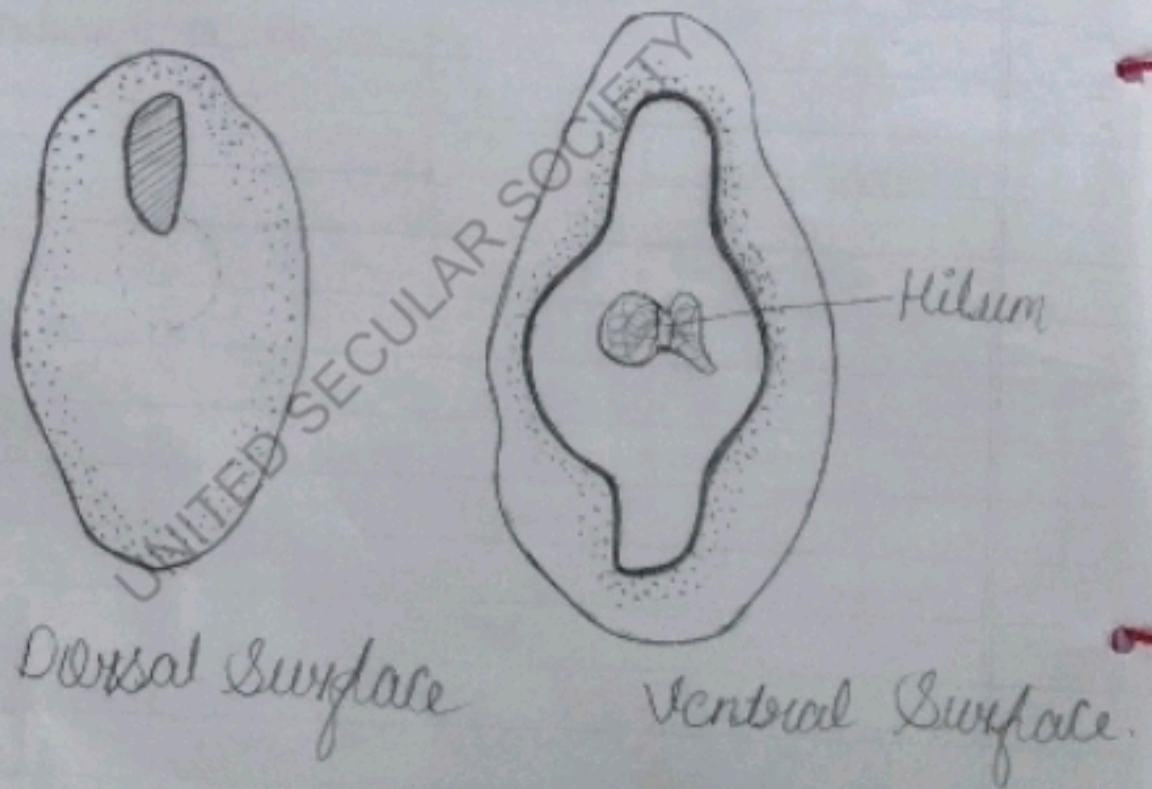




Experiment NO- 01

Object - To study the morphology of the ispaghula

Reference - Kopate C.K. "Practical Pharmacognosy" 4th edition Varad Prakashan Page No 4.164

Requirements - Dried Seeds of Ispaghula

Synonyms - Ispaghula, Isapgol, Isbgul, Indian Psyllium

Biological source - Dried seeds of plantago ovata farsp.

Family - Plantaginaceae

Morphological characteristics

Colour - pinkish - grey to brown

Odour - None

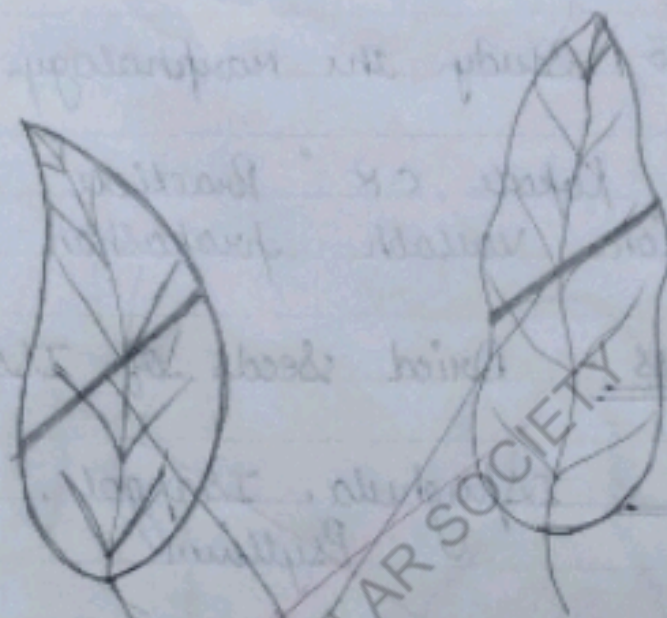
Taste - Mucilaginous

Size - 10 to 35 x 7 to 2 mm

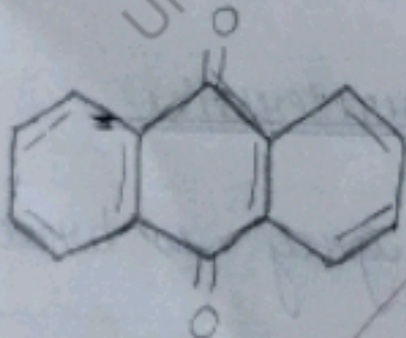
Shape - Cymbiform (coit shaped)

Experiment No. 01

Object - To study the morphology of the epidermis



Transverse line



Anthraquinone

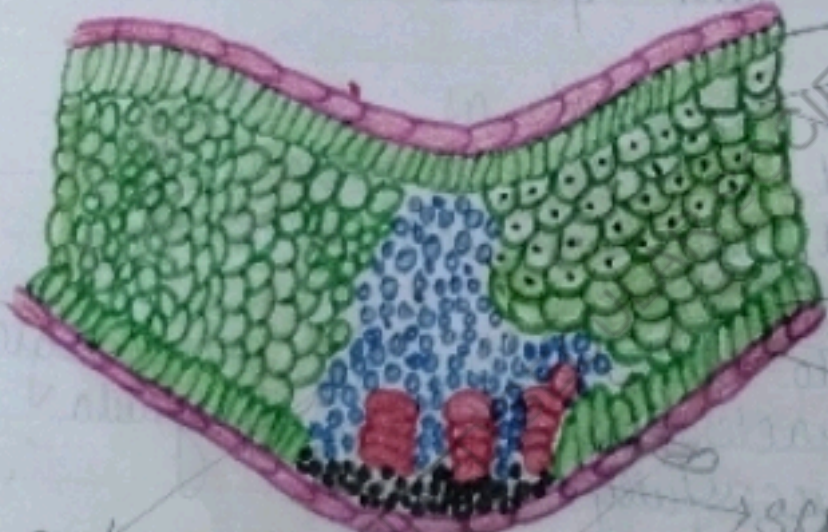
Chemical constituents

- Epidermal cell of isabgol contain mucilage mainly
Isabgol seeds constitute about 25-27% of
this is fully mucilage seeds also contains
fixed oils and proteins

- Uses -
1. it is used as laxative
 2. it is used as demulcent
 3. it is used as emollient

Report: To the study of morphological characteristics of the ispaghula was successfully.

Dehul
23/11/22



upper epidermis

Upper folioside

Spongy here

slowly

Passade

lower epiderm

enchymatous
sheath

Phloem

Xylem

Good

Experiment No-02

Aim - To study the morphology and microscopy of Indian Senna.

Reference:- Kokate C.K. "The textbook of pharmacognosy" published by Nirali Mittal Prakashan 5th edition 2016. Pg no 9.24-29.28

Synonyms - Cassia Senna

Biological Source - it consist of dried leaflets of *Cassia angustifolia*.

Family - Leguminosae.

Morphology:-

Colour - yellowish green
 Odour - Slightly characteristics
 Taste - Bitter
 Size - length 25-60 mm width 7-8 mm
 Shape - leaves are lanceolate

Chemical Constituent:- Anthraquinone Glycoside
 ↳ Sennosides A

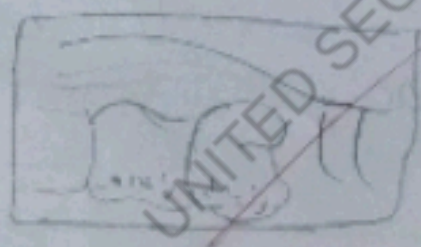


Epithelial tissue X3

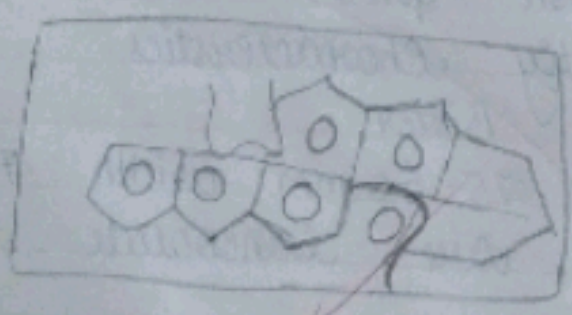
Paracytic Stomata



Covering - waxy
 Trichome



Mucilage
 epidermal cells



Calcium oxalate
 crystals

- Sennosides B.
- Sennosides C.
- Sennosides D.

Resins, Salicylic acid and Calcium malate
Crystals

Chemical test :- (Borntrager's test) :-

In this test drug boiled with the dilute Sulphuric acid, filtered and to the filtrate benzene or ether or chloroform is added and shaken well. The organic layer is separated to which ammonia is added slowly. The ammoniac layer shows pink to red colour due to the presence of Anthraquinone Glycoside.

Uses :- used as Laxative
It is used for weight loss

Microscopic Study of Indian Senna

Senna leaflet has fasciculated structure. In transverse section of lamina and midrib shows the following features

Lamina - upper & lower epidermis show similar

features they consist of a single layer of polygonal cell. the cell are covered with thick cuticular epidermis consist trichomes. Stomata are seen at regular interval upper palisade & lower palisade differentiated by the mesophyll.

microb:- Epidermal layer are continuous over the microb. but the cell of lower epidermis are small.

Result:- morphology & microscopy of the given drug was studied successfully.

UNITED SEC
Kibhuil
25/11/22

Experiment No - 3

Aim - To Study the morphology of Cardamom

Reference - K.R. Khandekar "practical pharmacognosy" 4th edition
Page no - 141 - 143

Synonyms - Alphonse, Tlauschi

Biological Source - it consist of dried nearly ripe fruit of *Alphonse cardamomum* var. *minuscule*

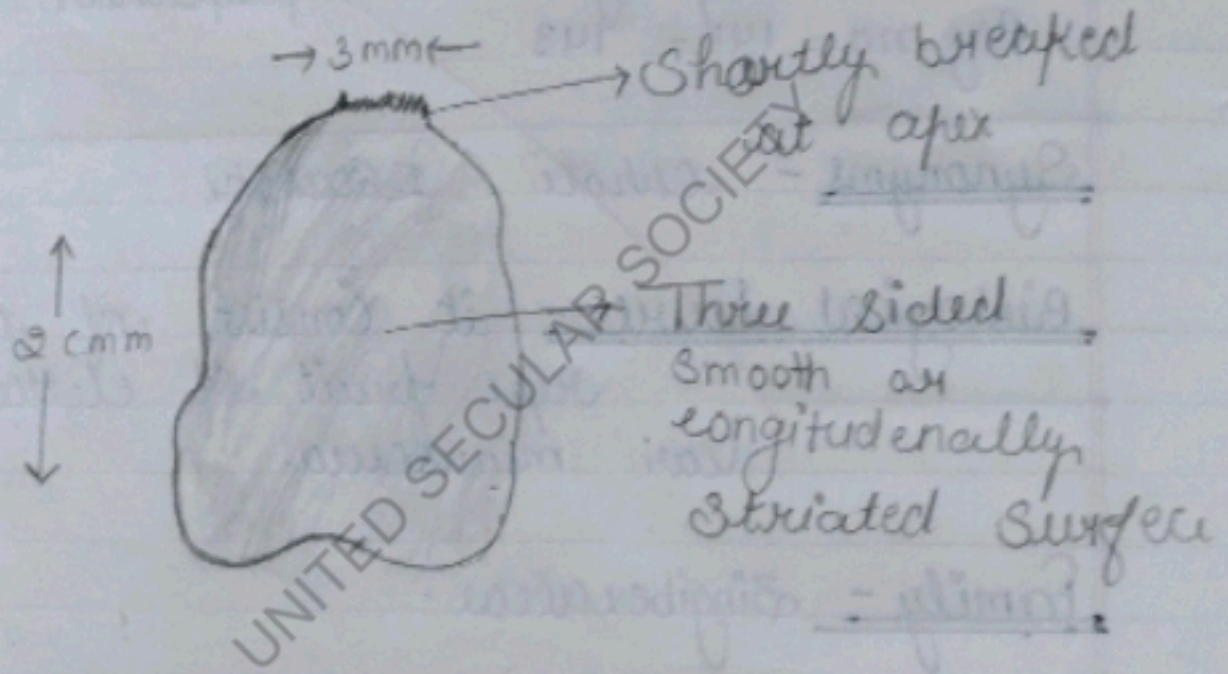
Family - Zingiberaceae

Morphological characteristics -

- Colours - Pericarp: Green to pale buff
- Odour - aromatic agreeable and pleasant
- Taste - Strongly aromatic
- Shape - oval elongated
- Size - capsules are 2cm in length, 0.8 to 1.0cm in width

Other Surface - fruits contain three chambers. each consists of two rows of seeds, seeds are enclosed in

Experiment No. 3



C. Holcomi

membranous wall, each chamber contains six to ten seeds in two rows

Chemical constituents -

Volatile oil - cineol, limonene, borneol, l-terpineol, starch, fixed oil, silica.

- Uses -
1. It is used as expectorant agent
 2. It is used as aromatic and flavouring agent
 3. It is used as stimulant

UNITED SECULAR SOCIETY
Rishu
23/11/22

Experiment No - 4

Aim:- To study the morphology and microscopy character of Ginger

Reference:- Kokate C.K. text book of Pharmacognosy published by Nirali Prakashan 4th edition Pg. no. 14-128 - 14-131

Synonyms:- Adarak, Zingiber.

