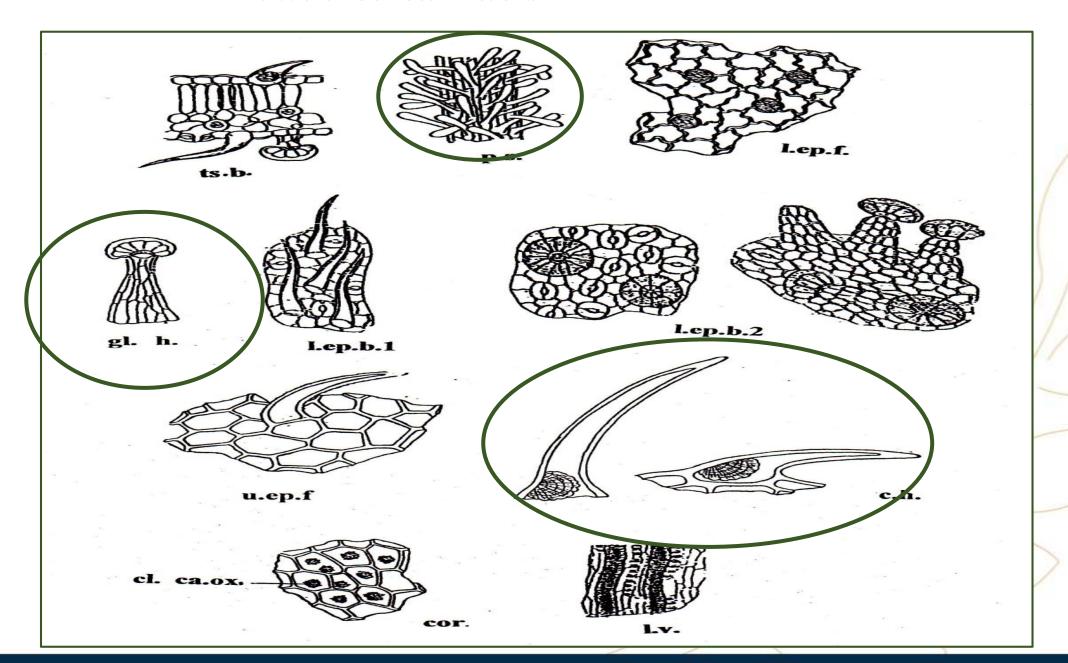
Powdered cannabis

- Colour: dark green
- Odour: narcotic characteristic
- Taste: No taste.

Microscopical characters of the powder:

- 1-Glandular trichomes showing globular multicellular head of 8-16 radiating clubshaped cells and a long multicellular pluriseriate stalk.
- 2- leaf tissue with cluster crystal of Ca Ox.
- 2- Curved hairs with or without cystolith of CaCO₃.
- 3- Glandular trichomes with labiaceous glandular head and short unicellular stalk.
- 4- Papillosed stigma.
- 5- Laticiferous vessels and pericyclic fibers.

Powdered cannabis



1-Resin materials, tetrahydro cannabinol and cannabinoids e.g. cannabinol & cannabinal

2-Nitrogen bases e.g. choline, trigonelline

ACTIVE CONSTITUENTS

3-Volatile oil, oxidase enzyme

4-Sterols

Cerebral stimulant, it produces mental excitement, delirium with hallucination followed by sleep interrupted by bad dreams &marked weakness & mental depression, high sensitivity to sound and less to time & space.

Anti anxiety& sedative in mania &hysteria

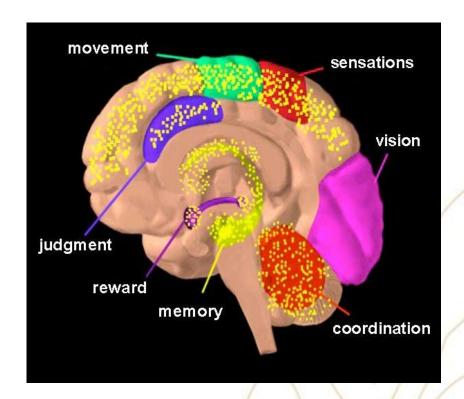
USES & ACTIONS

Analgesic

THC is a potent antiemetic used in cancer patients

Side Effects

☐ Short term side effects may include a decrease in short-term memory, dry mouth, impaired motor skills, red eyes, and feelings of paranoia or anxiety



Long term side effects may include <u>addiction</u>, <u>decreased</u> <u>mental ability</u> in those who started as teenagers, and behavioral problems in children whose mothers used cannabis during pregnancy.

CHEMICAL TESTS

1- Powder+
HCl produces
eff. due to
Calcium
carbonate in
cystolith.



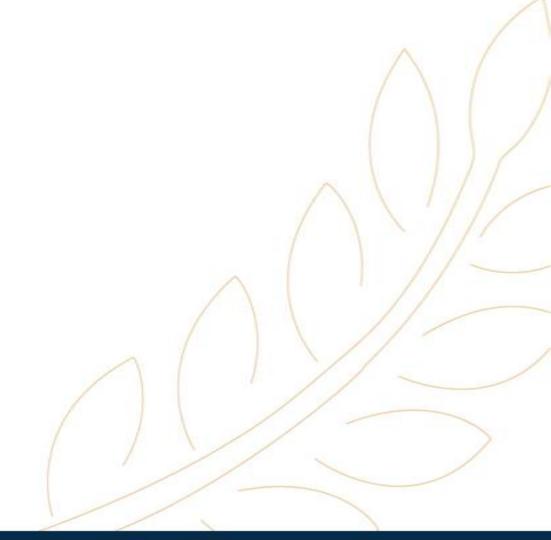
2- Beam's test:
Cannabis shaked
with light petrol
and alc. KOH and
amyl alcohol give
violet pink colour.

3- Fast blue test:
(di-O-anisidine
tetrazolium
chloride)
Biological samples +
Fast Blue reagent

Different sequences of colours with different cannabinoids

Homework Extra reading

What is ergotism?





Thank You!

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