Biological Source:- it consist of the fresh and dried rhizome of Zingiber officinal

Family:- Zingiberaceae

Morphology:-

- Colour - Buff
- Taste - Pungent
- Odour - Aromatic
- Size - Rhizome are about 15 cm long and 1.5 - 6.5 cm

Chemical constituent:- It consist of volatile oil

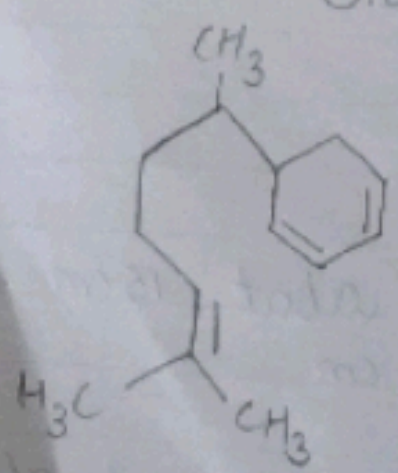
Experiment No. 1

Scarlett
by branch



UNITED SECULAR SOCIETY
Ginger

Inter mode



Zingiberin

Starch, fat, fibers, inorganic Melsial residual moisture

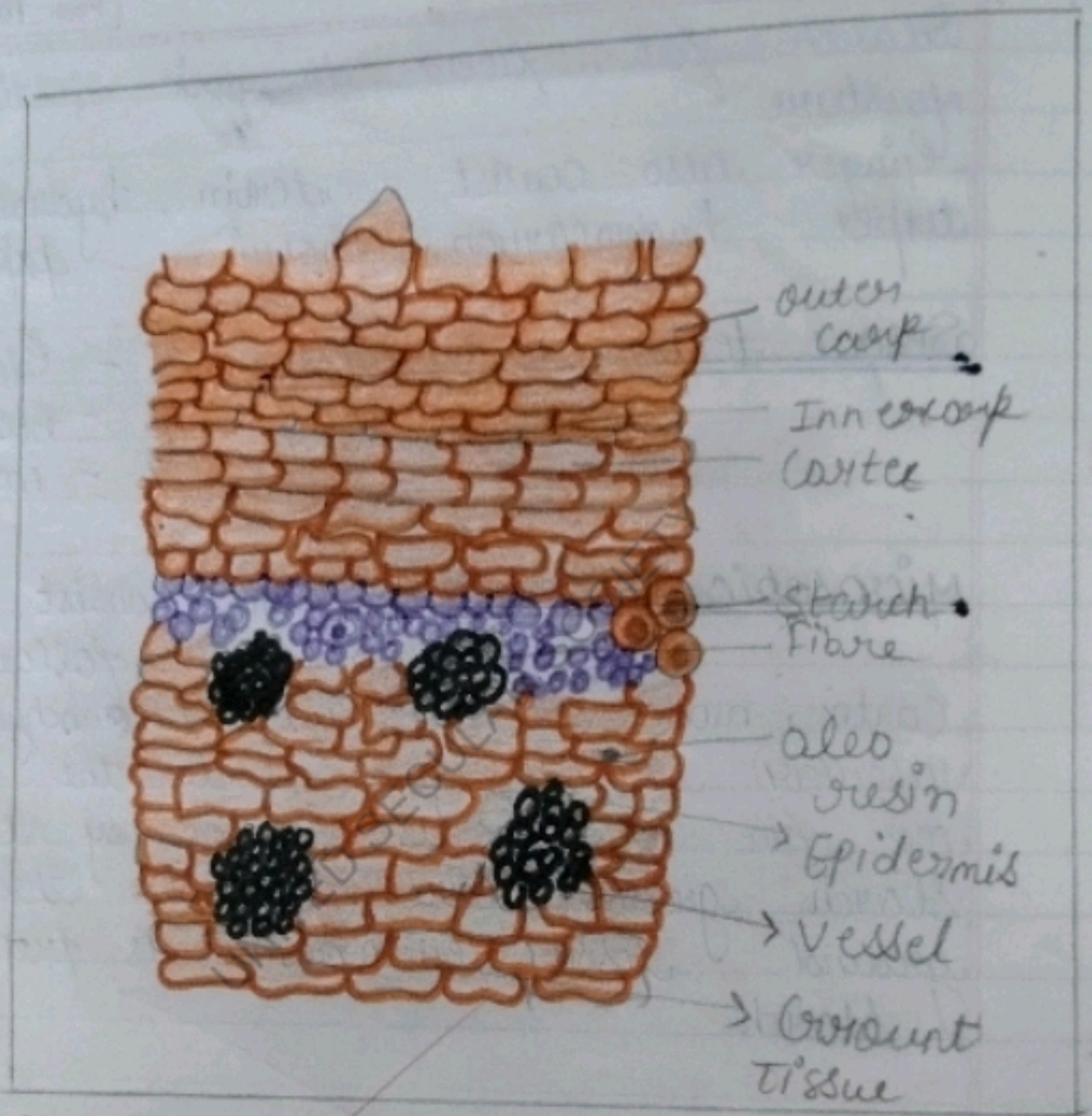
Ginger also consist monoterpin, hydrocarbon Sesque
terpene hydrocarbon, Phenyl pyranoids

Sesque terpene hydrocarbon -
 α - Eingeloxone
 β - Bisabolene
 γ - Farnesone

Microscopic character:- Cork consist irregular
 arranged cells followed by
 Cortex, made of thin walled parenchymatous tissue
 vascular bundle just inside the endodermic
 are free of fibrous oil. mesophyll cell and
 starch grain are found through out
 ground tissue. Endodermic is free of
 starch

Uses:-

- It is used as aromatic
- Used as carminative
- Ginger oil also used as a mouth wash
- Used as a stimulant
- Ginger powder is effective in motion
sickness.



four

T.S of Cuscuta sinensis

Result :- The morphology and microscopy of given crude drug was performed successfully.

Dibhil
23/11/22

UNITED SECULAR SOCIETY

Experiment No - 5

Object - To study the morphological characteristics of "Nutmeg"

Reference - "Kapale" C.K. The text book of pharmacognosy published by Nirale prakashan 4th edition 298 pages = 4.109.

Synonyms:- Myristica, Nixmunda

Biological Source:- Dried pericarp of seeds of myristica fragrans Honet:

Family:- Myristicaceae

Morphological characteristics

<u>Colour</u>	The kernels are greenish brown
<u>Odour</u>	Strongly aromatic
<u>Taste</u>	Pungent and aromatic
<u>Shape</u>	Ellipsoidal
<u>Size</u>	20 to 30x20 mm

Extra Features:- kernels are irregularly wrinkled and covered with orillous

Experiment No - 2

Objective - To study the morphological characters of "Moringa".

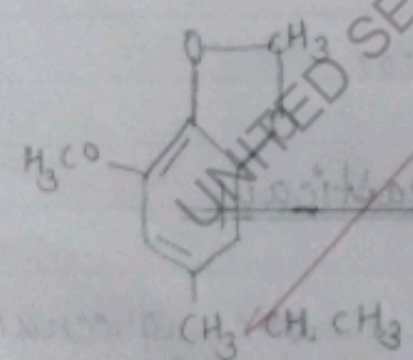
Reference - "Text book of Botany" published by Nishit



Seed

Abellus

mace



Moringa

Properties - The leaves are green and tender. The fruit is green and elongated. The seed is oval and contains a large amount of oil. The root is white and contains a large amount of calcium. The bark is brown and contains a large amount of tannin. The leaves are used as a vegetable. The fruit is used as a fruit. The seed is used as a source of oil. The root is used as a source of calcium. The bark is used as a source of tannin.

Chemical Constituents

→ Nutmeg kernels contain 7.13% of volatile oil, fat about 25-30% and starch.

→ Volatile oil is the chief active constituents of the drug containing myristicin in the chief constituents and responsible for flavour.

Uses:- It is used as carminative and flavouring agent.

Report To study the morphological characteristics of given crude drug study was successfully.

Dibakar
23/11/22

Experiment No. - 6

Object:- To study the morphological characteristics of "Black pepper"

Reference "Lokate et al" the text book of pharmacognosy published by nirala prakashan 4th edition 2018 page NO-4-80

Requirements:-

Drug:- Dried fruits of Black pepper

Biological Sources:- Dried unripe fruits of "*Piper nigrum*."

Synonyms pepper, *piper nigrum*, maricha

Family *Piperaceae*.

Morphological characteristics:-

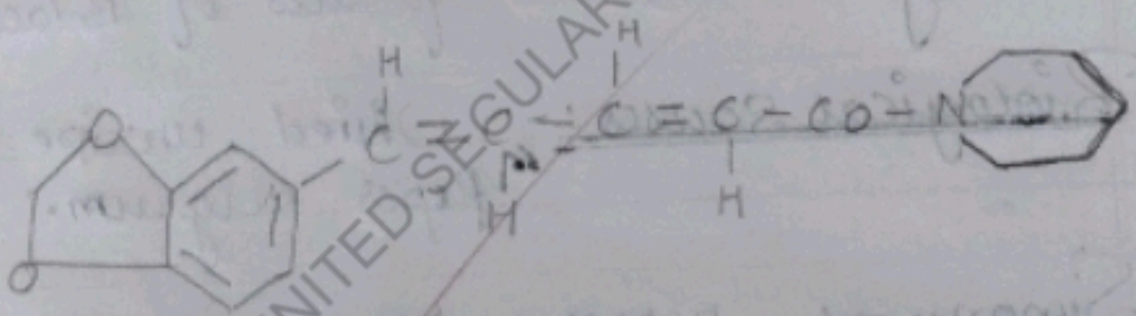
<u>Colour</u>	Blackish brown to greyish brown
<u>Odour</u>	Aromatic
<u>Taste</u>	Pungent and spicy
<u>Size</u>	Berries are 3-5 mm in diameter
<u>Shape</u>	Oval

Experiment No - 6

Object:- To study the morphological characters of "Black pepper".



Reference



Piperine

Morphological Characteristics:

Color	Blackish brown to greyish brown
Odour	Aromatic
Taste	Pungent and spicy
Size	Grains are 1-2 mm in diameter
Shape	Globular

Extra features Globules and reticulately wrinkled with stigma at apex.

The pericarp is thin with single layer. Endocarp is white and hollow at the centre.

Chemical Constituents Pepper contains 1 to 25% of Volatile Oils, pungent resins 6.0% and Alkaloid piperine 8.10%.

Uses:- 1) It is used as the carminative
2) It is used as the aromatic
3) It is used as the stimulant and stomachic.

Report To study the morphological characteristics given crude drug was successfully

A. K. Chaudhary
23/11/22

Experiment No-7

Object To study the morphological characteristics of "CINNAMON"

Reference "Kokate C.K" text book of Pharmacognosy published by Nirali prakashan 4th edition Page No - 4.55.

Synonyms Ceylon Cinnamon, Kalmi, Dalchini

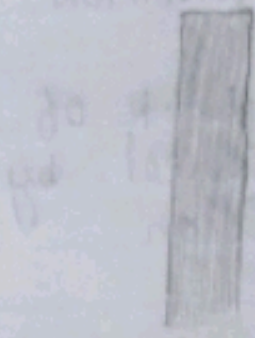
Biological Source Dried inner bark of shoots of coppiced trees of cinnamon zeylonicum

Family Lauraceae

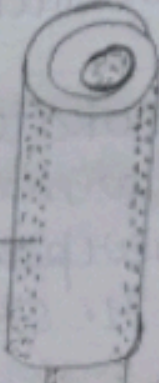
Morphological characteristics

Colour Dull yellowish brown externally
Dark yellowish internally
Odour Aromatic fragrant
Taste Sweet followed by warm sensation.

to study the morphological
characteristics of "CINAMON"

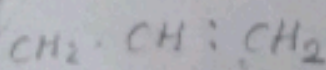
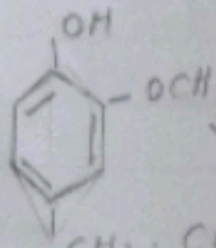


Outer
squill



middle squill

Inner squill



Engel

UNITED SECULAR SOCIETY

Shape Compound quills approximately 0-3 mm in thickness

Size 1 metre in length and 0.1cm in diameter thickness of the bark is approximately 0.5 mm

Extra features

Fracture splintery

→ The outer surface of the bark is marked by many longitudinal striations with small holes of score left by the branches.

→ The inner surface also shows longitudinal striations. Bark is free of cost.

Chemical Constituents

→ Cinnamon bark contains 0.5 to 0.1% Volatile oil, 1.2% tannin, Volatile oil contains Cinnamaldehyde, eugenol, benzaldehyde, cuminaldehyde.

→ It also contains mucilage, Calcium Oxalate, starch and sweet substance as mannitol.

Used:- 1.) It is used as stomachic
2.) It is used as laxative
and stimulant
3.) It is used as mild astringent
and antiseptic

Report To study the morphological
characteristics of Cinnamon
"was done."

Signature
23/11/21

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Experiment no - 8

Object To the study morphological characteristics of "Clove"

Reference "Kopate C.K" the text book of Pharmacognosy published by nirali Prakashan 4th edition 2018 Page No - 472.

Synonyms:- Clove buds, Caryophyllum

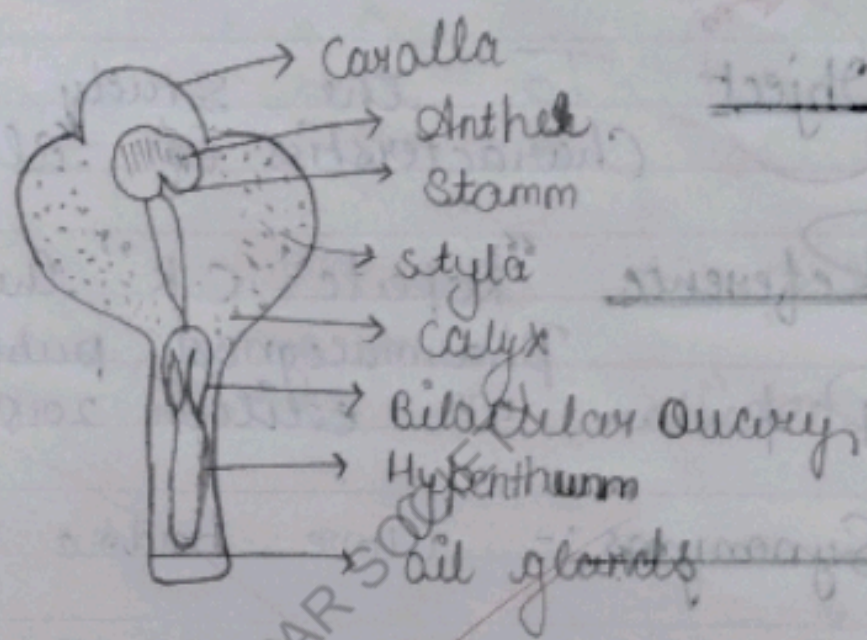
Biological sources Dried flower buds of engender Caryophyllus

Family myrtaceae

Morphological characteristics:

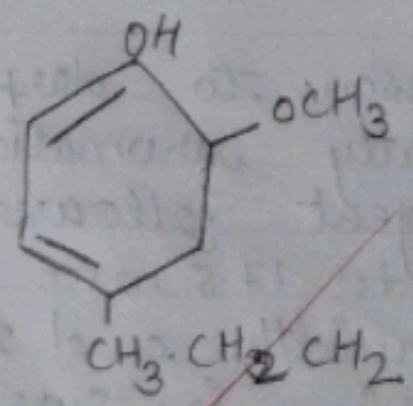
<u>Colour</u>	Crimson to deep brown
<u>Odour</u>	Slightly aromatic
<u>Taste</u>	Pungent followed by numbness
<u>Shapes</u>	10 to 17.5 mm in length 4mm in width and 2mm thick
<u>Size</u>	Hypanthium is surrounded with 4 thick divergent sepals and done
<u>Shoepel</u>	Carocla containing membranous

8 - 21 January



Clave

Structure



Eugenol.

petals, several stamens and single stiff prominent style

Extra features:- Cloves are heavier than water

Chemical constituents

Cloves contains about 15 to 20% of volatile oil. which contains eugenol (70 to 90%), eugenol acetate caryophyllenes

- Uses
- 1) It is used as Dental analgesics
 - 2) it is used as stimulant and antiseptic
 - 3) it is used as Carminative and aromatic.

Report To the study the morphological characteristics of clove buds was successfully.

Rishu
30/11/21

Experiment No - 9

Object - To study the morphological characteristics of Ephedra

Reference - Khandelwal K.B. "Practical Pharmacognosy" Nimali prakashan 22nd edition, April 2012

Page no - 19.4 - 19.6

→ Kerkate CK, Purohit A.P, Goshale K.B. "Pharmacognosy", Nimali prakashan, 36th edition, September 2006, Page No - 502 - 504

Biological Source It consists of dried young stem of

Family Ephedra Gerardiana
Gentaceal / Ephedraceal

Synonym Ma - Huang

Morphology:

Colour	Greenish - yellow
Odour	Agreeable & slightly aromatic
Taste	Restricting & bitter
Shape	Cylindrical
Size	12-33 cm length, 0.8-1.5 mm thickness
Surface	Rough

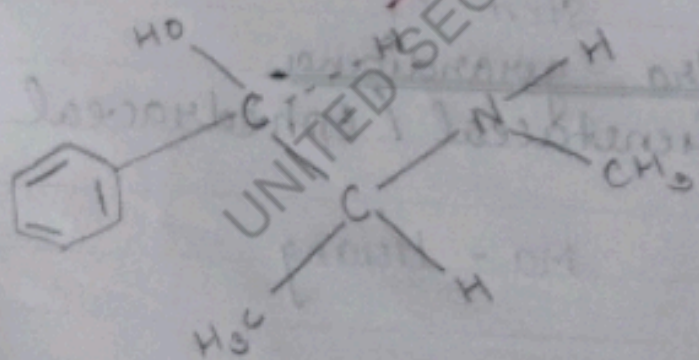
Experiment No. 8

Object

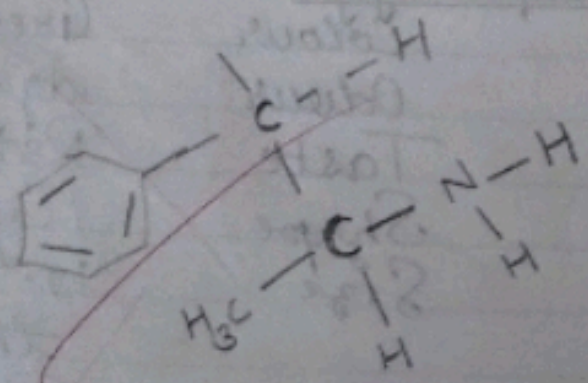


Node
 (3-6 cm) Internode

Ephedra



Ephedrine



Nor-Ephedrine

Chemical Constituents

→ Ephedra contains the amino alkaloids or alkaloidal amine like -

- Ephedrine (30-90%)
- Nor - ephedrine
- n-methyl ephedrine
- Pseudo - ephedrine, etc

Uses:-

It is used as

- Sympathomimetics
- bronchodilator in asthma
- treatment of allergic conditions like hay fever

Allied Drugs

E. Sinica
E. alata

Report

The morphological characteristics of ephedra was successfully studied.

A. K. Singh
30/11/21

Experiment No-10

Object

To study the morphological characteristics of Rauwolfia Root.

Reference: Khandelwal K.K., "Practical Pharmacognosy," Nirali Prakashan, 22nd edition, April 2012,

Page no - 18.1 - 18.8.

→ Kokate C.K., Purohit A.P., Gokhale S.B., "Pharmacognosy," Nirali Prakashan 36th edition, September 2006,

Page no - 466 - 468

Synonym: Sarpagandha

Biological Source: It consists of dried roots & rhizomes of Rauwolfia Serpentina

Family: Apocynaceae.

- It contains not less than 0.15% of reserpine group of alkaloids.

Morphological Characteristics:

Colour - wood - Pale yellow

Root Bark - Greyish yellow to brownish

Odour - Odourless

Taste - Bitter

Experiment No-10

1-8cm



Object

To study the longitudinal wrinkles

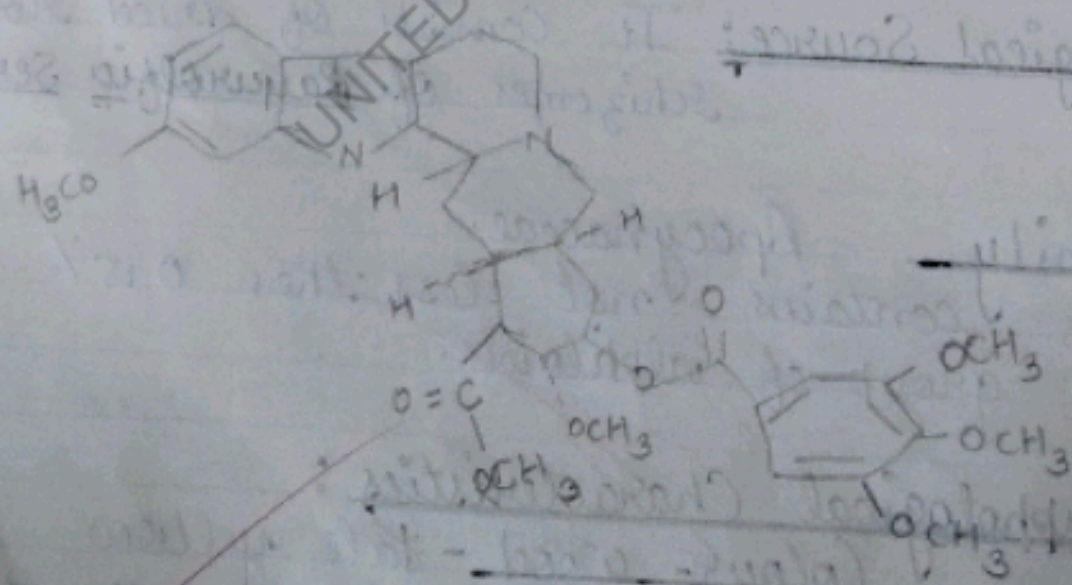
10-18cm

Rauwolfia

UNITED SECUR SOCIETY

Synonym

Biological Source



Reserpine

Source

Test

Size - About 10-18cm long & 1-3cm in diameter.
Shape - Sub-cylindrical, slightly tapering, tortuous.
Fracture - Short, irregular

Chemical constituents: It contains about 30 indole alkaloids.

- The important alkaloid of Rauwolfia is Reserpine.
- The other alkaloids present in the drug are
 - Rauwolfanine
 - Reserpinine
 - Serpentine
 - Serpentinine
- It also contains gk-resin, phytosterol, fatty acids, alcohol & sugars.

Uses: It is used as

- Antihypertensive &
- tranquillizing agent.

Report: The morphological characteristics of Rauwolfia Root was Successfully Studied

Size: 10-15 cm long & 1-2 cm in diameter.
 Shape: Sub-globose, slightly tapering, tapering.
 Fracture: Short, irregular.

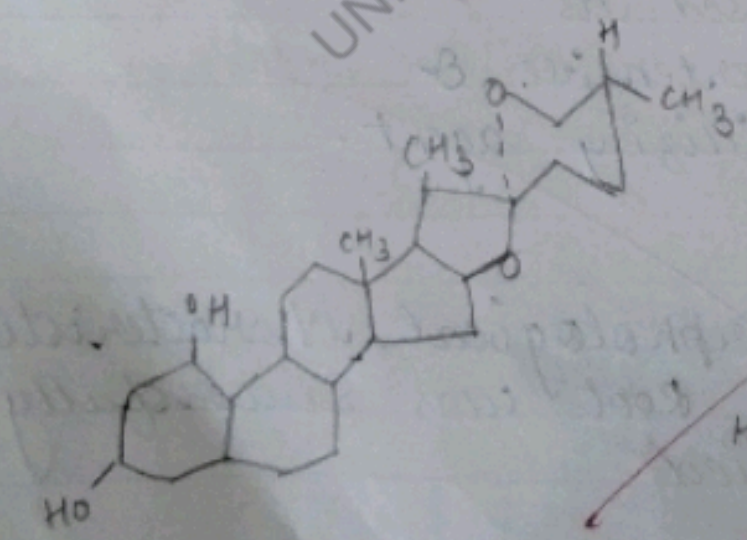
Chemical constituents: It contains about 80%
 iridoid glycosides.
 The important iridoid of knowledge is



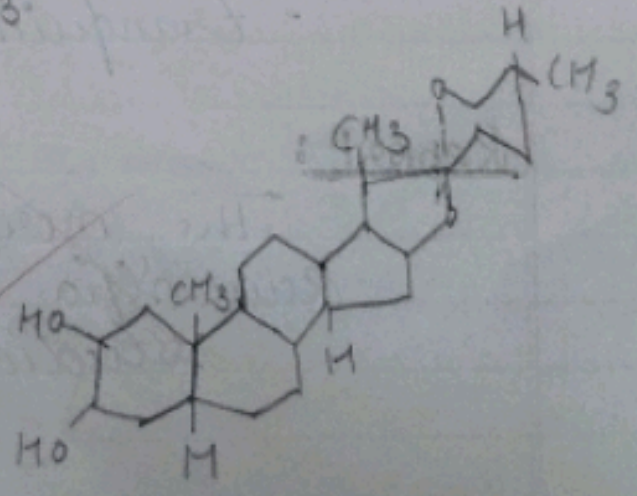
Chata

Grophen

UNITED SECULAR



Ruscogenin



Gutogenin

Experiment No - 11

AIM: To study the morphological characteristics of Goknera Cenola (Gourea)

Reference Qadri J.S., "Pharmacognosy", B.S. Shan Prakashan 14th edition Page no - 258

Biological Source: It consist of fruits of Tribulus terrestris
(Zygophyllaceae)

MORPHOLOGY:

Size 1-2 cm in diameter, 1-1.5 inch thickness
Shape globus with muriculate cocci.
Colour Yellowish brown
Odour Characteristic
Taste Mucilaginous

Chemical Constituents: Contain protodioscin, diosgenin, siterogenin, gitogenin, flavone glycoside, Rhamphol, Zithamnosides, alkaloid, fixed oil, potassium nitrate.

Uses:-

It is used as diuretic, coasing, demulgent, aphrodisiac, action.
It is used in the treatment of kidney stones, genourous gut.

Experiment No. 11

Aim:

Study the morphological characteristics of Punarnava (Punarnava)

Reference:

1. Pharmacopoeia of India, 1971, Edition 1971, Page No. 228



Morphology:

Size:

Shape:

Color:

Other:

Taste:

Chemical Constituents:

Punarnava

Excellent

it is used as important ingredient in
vaguevedic prepared as Balmusasishtha, Chyawanprash

Report:- Chota Gorneu is morphologically
studied & done

Abhil
20/11/21

UNITED SECULAR SOCIETY

Experiment No-12

Object

To study the morphology of Punarnava

Reference:

Biological Source :- drug consists of dried, native whole plant of *Boerhaavia diffusa*, *Boerhaavia*, *repens*, *B. Prostrata* (Nyctaginaceae)

MORPHOLOGY

Stern Prostrate, divaricately branched, slender, prostrate or ascending. Swollen at nodes, nearly glabrous, green

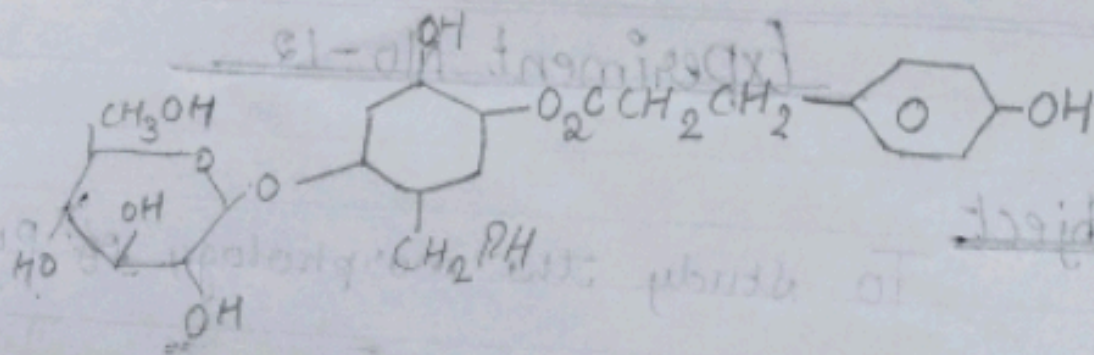
Size 0.6 - 0.9 m long

Leaves upper surface green & glabrous, simple or thick, opposite in unequal pairs at each node.

Size 2.5 - 3.8 cm, smaller, 1.3 - 2 cm

Colour green upper & silvery white beneath

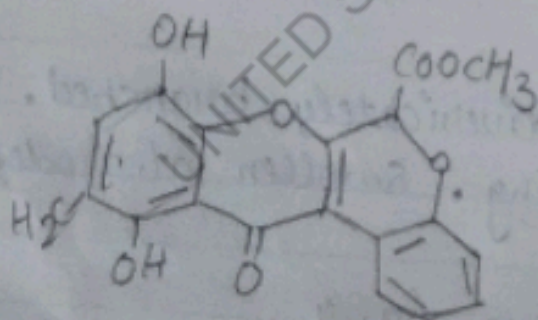
appearance broadly ovate, sub-orbicular, rounded at apex usually rounded, subcordate beneath



Object

Panamauoside

Reference



Boerhaavinone

Flower	Small, long wirily peduncled umbellate clusters
Colour	Pink
Odour	no distinct odour
Taste	slightly bitter

CHEMICAL CONSTITUENTS

It contains alkaloids like punarnavoside, punarnavoside, β -sitosterol, ursolic acid, fatty acid like stearic acid, arachidic acid. Flaninoids like Bceravinone, C-methyl flavones

Uses:-

1. It is used in the treatment of diuretic, expectorant.
2. It is also used in the treatment of jaundice
3. It is also used in anti-inflammatory & antibacterial
4. It is also used as antifungal
5. It is used as cardiac tonic

Report:-

The morphology of punarnava is studied.

Anshul
30/11/21



UNITED STATES SOCIETY
Lg: Cinchona Bark

EXPERIMENT NO - 13

Object ~~Identify~~ To study the morphological characteristics of cinchona bark.

Reference Khandelwal K.R Practical Pharmacognosy, Techniques and experiment nirali Prakashan 2nd edition Page no - 16.3

Biological source It consists of dried bark Part of *Cinchona succubae laffucinalis*

Family Rubiaceae

Morphological characteristics

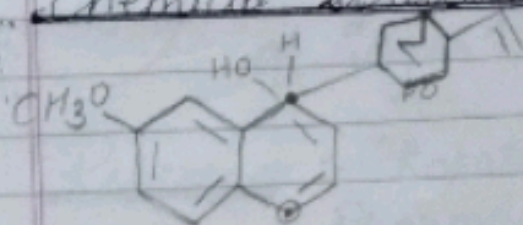
Shape	Cylindrical with well marked longitudinal wrinkles
Size	20-30mm diameter, 2-6mm thick
Colour	Raddish Brown
Taste	Bitter
Odour	Characteristics

Chemical Constituents:-

- Quinine
- Quinitine
- Cinchonine

Cinchonine

Chemical structure :-



$R = OCH_3$ (Quinine)

$R = H$ (Cinchonine)

Cinchonine

Uses Anti-malarial
 Analgesic
 Cardiac Depressant
 Atrial Fibrillation

Report

The morphological characteristics of the cinchona bark was successfully studied

~~Noted~~
30/11/21

EXPERIMENT NO - 14

Object:- To the study of morphological characteristics of "agar"

Reference:- "Kopale C.K" the text book of Pharmacognosy published by Nirala prakashan 4th edition 2018 Page no 5-24

Synonyms Agar-agar, Japanese-Isinglass, Vegetable gelatin

Biological sources Dried gelatinous substance derived from algal

Gelidium Omansae

Family Rhodophyceae

Morphological characteristics

Colour	Yellowish grey to white or colourless
Odour	Odourless
Taste	Mucilaginous
Shape	Various forms like strips, sheets, flakes
	Coarse points
Size	4mm in width 40 to 60 cm in length

Extra feature:- Strips are translucent, lustrous and slender, while the flakes are grayish to white in colour.

Solubility - Insoluble in water and alcohol
Soluble in hot water

Chemical constituents :- Agar contains of Polysaccharides i.e. agarose and agarpectin.
→ It contains about 3.5% Cellulose and 6% nitrogen containing substance.

Uses:- 1. It is used as emulsifying agent.
2. It is used as thick texture in the Preparation of Culture media.

Report - The morphological characteristics of "Agar" studied was successfully.

Abhilash
30/11/21

EXPERIMENT NO - 15

Object To study the microscopical characteristics [T.S.] of "Ajowan"

Reference "Kokato C.K" text book of Pharmacognosy published by Narali Prakashan
4th edition Page No 4.6 to 4.7.

Requirements Dried fruits of ajowan (Powder),
microscope slide, staining agents,
glycosine

Synonyms Bishop's used carum copticum Link
Tychospermum copticum Hieron
Ajowan

Biological Sources: Dried ripe fruits of
Tychospermum ammi

Family: - Umbelliferales

Microscopy Polygonal cells constitute the epicarp while pectinate and lignified parenchyma is present near the vascular bundles in the mesocarp. Starch grains are absent.

- Elongated cells with Parquet arrangement is represented by endocarp six number of vittae are present four on the mesocarpic region and two on the commissural surface of mesocarp, polyhedral, thick walled endosperm cells contain volatile oil globules and also gleuone grains. Trichome and Calcium oxalate crystals absent.

Powder characteristics

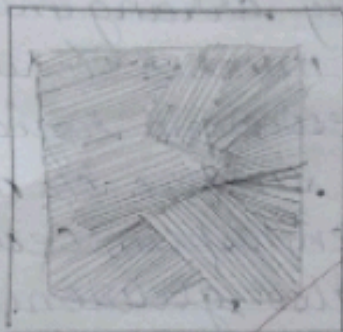
1. Parquet arrangement of endocarp
2. Volatile oil globules.
3. Thick walled endospermic cells

Uses: 1. It is used as carminative

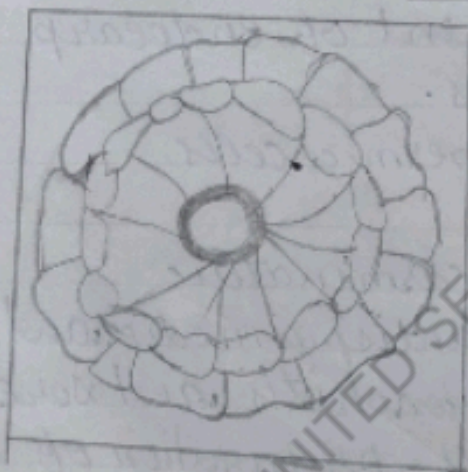
2. it is used as antispasmodic and stimulant
3. it is used as bronchitis and sore throat
4. Oil is used in the preparation of Leobrande gargles, mouth washes and also as flavouring agent.

Report To study the microscopy characteristics of Azadirachta was successfully.

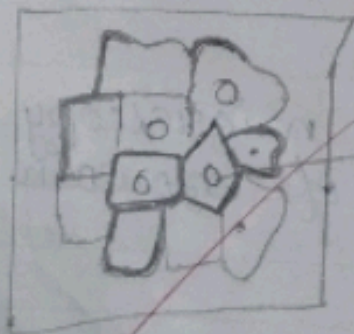
Diksha
30/11/21



microscopic
haquentry layer



Vitta



fixed oil

Powder characteristics of Ajowan fruit

EXPERIMENT NO - 16

Object - To study the morphological characteristics of datura leaf.

Reference Khandelwal A.R. Practical Pharmacognosy Techniques and Experiment Nirali Prakashan 22nd edition 2012 Page no-

Biological sources: it consists of fresh and dried leaves part of.

Datura metel

Family Solanaceae.

Morphology

Shape	Oval, oblong, simple
Size	3-25cm long, 7-15cm wide
Colour	Dull green
Odour	Characteristics
Taste	Bitter
Surface	Hairy, soft
Margin	A cymmetrical, Angular Base

Chemical Constituents Tropene alkaloids.
Nitrogen must present

EXPERIMENT No - 10

Object

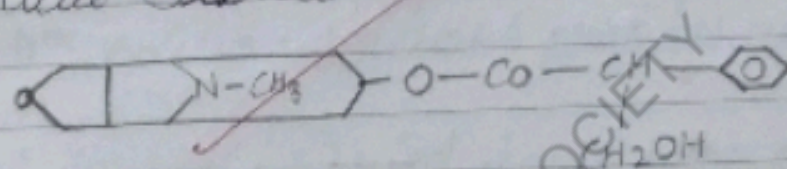
To study the morphological characteristics of datura leaf.



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Eg. Datura leaf.

- Atropine
 - it contain 05 - 17% total alkaloids especially Scopalamine (hyoscyine) is the main alkaloid with a small amount of atropine, hyoscyamine Scopalamine and esters of tropic acid
- Chemical Structure:-



Scopalamine (Hyoscyine)

Uses

- It is used as CNS depressant
- it is used as parasympathomimetic (stimulate cholinergic)
- Mydriatic (Pupil dilator)
- Antispasmodic and cerebral sedative

Report: Morphological characteristics of *Latura* leaf was successfully studied.

Dishal
30/11/21

Experiment NO-17

Object To study the powder microscopy of Cinnamon

Reference Kokate C.K "Practical Pharmacognosy"
4th edition Vallabh prakashan Pg No. 55

Biological source: Dried inner bark of shoots of coppiced trees of "Cinnamomum zeylanicum".
Family: Lauraceae.

Microscopy characteristics:-

1. Transverse section of stem bark shows a bulk of Sclerenchyma cells and secondary phloem.
2. The outermost parts consist of 3-4 layers of sclereids which are lignified, pitted like U-shaped.
3. Small pericyclic fibres are present on the outer side of layers of stone cells.
4. Secondary phloem contains phloem parenchyma, phloem fibres and medullary rays. Strach grain and prismatic. Calcium oxalate crystals are present in phloem.
5. Axially elongated oil cells are present throughout the Phloem Parenchyma.

Fig. 1-10. Cinnamomum Zeylanicum

Study the following micrograph of _____

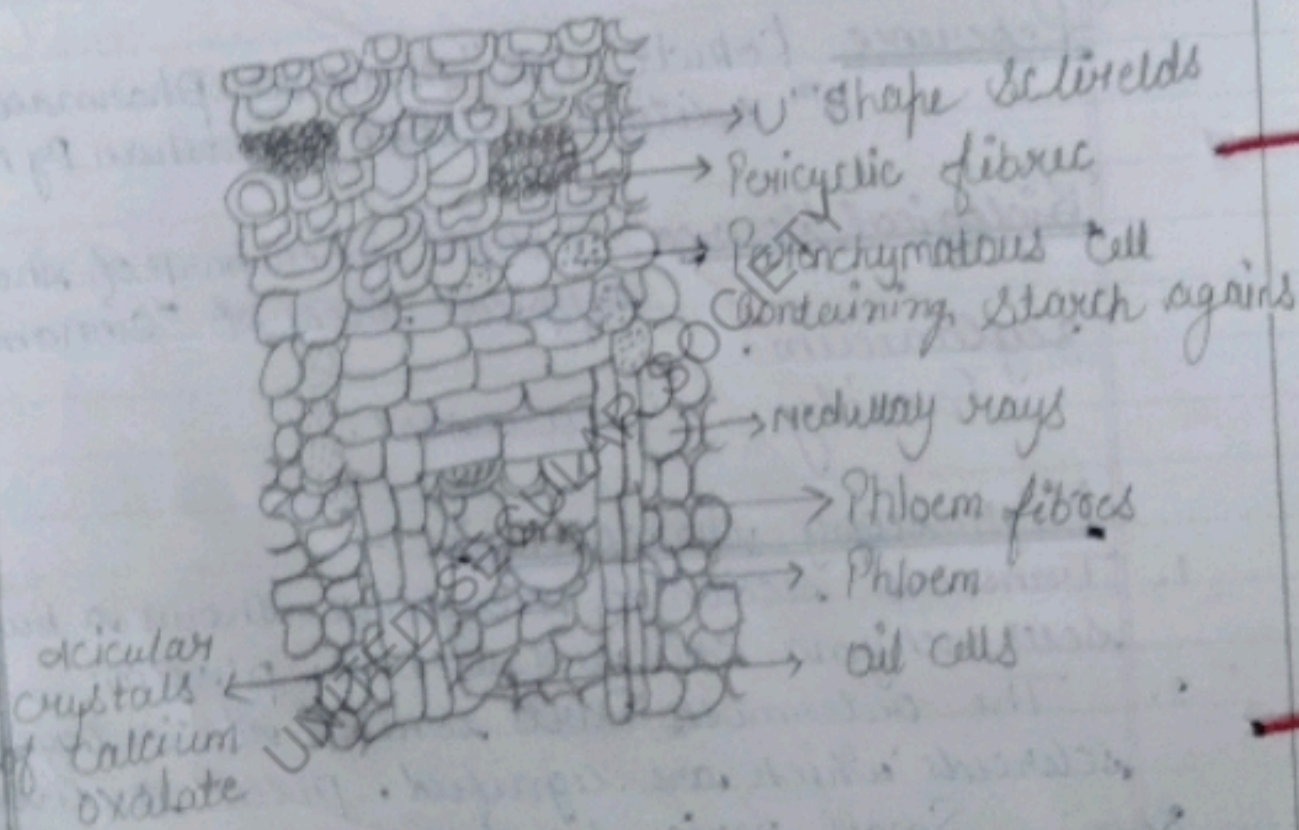


Fig. 1-10. *Cinnamomum Zeylanicum* Stem. bark

6. Medullary rays are uni- or seriate and contain adicular calcium oxalate crystals

Powder Characteristics:

Fibres:- Pointed, thin and isolated, less than 30 μ (bark)

Stone cells:- Isodiametric, outer cells walls less thickened inner walls lignified fitted, V-shaped

oil cells:- Isolated, big, round
calcium oxalate crystals:- Bicular, in phloem parenchyme and medullary rays cells, 5-8 μ

Starch grains:- Numerous, simple and compound, 10 μ in cortex

uses:-
It is used as stomachic
It is used as Stimulant
It is used as mild astringent and antiseptic

Report- the microscopy characteristics of Cinnarosa powder was done.

Dabhi
20/11/21

Experiment No. 18

Object - To study the morphological characteristics of Cinchona bark.

Reference: Khandekar K.R. "Practical Pharmacognosy", Nirali Prakashan, 2nd edition April 2012

Page No - 18, 12 - 18, 15

• Karkate C.K. Prabhat A.P. Gophale S.B. "Pharmacognosy Nirali Prakashan, 36th edition September 2006, Page No - 496-498.

• Synonym: Kinner

• Biological Source: It consists of dried bark of the Cinchona Sulfurea

Family - Rubiaceae

• It contains not less than 6% of total alkaloids of Cinchona.

• Morphological characteristics:

Colour - Reddish brown powder.

Odour - Slight & characteristic

Taste - Intensely bitter & slightly astringent

Size - 20-40 mm in diameter, 2-5 mm thick

Shape - Cylindrical

Surface - Longitudinal wrinkles, but less transverse

Experiment No. 18

Object: To study the morphological characteristics of Cinchona bark.

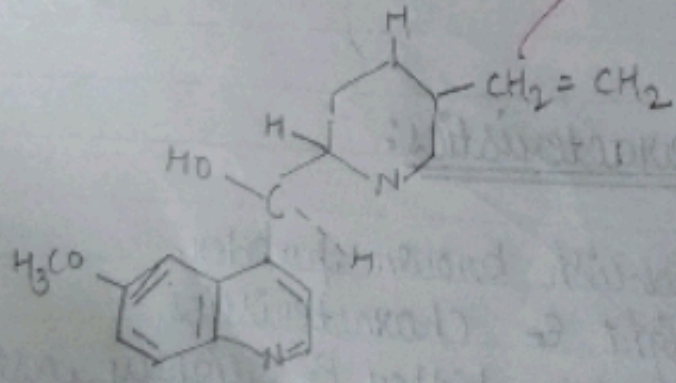
Reference: Pharmacognosy, 10th Edition, A. K. Gupta, 2010.

20-40mm

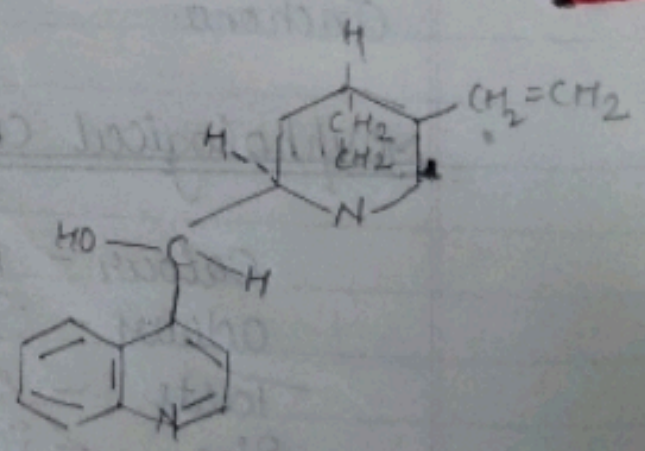


Longitudinal wrinkles

Cinchona Bark



Quinine



Cinchonine

Coaches.

• Chemical Constituents: Cinchona bark contains about 25 alkaloids, which belong to quinaline group. the important alkaloids are-

- Quinine
- Quinidine
- Cinchonine
- Cinchonidine

- Cinchona succisubra contains 5-7% of total alkaloids of which 50% is quinine

Uses - Cinchona bark is antimalarial in nature it is also used as bitter Stomachics and Anti pyretics

Report: The morphological characteristics of Cinchona bark was Successfully Studied.

Dibul
30/11/21

Experiment No-19

Object - To study the microscopical characteristics of coriander.

Reference - "Khandelwal K.R", "practical pharactice pharmacognasy, nimali prapashan 22nd edition april 2002. page no 14-16 to 14,18

Requirement - microscopy, slide, coverslip, staining, solutions

Synonyms - Dhania (Hindi) coriander fruit

Biological Source - Dried ripe fruits of coriander
Erum botanum linn

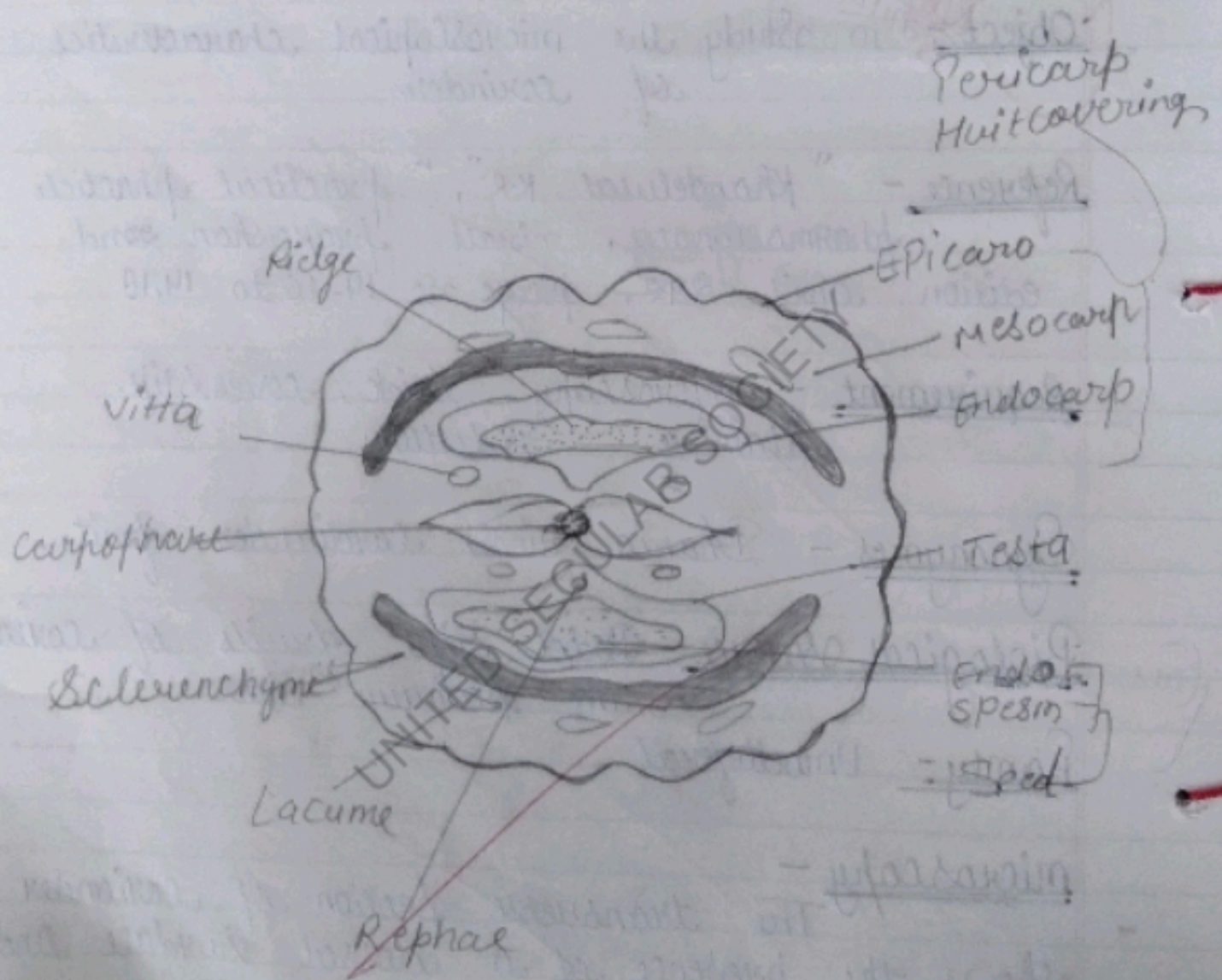
Family - Umbelliferae

microscopy -

The transverse section of coriander shows the presence of a dorsal surface and a commissural surface

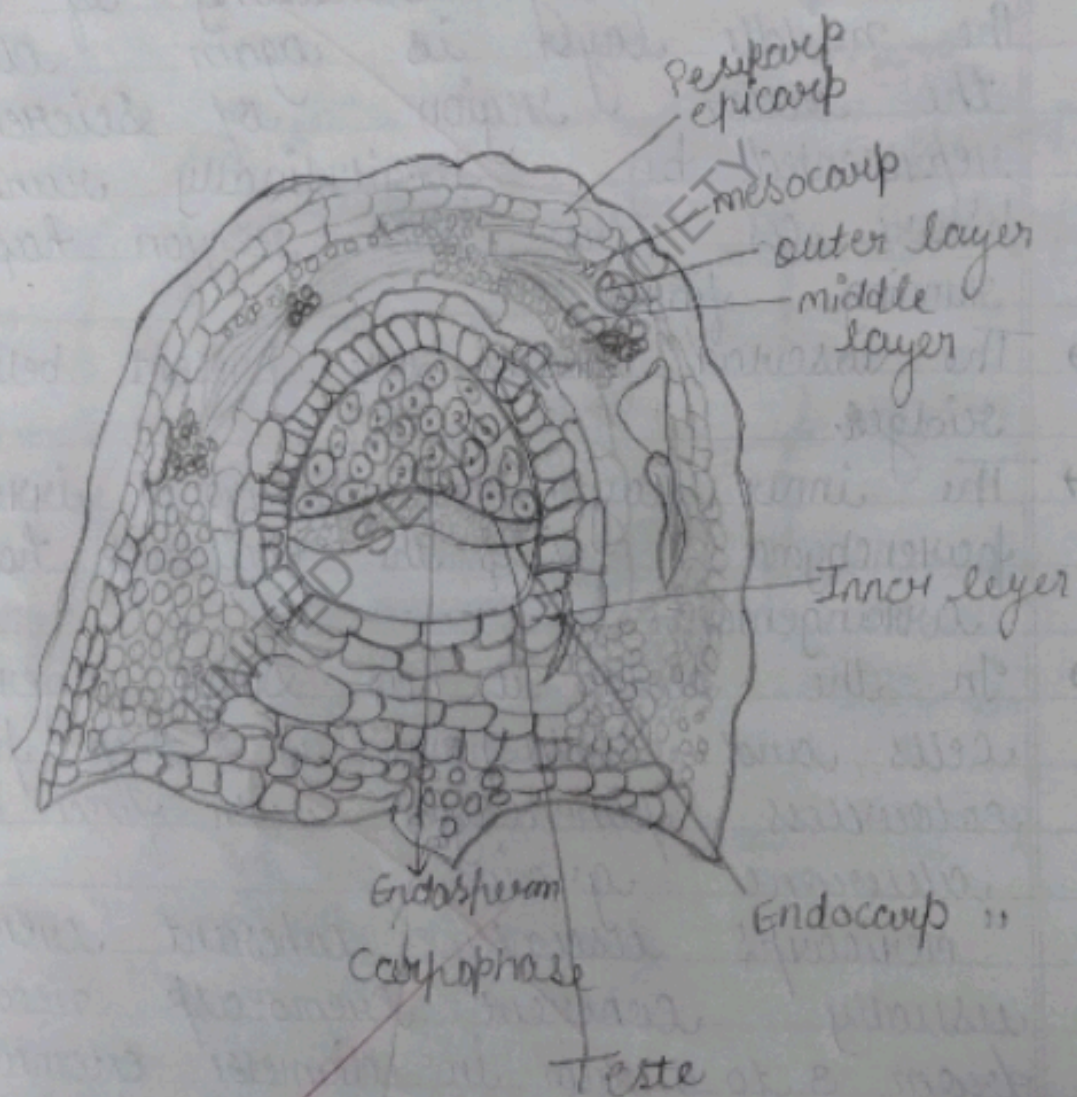
→ The dorsal surface consists of two vittae and a carphare the dorsal surface has five primary ridges and four secondary ridges

Experiment No. 19



T.S of Cocos nucifera

- The epicarp consists of a single row of small thick walled cells with calcium oxalate crystals.
- The mesocarp has an outer loosely arranged tangentially elongated parenchyma cells and the middle layer consisting of sclerenchyma.
- The middle layer is again divided into the outer region of sclerenchyma is represented by longitudinally running fibres where as the inner region has tangentially running fibres.
- The vascular bundles are present below the primary ridges.
- The inner layer has polygonal irregularly arranged parenchyma cells the endocarp has the paracortical arrangement.
- In the testa it has single layered yellowish cells and endosperm is thick polygonal colourless parenchyme with fixed oil and albumen grains.
- "mericarp usually coherent cremocarp usually coherent cremocarp nearly globular from 3 to 5 mm in diameter externally light brown or rose coloured Summit with 5 calyx teeth and a short stylopodium, each mericarp with 5 prominent, straight, longitudinal primary ribs and 4 indistinct undulate



T.S of Coriander fruit mericarp.

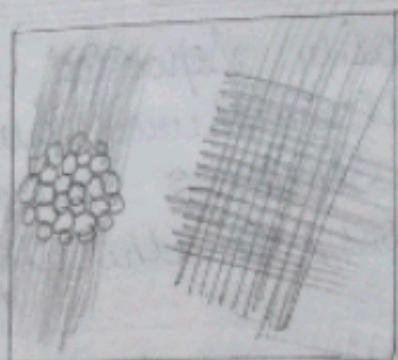
Secondly sub. pericarp easily separated deeply concave on the inner or commissural surface and showing in transverse section 2 surface and showing vittal (oil tubes) on the inner surface of each

→ under the microscope, section of cardamom shows an epidermis of small cells with thick walls a layer of several layers of thin-walled parenchyma or less collapsed parenchyma separated from a broad zone of strongly lignified

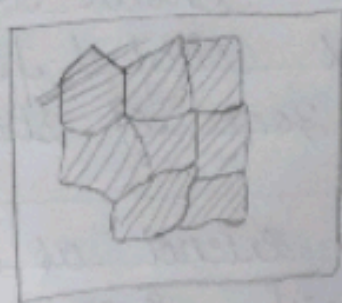
→ Sclerenchymatous fibres which extend as a continuous ring in the pericarp, 2 or 3 layers of large, tangentially elongated thin-walled parenchyma cells frequently with numerous large lysigenous intercellular spaces

→ Inner epidermis of large tabular cells the inner yellowish walls being considerably thickened and closely coherent to the brownish cells of the seed coat, commissural surface with a large elliptical vittal the cells of the pericarp separated from the seed coat and forming a large elliptical vittal the cells of the pericarp separated from the end and forming a large elliptical cavity

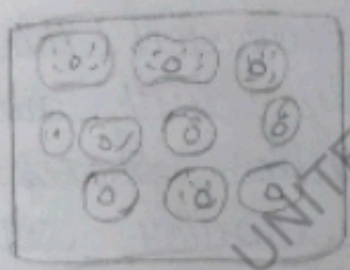
→ Endosperm distinctly reniform in Citrus and consisting of tubular or polygonal thick



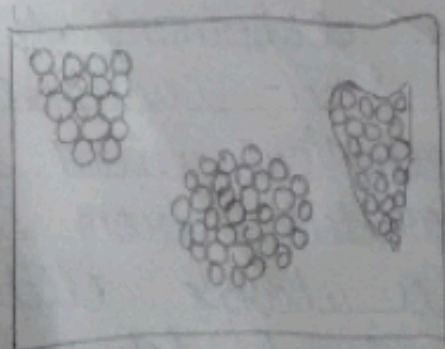
Sclerenchyma matrix layer



Endocarp



Endosperm



Vitelline

UNITED SECULAR SOCIETY

multicelled cells containing numerous large alkenone grains each with a rosette aggregate or prism of calcium oxalate.

Powder microscopy :- Coriander powder is light brown to brown in colour with aromatic odour and characteristic aromatic taste.

It is characterized microscopically by,

- (i.) Numerous irregular fragments of endosperm cells containing globules of fixed oils and alkenone grains calcium oxalate crystals are numerous from 0.003 to 0.01 mm. in diameter mostly in rosette aggregates.
- (ii.) Fragments of endosperm cells associated with hexagonal sclerenchyma of the innermost layer of mesocarp.
- (iii.) Sclerenchymatous fibres irregularly, curved bearing thick, yellowish lignified walls and having numerous simple pits and numerous globules of fixed oil.
- (iv.) Fragments of parenchymatous cells of the mesocarp without reticulate thickening.
- (v.) Fragment of characteristic irregularly, curved yellowish pitted lignified fusiform fibres of the mesocarp.

Added
30/11/22

Experiment No-20

Object - To study the powder microscopy of *Withania*

Reference - Khondelwal K.R "Practical pharmacognosy", Nirali Prakashan 3rd edition April 2012, page no. 18.26 - 18.29

Synonym - Ashuggandha.

Biological Source - It consists of dried root parts of.

Withania Somnifera

Family: Solanaceae

Powder microscopical characteristics:

Cells:

Irregularly outlined

Vessels

Lignified, bordered pits, spiral and annular.

Fibres -

Lignified thick walled.

Calcium Oxalate:-

microsphenoid.

- (vi) very few fragments showing pieces of xellatish brown vittae
- (vii) Hairs and Starch granules are completely absent.
- (viii) Branching vittal (shows in outline) only and understanding endocarp in surface view
- Covering trichomes
 - Part of a group of fibres - vascular tissue
 - Epicarp in surface view showing stomata and striated cuticle
 - Part of two vittal showing transverse Septa and part of the underlying endocarp in surface view.
 - Endosperm containing microspheroidal crystals of calcium oxalate
- Uses -
1. Coriander is used as aromatic and carminative
 2. Coriander is used as antispasmodic and diaphoretic
 3. Coriander is used as flavouring agent
 4. it is used as refrigerant tonic appetizer, diuretic, aphrodisiac and stomachic
 5. Coriander can be applied externally for rheumatism and painful joints

Result:-

To Study the microscopical characteristics of coriander was study successfully.

31/11/22

Stack

Simple, few compound, periform & oval
Abundant in parenchymatous cells

- Uses - It is used as
- Anti-tumour
 - Hypotensive
 - Respiratory stimulant
 - Antispasmodic
 - Antidysrhythmic
 - Hepatoprotective etc

Report - The powder microscopy of Withania
powder was successfully done
& studied.

Kishor
30/11/21

Experiment no - 21

Object - To study microscopical characteristics of lignaic powder & its of lignosics Stolon or root

Reference - Dr. K.R Khondelwal "practical Pharmacognosy", nirali prakashan, Pune Edition: XIX-2008
Pg. - 123

Synonym - Glycyrrhizae Radix, glycyrrhiza.
matethi, Jethimbeth

Biological Source - It consist of dried peeled or unpeeled roots & stolon of glycyrrhiza glabra Linn family

Family - Leguminosae.

macroscopy -

Colour - Peeled - pale yellow, unpeeled yellowish brown to dark brown

Odour - Faint & characteristics

Taste - Sweet, free from bitterness

Shape - Angular in shape

Experiment no - 31

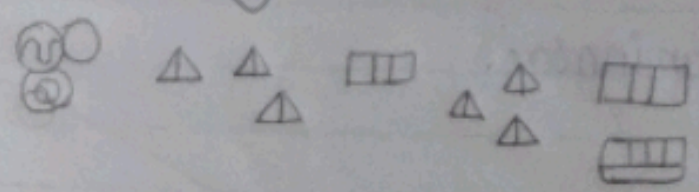
Topic -



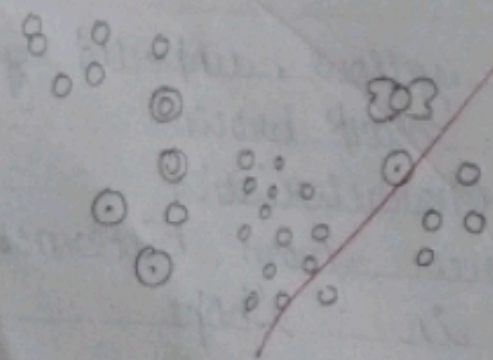
Fibres



Xylem Vessels



Calcium oxalate
Crystals



Starch grain

microscopical characteristics-

Fibres - lignified thickened, yellow walls in bundle of about 10-50 with crystal sheath of parenchymatous cells each containing single prism of calcium oxalate.

Xylem vessels:- large with numerous bordered pits. Surface is lignified

Calcium oxalate crystals - Individually prism shaped 10-15 to 25-35 long, present in parenchymatous cells and many are scattered in fine powder

Starch grain:- most are simple oval or rounded about 3-4 to 10-20 μ long, showing no striations

Cork - Abundant fragments of orange brown cork composed of thin walled polygonal cells

Chemical constituents:-

Saponin glycosides Crycyrohisin (3-9%), Glycyrohisin acid calyflow.

Flavonoid glycosides: Isaliquisarin & liquisarin
 Coumarin derivatives: Hemicoumarin, umbelliferone

Identification Test

S.No	Reagents	observation	characteristics
(i)	Phloroglucinol + Conc HCl (1:1)	Pink	Lignified xylem fibres, phloem fibres
(ii)	Iodine Sol ⁿ	Blue	Starch
(iii)	Acetic acid	Insoluble	Calcium oxalate cryst. fairs
(iv)	HCl	Soluble	,
(v)	H ₂ SO ₄ (60% w/w)	soluble needles of Ca ⁺⁺ sulfate on standing.	Ca ⁺⁺ Oxalate crystals.

uses:- (i) used as expectorant & demulcent
 (ii) as antacid, Sweetening agent
 (iii) also used for masking undesired flavour

Report - The microscopical characteristics of
 liquorice powder had been studied
 Successfully.

Expt no - 22

Experiment no - 22

Object - To study the microscopy of clove bud, and powder.

Reference - Karkate C.K. "Practical pharmacognosy" 4th edition Vallabh prakashan Pg 78

Requirements -

Synonyms - lavang

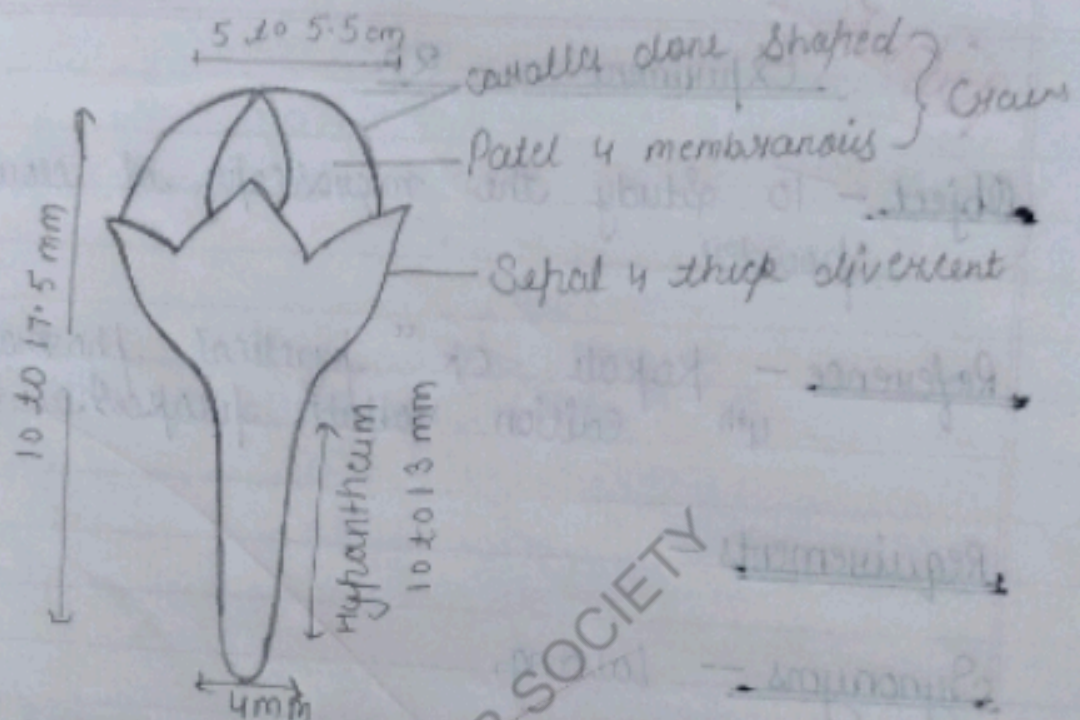
Biological source - It consists of dried flower buds of "Eugenia coryaphyllus"
 "Sponge"

Family - myrtaceae

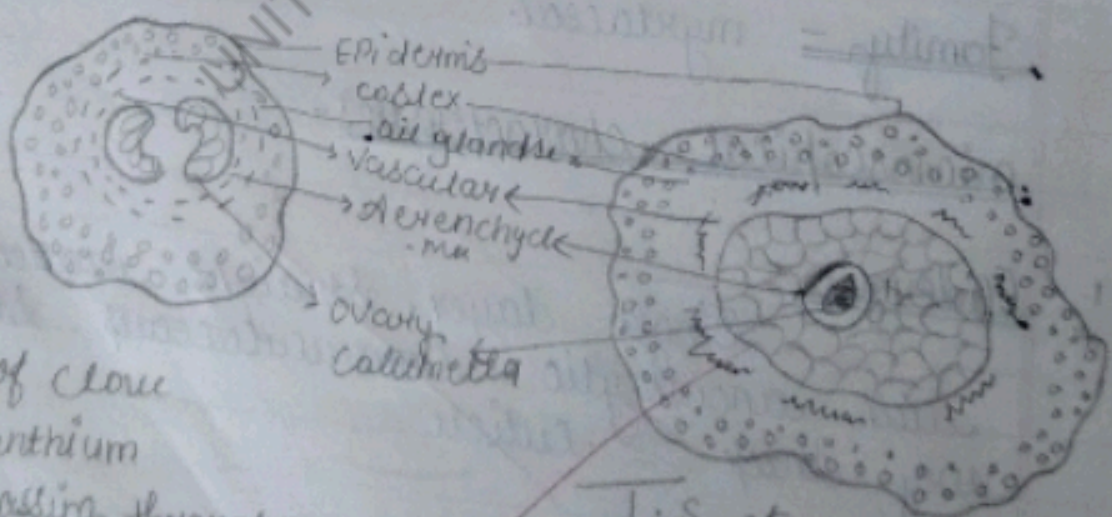
microscopical characteristics -

1. Epidermis - Single layer, straight walled cells with anomocytic ~~cruciculate~~ stomata very thick cuticle
- 2.

Cortex - Three zones



Shape: Sub-cylindrical & slightly flattened
 Clove bud



T.S of clove
 Hypanthium
 passing through
 ovary

T.S of clove
 Hypanthium
 passing through
 Calumella

(i) Upper Zone -

Upper zone contains radially arranged parenchymatous cells with two to three layers of big, ellipsoidal, ischizotysignous cells glands parenchymatous cell contain tannins hence show dark colour when stained with ferric chloride

(ii) Middle Zone -

Middle layers or region containing a ring of bicollateral vascular bundles where xylem is composed of three to five lignified spiral vessels about 15 vascular bundles are present in ring. Isolated pericyclic fibres (lignified) may be present around the vascular bundle (fibro vascular bundle)
→ Fibers are prominent and show distinguished pink colour on staining.

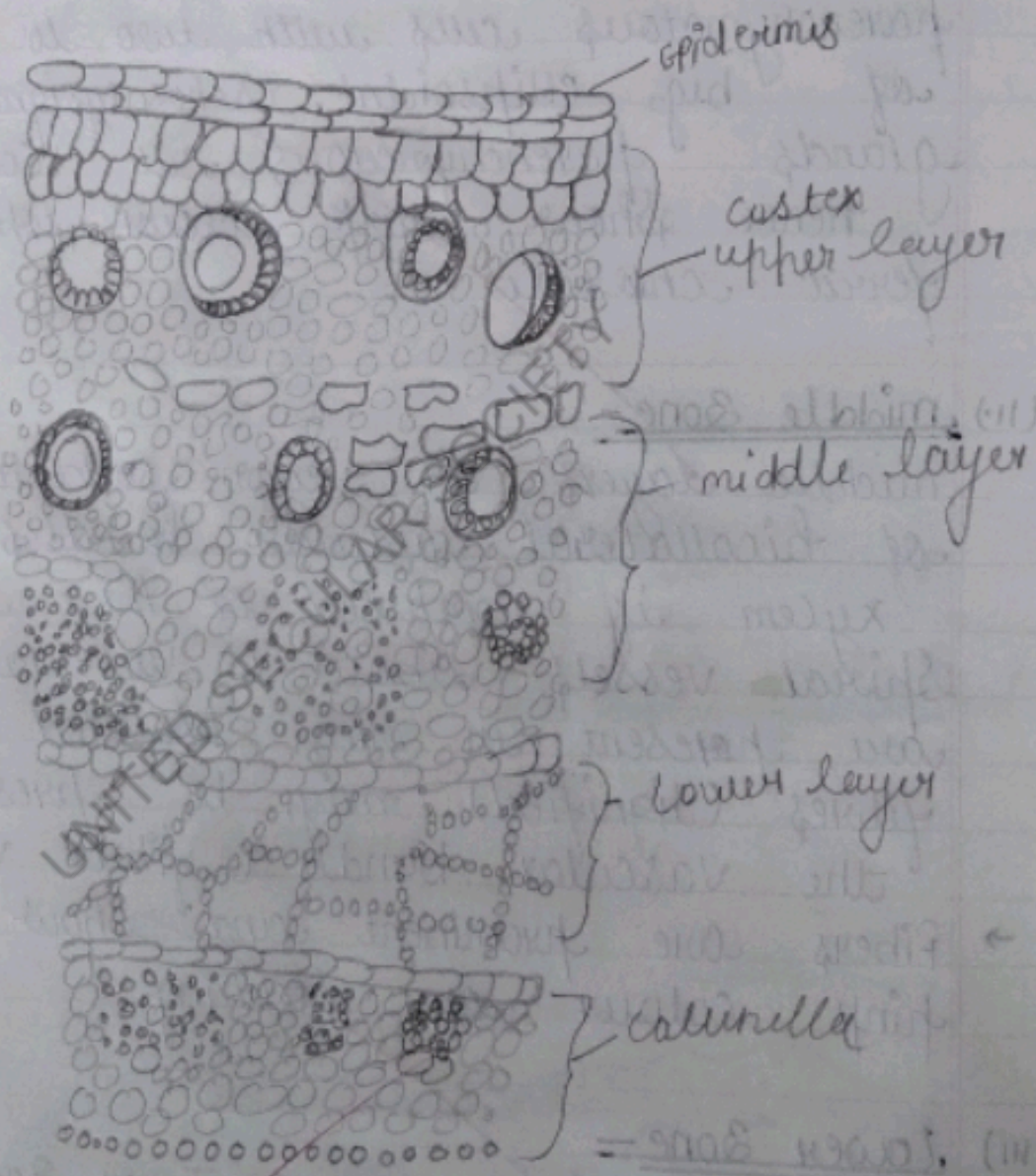
(iii) Lower Zone -

Lower zone or Inner zone of parenchyma composed of air spaces (aerenchyma) separated by lamellae one cell thick which supports the central columella.

Columella -

→ parenchymatous, rich in calcium oxalate clusters a ring of vascular bundles

Topic: _____



- towards the periphery,
- 25-30 small vascular bundles are present to periphery.
 - It is passing through ovary, instead of columella two bean shaped lobes with avicles will be seen in the center
 - Calcium oxalate, Juvenis starch, trichomes and stone cells are absent.

Staining Diagnosis / micro-chemical tests

S.No	Reagents	Observation	Characteristics
01	Phloroglucinol + + concn HCl (1:1)	Pink	vascular bundles and fibres
02	Sudan Red III	Red	Sudical, oil glands
03	Strong KOH Solution	Needle shaped fratascium	Eugenol and volatile oil
04	Dil Hydrochloric acid	Eugenol crystals Crystals soluble	Calcium oxalate crystals
05	Sulphuric acid (60% w/w)	Soluble needles of calcium sulphate on standing.	calcium oxalate crystals

- uses -
1. It is used as carminative
 2. It is used as aromatic and stimulant
 3. It is used as antiseptic and flavouring agent
 4. It is used as dental analgesic oil in microscopic work for isolation of Eugenol.

Report - The microscopical characteristics of clove (flower bud) was studied successfully

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Experiment no - 23

Object - To study the microscopical characteristics of turmeric (*Curcuma*)

Reference - "Kakade or Text book of pharmacognosy, published by, pinoli prakashan 4th edition
Page no- 4.149

Synonyms - Haldi. Hachidha. Curcuma

Biological Source - Dried as well as fresh rhizomes of the plant *Curcuma longa* Linn

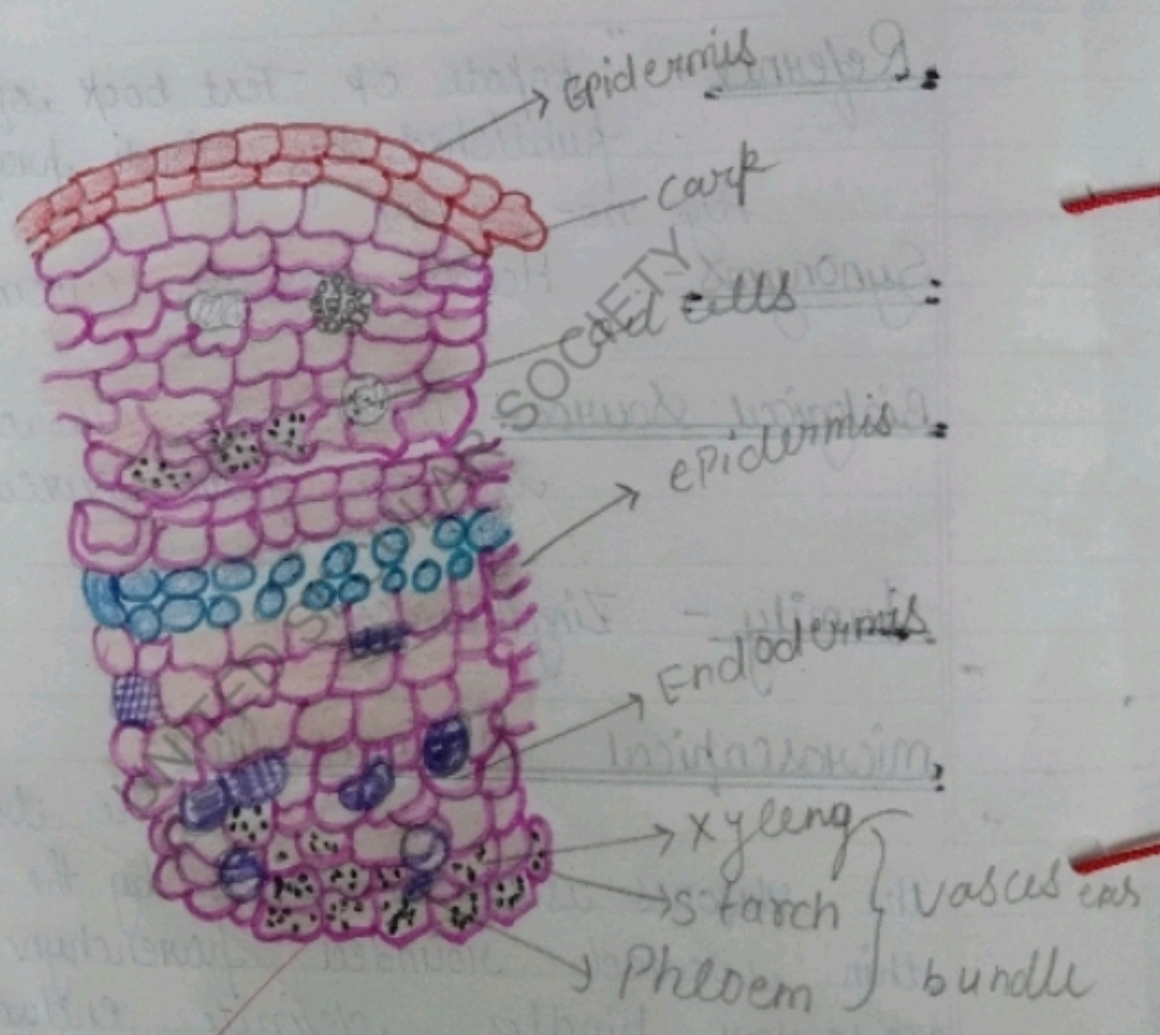
Family - Zingiberaceae

Microscopical Characteristics

- The transverse section of the rhizomes is characterized by the presence of mostly, thin walled rounded parenchyma cells scattered vascular bundles definite endodermis few layers of cork developed under the epidermis and scattered aleurone cells with brownish contents
- The epidermis is consisted of thick walled cells cubical in shape of various dimensions.
 - The cork cambium is developed from the sub-epidermal of the cork the epidermis is retained.

Experiment no - 23

Object - To study the microscopic structure of *Turneria* (Cuscuta)



Source - *Turneria* (Cuscuta)

The *Turneria* is a parasitic plant. It is found in the roots of other plants. It is a yellowish, thread-like plant. It is found in the roots of other plants. It is a yellowish, thread-like plant. It is found in the roots of other plants.

- Cork is generally composed of four to six layers of thin-walled brick shaped parenchymatous cells
- The next region of cortex is composed of few layers of thin walled polygonal parenchymatous cells containing gelatinized flattened starch grains, yellow coloured matter and vascular bundles (collateral type)
- Cortex region also shows presence of oil cells having thickened wall containing orange yellow globules of volatile oil and amorphous resinous masses.
- Endodermis is present below cortex and is composed of single layer of thin walled cells.
- Innermost region of pith is composed of parenchymatous cells containing starch grains numerous oil cells containing and vascular bundles numerous oil cells and vascular bundles
- The vascular bundles in this region are scattered and form a discontinuous ring just below endodermis

Powder characteristics-

1. Fragment of cortex - Thin walled parenchymatous cells containing gelatinized starch grains, yellow colouring matter

Starch grains - Simple, oval, long lens shaped flattened grains show transverse

Starches and small hilum

3. Fragments of hilum - Thin walled, parenchymatous cells containing starch grains
4. Vessels - mainly spiral, reticulate and annular vessels are few in number.

Uses -

1. It is used as antiseptic
2. It is used as expectorant
3. It is used as colouring agent

Report - To study the microscopical characteristics of Turmeric was study successfully.

Alphee

Experiment no- 24

Object - To study the microscopical characteristics of Nux-Vomica seed

Reference - Khandelwal R.R. practical pharmacognosy
Techniques and Experiment nisha prakashan
22nd edition 2012 Pag no - 13-3

Synonyms - Semen Strychni, Kuchla, Zerkachuro

Biological Source -

- + It consists of the dried ripe seeds of *Strychnos nux Vomica*.

Family - Loganiaceae

Microscopical characteristics of powdered drug of Nux - Vomica

1. Trichomes - Entire or fragments of trichomes. lignified base is pitted and broad

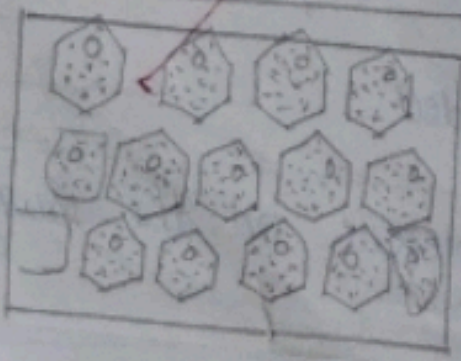
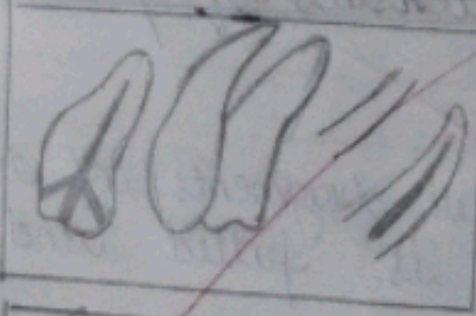
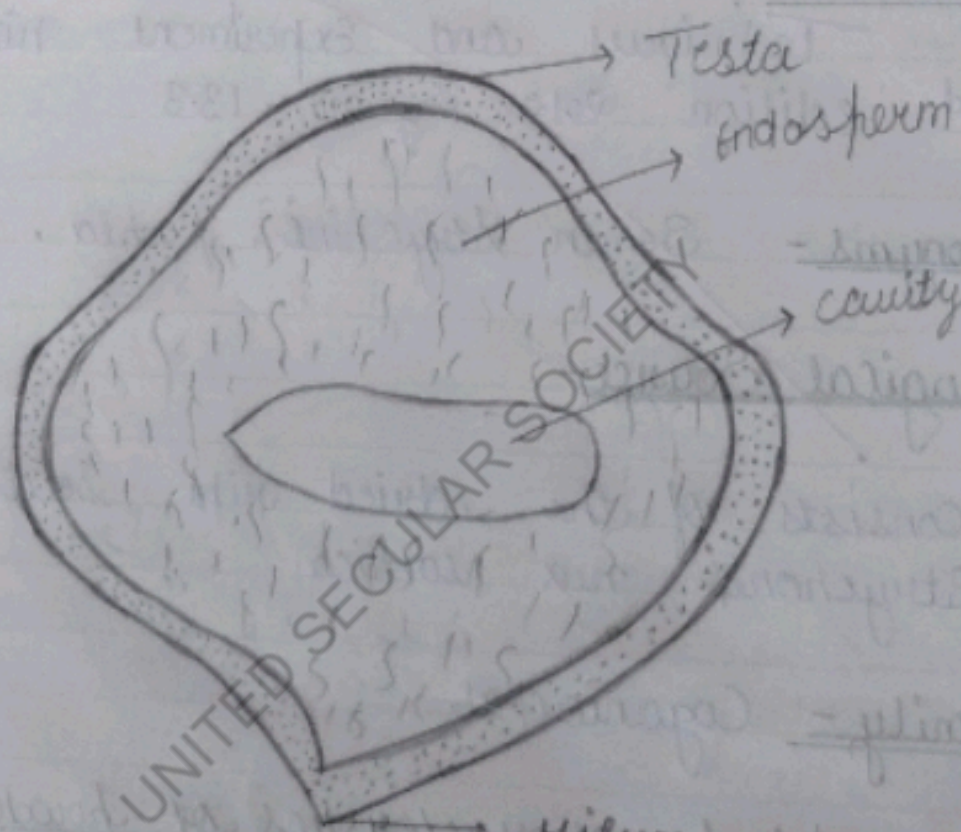
Apex - Apex is rounded

Ridges - ridges are present on the surface

Experiment no - 58

Object - To study the microscopic characteristics of the various seed

Reference - Microbiology & practical microbiology



Microscopical multilayered structure of the seed

Trichome

Endosperm

Length = 60 - 1000 μ . Diameter about 25 μ

2. Endosperm - polygonal cellular cells with oil globules and albumen grains

Testa -

(i) Lignified trichomes -

Thick walled bent and twisted lignified trichomes. Immersed from epidermis parallel in one direction

(iii) Length = 600 - 1000 μ Diameter about 25 μ

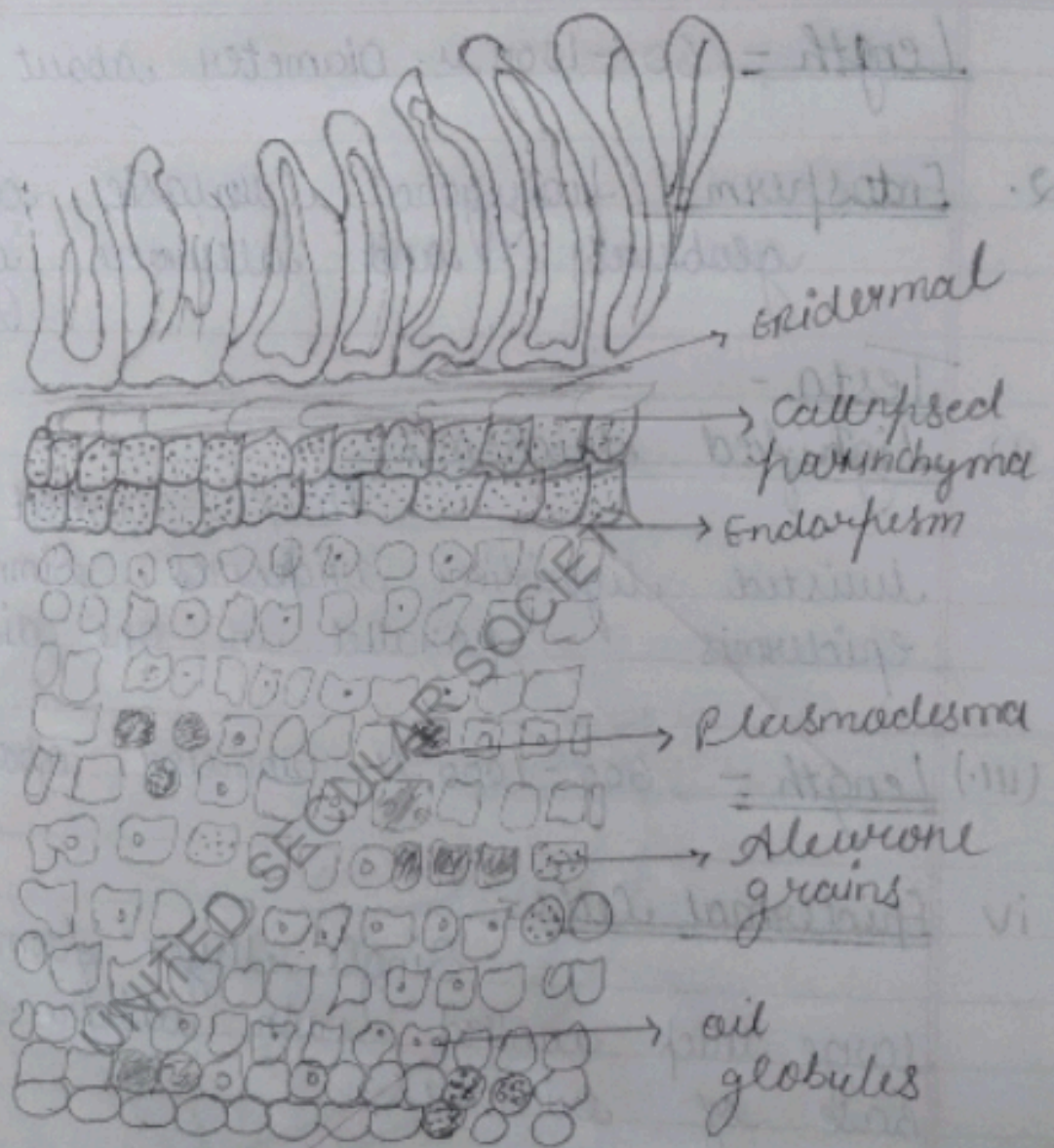
iv Epidermal cells -

Single layer forms lignified trichomes large thick walled with oblique linear pits base of trichomes

(v) Collapsed parenchyma -

Two layers, flattened parenchyma present below epidermal trichomes.

(2) Endosperm - Thick walled cellular parenchymatous cell. Cells show hemicellulose in the cell wall and following characteristics.



T.S. of nux-vomica seed

(i) Plasmodesma - Fine protoplasmic strands b/w the walls of endospermic cells.

Alcristone grains - About 30 μ in diameter only globoids are present

Oil globules - Fixed oil as small oil droplets in the cells

Staining / Diagnosis / micro-chemical Tests

S.No	Reagents	Observation	Characteristics
01	Phloroglucinol + Concentrated HCl (1:1)	Pink	Lignified epidermal trichomes
02	Dil Iodine conc ⁿ Sulphuric acid	Blue	Hemicellulose Endospermic wall (plasmodesma)
03	Alcoholic picric	Yellow	Alcristone grains present in the cell of endosperm
04	Sudan red III	Red	oil globules present in the cell of endo sperm

Uses-

1. It is used as bitter Stomachic
2. It is used as Spinal Cord Stimulant
3. it is used as Vagus tonic

Report - To the Study the microscopical characteristics of was successfully.

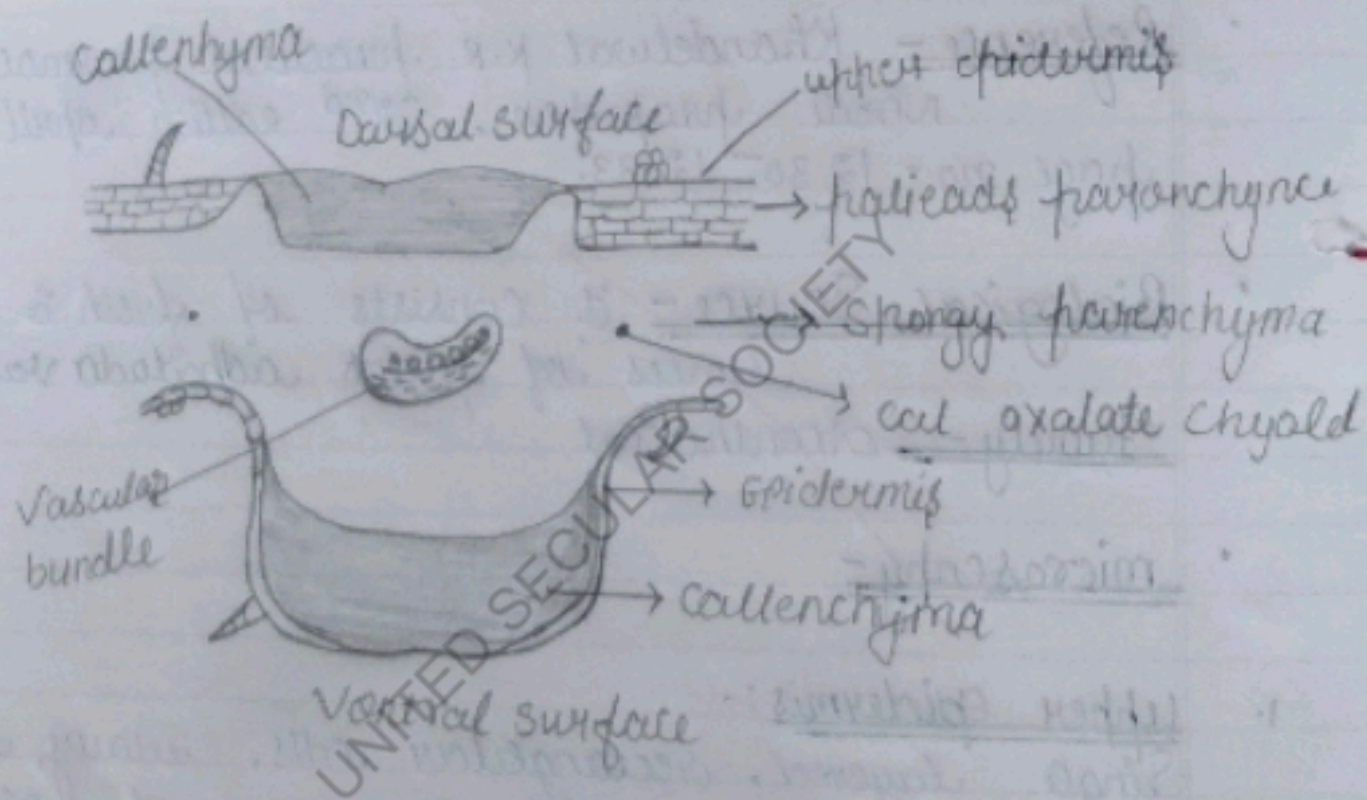
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Experiment no- 25

- Objective → To study the microscopy of *vasaka* leaf.
- Reference - Khandelwal P.R. practical pharmacognosy, Nirali prakashan, 2nd edition April 2012
page no - 12.30 - 12.33.
- Biological Source - it consists of fresh & dried leaves of plant *Sida cordata* var. *cordata*
- Family - *Malvaceae*
- microscopy -
 1. Upper Epidermis :-
Single layered, rectangular cells, wavy anticlinal walls, cuticularized covering, and glandular trichomes (Secrete without stalk) and diacytic stomata are present.
 2. Mesophyll: Dorsiventral
 - Palisade -
- 2 layered. Compact & radially elongated cells
 - Spongy parenchyma -
- 4 to 5 layered, loosely arranged with intercellular spaces. presence of calcium oxalate crystals

Experiment no- 22

Object ->



T.S of mimosa leaf

Good

Lower Epidermis:-

- Resembles upper epidermis, but no. of trichomes & stomatal pores are more.

4. Cusping trichome:-

2-4 cells blunt, thick walled, pointed

5. Glandular trichome:-

- Sessile, with quadricellular heads

6. Stomata:-

- Caryophyllaceous (disclathyl)

7. Collenchyma:-

- 2 to 4 layers. below upper epidermis also present above lower epidermis

8. Cystaliths:-

- Few cystaliths can be seen in cortical parenchyma

9. Vascular bundles:-

- These are - Shaped, Collateral
Xylem: Lignified
Phloem: Non-lignified

10. Collenchyma:-

Thick walled cellulosic cells.

• Report:-

The microscopy of the Vasaka leaf was successfully studied.

Done

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Experiment No - 26

Object: To perform the physical & chemical test for "ASAFOETIDA"

Reference:- Kokate C.K. Purohit A.P. Gadhale S.B.
text book of pharmacognosy 51 edition
nitai prakashan page no 5.33

Requirements

Apparatus: mortar and pestle test tube
conical flask, beaker, filter paper
drug sample, weight balance.

Chemicals - HCl ammonia 5% HNO_3 , H_2SO_4
sulfur

Biological Source:-

It is the latex resin obtained from roots and rhizomes of *Ferula foetida*.

Physical characteristics:-

Appearance	-	Crystalline
Colour	-	Yellow brown
Odour	-	Intense penetrating, and alliaceous odour
Shape	-	Tear and masses
Taste	-	Bitter acid alliaceous taste

Solubility:- partially soluble in alcohol

S.No	Test	Observation	Inference
01	Triturate with H_2O	yellow orange emulsion	Arafoetida present
02	Treat fractured surface with 50% HNO_3	Green colour	Arafoetida present
03	Treat fractured surface with conc. Sulphuric acid	Red or reddish brown colour	Arafoetida present
04	Combined umbelliferone test. triturate 0.5g of drug + 30ml conc. HCl acid add 2ml water filter filtrate + equal vol of ammonia	Blue fluorescence (umbelliferone)	Arafoetida present
05	Alcoholic extract + phloroglucinol and conc. HCl	pink colour	Arafoetida present
06	on burning	yellow flame	Arafoetida present

Uses:- 1. it is used also comminative relieve
excessive collection of gas in the stomach
2. it is used as expectorants.

Result:- The chemical and physical test of
saccharated acid successfully.

~~Diakine~~

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Experiment no - 21

Aim - To perform the physical and drug chemical test for the given crude drug "BENZOLIN"

Reference: "Kokate et al" The textbook of pharmacognosy
- 8th ed., published by Nirali prakashan
4th edition 2010 page no - 836

Requirement:-

Chemicals:- KMnO₄ solⁿ, H₂SO₄, FeCl₃
Sulphuric acid

Apparatus: china dish, glass rod, beaker, filter paper, heating mantle, test tube, T.T holder.

Physical Characteristics:-

Colour - greyish brown or grey mass
odour - agreeable and balsamic
Taste - Sweetish and slightly acid
Shape - tear's mass, lamp
Size - varying in size

uses → it is used as Expectorants, Comminative, diuretic, antiseptic and protective

S.No	Characteristics	Sumatra benzoin	Siam Benzoin
01.	Physical colour Taste colour Extr features Solubility	Greyish brown or grey, granular and Characteristics Sweetish and slightly Acid lumps of staying stays and leaves yellowish milky white and brittle crystal	Yellowish brown to milky brown vanilla like Sweetish and slightly acid hard mass softer and on heating becomes plastic colour of
02.	Standards:- Acid insoluble ash benzoic acid extractive Loss on drying	Not more than 1% not less than 5% Not less than 75% Not more than 10 %	Not more than 0.5% Not more than 1% Not less than 90% Not more than 10%
03.	Chemical Constituents	Free balsamic acids (benzoic and Cinnamic acids) Triethylolid solid like Sumatresicolic acid	As ester Cinniferyl benzoates Styrol, vanillin and phenyl propyl Cinnamate

Topic _____

Date ____/____/____

Chemical test1. Warm 0.5g benzoin powder + 10ml $KMnO_4$ 2. 1ml ether extract of benzoin + 2-3 drops of H_2SO_4 3. Alcoholic extract benzoin powder + alcoholic solⁿ of $FeCl_3$

4. Digest 0.5g of drug + 5ml ether

5. Mix take 1ml of ethereal solⁿ in a porcelain dish + concⁿ sulphuric acid

Odour of benzaldehyde

Deep reddish brown

Green colour

Deep reddish brown colour

Deep purplish red colour

Negative

Deep purplish red

Chemical Test

S.No	Test	Observation
01	0.5mg benzoin powder heated with 10ml of $KMnO_4$	odour of benzaldehyde
02	Alcoholic solution of benzoin + H_2O	milky solution (acidic to litmus)

03

Heat 0.5g benzoic powder slowly in dry test tube

Evolved irritating, whitish fumes which condense to form whitish crystalline sublimate at upper part of test tube

04

Sublimates after cooling,

crystals of benzoic acids

Result - To perform the physical and chemical test for the given crude drug was done.

Experiment no- 20

Object - To the study of the physical character of given crude drug of "false catechi"

Reference :- Kokate CK text book of pharmacognosy, published by nirali publication, 4th edition
Page No - 5.59

Requirements - Test tube holder, spatula test tube stand, spirit lamp.

Chemical - HCl, vanillin, light petroleum hydrocarbon solⁿ

Apparatus - china dish, glass rod, beaker, heating mantle test tube and T.T holder

Chemical Constituents -

- false catechu contains mainly catechins about 7.33%. catechu tannic acid and catechu are in addition to quercetin and gambier flavonoid.

Procedure

S.No	Experiment	Observation	Inference
01	mix with in vanillin and HCl	red and pink colour	quercetin is present
02	take catechu when treated with HCl	pink colour hydroglucinal	presence in catechin
03	To alcoholic extract of pale catechu add sodium hydroxide and few drops of light petroleum spirit will	green fluoresces ence	gambier fluoreses

Uses:- 1. it is used as astringent in diarrhoea
and in the form of lozenges for
buccal - cavity.

Result:- The physical and chemical test for
given crude drug, was done.

Experiment No - 29

Object - To study the physical and chemical test of given crude drug for Black catechu

Reference : Kopate C.K. & Purohit A.P. & Gokhale S.B.
Pharmacognosy, edition 4th Nirali
Publication page no 550

Requirements - Black catechu

Chemicals : Ferric Chloride Solⁿ Vanillin,
HCl

Synonyms :- Katthi, Kattha, Khadi, Catechu

Biological Source - Dried aqueous extract of heart wood of Acacia catechu

Family :- Leguminosae

Morphological characters :-

Colour - light brown to black powder

Odour - None

Taste - Astringent

Size - 2 to 5 cm cubes or rectangular pieces
Shape - cubes or irregular fragments

Standards:- pieces are friable, porous, with vegetable debris, fracture short.

Solubility:- Soluble in water and alcohol

Chemical Constituent:- it contains 10% of catechin, other constituents are catechin red, quercetin and gum but contain chlorophyll and fluorescent substance present in Ratan catechin.

Chemical tests:-

1. Gives bluish black colour with ferric chloride solution
2. Pink or red colour with vanillin and hydrochloric acid
3. Brown colour with lime water

Uses - It is used as the antidiarrhoeal, astringent, carminative and stimulant.

Result:- The physical character of Black catechin was done.

Experiment no- 30

Aim:- To perform the chemical test and physical test for the given crude drug, Castor oil.

Reference:- "Kokate CK Pharmacology AP and B.B. Grokhale "Pharmacognosy" edition 4th Nirali Prakashan page no - 515

Requirement:-

Chemicals:- light petroleum, ether, Chloroform, glacial acetic acid

Synonyms:- *oleum ricini*

Biological Source:- Fixed oil from dried "*Ricinus communis*"

Family:- Euphorbiaceae

Morphological character:-

Colour - Colourless

Odour - Characteristic

Test - Slightly, oxid

Standard:

Unit ~~pure~~ - 0.945 to 0.965g
Solidifying point - -10 to -18°
Refractive Index - 1.4758 to 1.4798
Solubility - Soluble in ~~alcohol~~ alcohol and
and in chloroform ether, petroleum
ether and glacial acetic acid it is
insoluble in mineral oils

Chemical Constituents:-

- It contains triglycerides of
ricinoleic acid fatty acid as isoricinoleic,
linoleic, stearic
→ Castor oil also contains heptaldehyde, undecenoic
acid, sebacic acid.

Chemical test - with equal volume of alcohol, clear
liquid is obtained on cooling

2. It mixes with half its volume of light
petroleum ether ($40-60^{\circ}$)

Uses - it is used as Irritant purgative, lubricant
and also for cosmetics purposes.

Result:- The physical & Chemical character of
Castor oil was done.

Experiment no-31

Aim:- To identify the physical and chemical characters of Acacia

Reference:- Kokade CK, Practical Pharmacognosy, 4th Edition Vallabh Prakashan, Delhi

Requirements:-

Chemical:- Gum Arabic consists almost entirely of glycosidal acid named arabic acid Combined with potassium, magnesium and Calcium. $FeCl_3$, Iodine Solution, HCl,

Equipment:-

Physical test:-

Synonyms:- Indian gum, Gum Acacia
Gum, arabica

Biological Sources:- Dried gummy exudation of stems of *Acacia arabica*

Family:- Leguminosae

morphological characteristics:

Colour - Cream to cream brown
odour - odourless
Taste - Bland and mucilaginous
Size - 1 to 5 cm
Shape - Tears of various sizes.

Extra feature:- Tears are glossy, marked with
diverse brittle break with
angular fragment

Solubility:- Soluble in water (partly) Insoluble
in alcohol and solvents organic

Chemical Constituents:-

By hydrolysis sorbic acid yields 1-molecule
of 1-strombol, 2-molecules of
D-galactose and 3-molecules of 1-arabinose
and an albinic acid
it also contains diastase and an oxidase
enzyme.

Procedure:- Dissolve about 0.25 gm of the
carefully powdered drug in 5 ml
of distilled water by shaking in the

in the cold add 0.5ml of hydrogen peroxide and 0.5ml of benzidine solution. Shake and allow to stand for few minutes. A deep blue colour is formed due to the presence of oxidase enzyme.

2. A 10% aqueous solution of acacia fails to produce any precipitate with dilute solution of lead acetate. It does not give any colour change with iodine solution and it never produces a bluish-black colour with $FeCl_3$ solution.

3. Hydrolysis of an aqueous solution of acacia with dilute HCl yields reducing sugars whose presence are ascertained by boiling with solution to give a brick-red precipitate of cuprous oxide.

Uses:- It is used as demulcent, suspending agent, emulsifying agent, binding agent.

Conclusion → From the physical test and chemical test for the given crude drug is identified as Acacia.

Experiment no - 32

Object: To Identify the chemical character of given Sample (Tragacanth)

Reference: Kokate C.K. Practical Pharmacognosy, 4th edition Vallabh Prakashan Delhi pages no-

Requirements:- Hydrochloric Acid (HCl) Sodium Lichoxide, Fehling's Solution Barium Chloride Solution, Lead Acetate Ruthemin Med, Iodine Caustic Potash

Back ground:

- ① Unorganized drugs are drug that show no definite cellular structure. These are derived from plants, animals or mineral sources by some process of extraction and followed by the purification if necessary.
- ② These may be differentiated by observing the solubility in alcohols then applying other physical and chemical standards.
- ③ Tragacanth is the derived gummy exudation from the stem of extracellular Gummifer.

4. Labillardiere and other species of Astragalus. It occurs as flat or curved ribbon shaped flakes colourless almost tasteless, white or pale yellowish white some what translucent horny, fracture short

Procedure :-

- ① To unit of 0.5% w/v solution add 0.5ml of HCl acid and heat for 3 minutes in a water bath divide the liquid the two parts
- ② To one part add 1.5ml of sodium hydroxide solution and Fehling's solution, warm on water bath red precipitate is produced
- ③ To the second parts add barium chloride solution (10%). No precipitate is obtained (distinction from agar)
- ④ To a 0.5% w/v solution of gume, and add 20% w/v solution of lead acetate: A voluminous fluorescence precipitate is obtained
- ⑤ Prepare a small quantity of powder is rheusth-ion red and iramine microscopically practical do not acquire pink colour.

4. To 0.1g of powder add N/S's Iodine The mixture acquire an olive green colour
5. powder is mixed with 5% aqueous caustic potash colour yellow colour will obtained

Conclusion :-

From the above morphological character and chemical test the given crude drug is identified as Asiaticum

Asiaticum

Experiment no - 33

Object:- To identify the physical and chemical test for agar

Reference:- Kokate C.K. Practical Pharmacognosy,
4th edition Vallabh Prakashan
page no. 554

Physical test:

1. Synonyms:- Agar - Agar Japanese - Isinglass
vegetable gelatin
2. Biological Source:- Dried gelatinous substance
derived from red algal
Gelidium amansii and other species of
red algal.

Family:- Rhodophyceae

morphological characteristics:-

Colour - Yellowish - gray to white or colourless sheets

odour - odourless

Taste - mucilaginous

Shape - various forms like strips, sheets, flakes

Size - 4mm in width and 40 to 60cm in length

Extra features: Strips are translucent lustrous and slender, while the flakes are grayish to white in colour

Solubility :- Insoluble in water and alcohol
Soluble in hot H_2O

Chemical constituents:-

- Agar consists of polysaccharides as agarose and agaraflectin
- It contains about 35% cellulose and 6% nitrogen containing cellulose.

Chemical test:

1. test - Boil 1gm of agar with 10ml of water until it is affected cool to room temperature

a. observation:- A slip jet is formed

b. Inference:- Agar

2. Test:- 0.2% solution of agar aqueous solution of tannic acid.

a. Inference:- Distinction from gelatin

b. Observation:- No precipitate is formed.

3. Test:- Warm little sample in alcoholic solution of potassium hydroxide

a. Inference:- Agar present

b. Observation:- Canary yellow colour is produced

4. Test:- mount a small quantity of powder in the solution of safranin red and examine microscopically.

Inference:- presence of mucilage in agar

Observation:- fructicles acquire red or pink colours.

5. Test:- Add 1 drop of N/10 solution of iodine to 10 ml of decation of agar. Rapidly cool under tap water to room temperature.

Inference:- Agar is present.

6. Test: Add 0.5 ml of concⁿ HCl to 4 ml of 0.5% solution of agar. heat it on H₂O bath for 30 minutes cool at room temperature and divide into two portions
- a. Add 3 ml of 10% NaOH solution and fehling's solution A and B is equal quantities and warm over water bath
- b. Add 10% of barium chloride solution

Inference:- (a) Red ppt. of cuprous oxide is obtained
(b) Slight white ppt of barium sulphate solution

observation:- Reducing Sugars are present

Test:- Incinerate agar to ash. add a drop of concⁿ HCl observed under microscope

Inference:- Agar is present

observation:- Fragment of diatoms

Conclusion:- From the morphological character and chemical tests the given crude drug is identified as agar

Experiment no - 34

Aim:- To study the physical and chemical test for the given "Gum Gum"

Reference:- Kokate C.K. Text book of Pharmacognosy, published by Nirali Prakashan 4th edition page no. 526

Requirement:-

Chemical:- Odour, solution, Lead acetate solution, Gum, Gum

Synonym:- Gum flour, Jagnat gum.

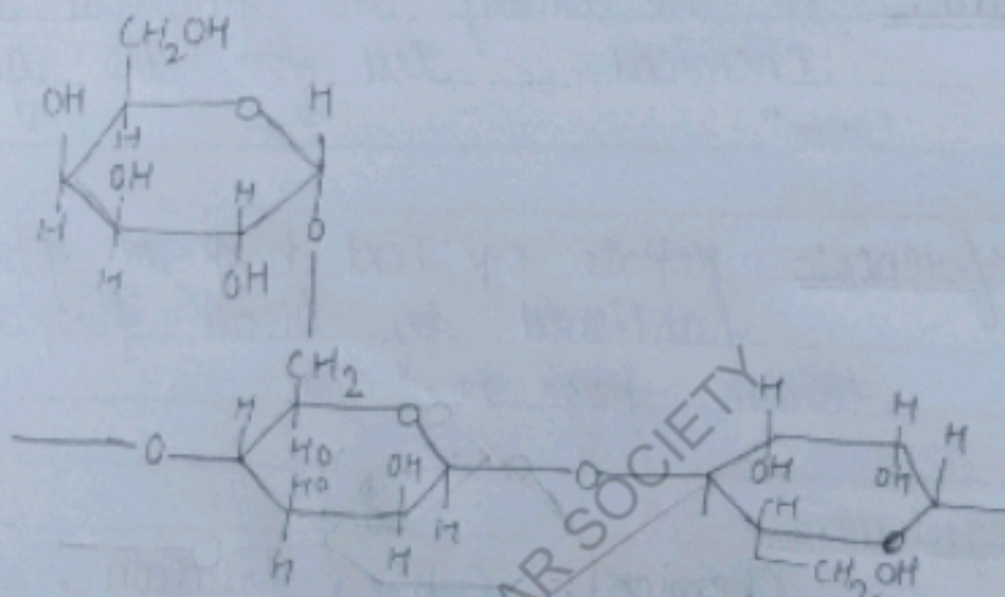
Biological Source:-

powder of endosperm of seed of *Cyamopsis tetragona* Linn

Family:- Leguminosae.

Morphological Character:-

Colour - pale yellowish
odour - odourless.



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Taste :- Gummy, - Characteristics
Size :- Fine powder.

Chemical Constituents :-

- Gummi Gum Contains water soluble and water insoluble parts
- Water soluble part is polysaccharide gum (85%) as gummi. it also contains 5.7% of proteins

Chemical Test :-

1. it does not acquire olive green colour with dilute
2. Does not form pink colour with ruthenium red
3. 2.0% lead acetate solution give precipitate with gummi gum solution.
4. Dissolve 0.5 gm of gummi in some of water by shaking. to it add 0.5 ml hydrogen peroxide and 0.5 ml 1% solution of benzidine in alcohol. no blue colour is produced.

Uses:- 1. Binding,

2. it is used as emulsifying, suspending agent bulk laxative

Result :- To perform the chemical test for the Gummi Gum was successfully;

Experiment no - 35

Aim:- To identify the chemical character of Gelatin

Reference:- Kokate CK. practical pharmacognosy; 4th edition Vallabh prakashan delhi

Background:- Gelatin is a glue in thin sheets strips as granular powder high grade gelatin light yellow semi crystalline substance. it is odourless and slowly dissolves on the warming to form viscous solutions

Chemical Tests:-

1. Where gelatin is heated with Soda lime in dry test tube ammonia is evolved due to the presence of nitrogenous compound as gelatin
2. Gelatin solution is added millon's reagent to give a white ppt which turns red on heating
3. Gelatin gives buff white ppt with tartaric acid solution
4. Biuret test to 3ml of test solution of gelatin NaOH is added where by white to whitish

buff coloured ppt is formed which does not dissolve on heating.

5. yellow ppt is formed on adding acetic acid to solution of gelatin.

6. it gives yellow ppt with trinitrophenol in aqueous solutions.

Conclusions:- From the above morphology and chemical test the crude drug is identified as Gelatin.

Abhishek

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Experiment no-36

Aim: To identify the chemical character of Gelatin.

Reference: Kokate CK. practical pharmacognosy 4th edition Vallabh prakashan. Delhi.

Background: Gelatin is occurs in thin sheets strips or as granular powder high grade gelatin light yellow semi crystalline substance. It is odourless and tasteless in cold water it swells up and slowly dissolves on the warming to form viscous solutions.

Chemical Tests:

- ① Where gelatin is heated with soda lime in dry test tube. ammonia is evolved due to the presence of Nitrogenous compound is gelatin.
- ② Gelatin solution is added millon's reagent to give a white ppt. which turns red on heating.
- ③ Gelatin gives buff white ppt with tannic acid solution.
- ④ Biuret test to 3ml of test solution of gelatin, NaOH is added whereby white to whitish buff coloured ppt is formed which does not dissolved on heating.
- ⑤ Yellow ppt is formed on adding picric acid to solution of gelatin.

⑥ It gives yellow ppt with trinitrophenol in aqueous solutions.

Conclusions: From the above morphology and chemical test the given crude drug is identified as Gelatin.

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