Vidya Siri College of Pharmacy

#67/4, Off Sarjapur Road, BangaloreEastTaluk, Chikkakannalli,Bengaluru –560035

Kashipathi
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VIDYA SIRI
COLLEGE OF PHARMACY

PHARMACOGNOSY
LABORATORYRECORD

Name of the Student :.....

Reg.No. : .....

Class :.....

Batch : .....

Vidya Siri College of Pharmacy #67/4,
Off Sarjapur Road,
Bangalore East Taluk,
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560035

CERTIFICATE

This is to certify that Mr./Ms.

_____

is a student of ***D.Pharm PART-I (ER 2020)****and hassatisfactorily completedthe Practicalprescribed byBoardofExaminationAuthority,Bangalorein****PHARM ACOGNOSY****duringtheacademicyear*

……..

*Reg.No.*_____*Date:*

Signature of the Subject Teacher

S.NO	DATE	EXPERIMENTS	PAGE.NO
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2		To study morphological identification of senna	
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EXPERIMENT NO. 1 **DATE:**

TO STUDY MORPHOLOGICAL IDENTIFICATION OF ISPAGHULA

Aim: To study morphological identification of Ispaghula

Biological Sources:

- Ispaghula consists of dried seeds of Plantago ovate, Forskal, belonging to family Plantaginaece
- The husk consisting of epidermis is separated from the seeds which has its own importance

Chemical Constituents:

Ispaghula seeds contain about 10% mucilage which is present in the epidermis of testa. Mucilage consists of two complex polysaccharides, of which one is soluble in cold water and the other soluble in hot water. Chemically it is pentosan and aldobionic acid. Pentosan on hydrolysis yields xylose and arabinose and aldobionic acid yields galactouronic acid and rhamnose. Protein and fixed oil are present in endosperm and embryo.

Morphological Characters:

Colour	Pinkish gray to brown.
Odour	None.
Taste	Mucilaginous.
Shape	Ovate, boat shaped, cymbiform.
Size	1.5 3.5 m long, 1-1.18 mm wide.
Weight of 100seeds	0.15-0.19 g.
Apperance	Seeds are hard, translucent and smooth, the dorsal (convex surface) consists of a small elongated glossy reddish brown spot at the centre, while the ventricle (concave surface) has a cavity having nil urn covered with a thin whitish membrane

Uses:1. Ispaghula seeds are used as an excellent demulcent, diuretic and bulk laxative in chronic constipation. The laxative activity of ispaghula mucilage is purely mechanical.

2. It is also useful in dysentery, chronic diarrhoea, in cases of duodenal ulcers and piles. It works effectively as a soothing agent. Ispaghula husk is also used for similar purpose.

OBSERVATION:

Morphological character of Ispaghula:

Character	**Description**
Size	
Shape	
Colour	
odour	
Taste	

Label of the diagram:

OBSERVATION:

Morphological character of Senna:

Character	**Description**
Size	
Shape	
Colour	
odour	
Taste	

Label of the diagram:

EXPERIMENT NO:2 **DATE:**

TO STUDY MORPHOLOGICAL IDENTIFICATION OF SENNA

Aim: To study morphological identification of Senna.

Biological Sources:

Senna leaf consists of the dried leaflets of Cassia acutifolia, Delile (C. senna L.) known as Alexandrian senna and of C. angustifolia Vahl., which is commercially known as Tin-nevelly senna. It belongs to family Leguminosae.

Chemical Constituents:

Senna contains sennosides A and B (2.5%) based on the aglycones sennidin A and B, sennosides C and D which are glycosides of heterodianthrones of aloe-emodin and rhein are present. Others include palmidin A, rhein anthrone and aloe-emodin glycosides. Senna also contains free chryso phanol, emodin and their glycosides and free aloe-emodin, rhein, their monoanthrones, dianthrones and their glycosides. Mucilage is present in the epidermis of the leaf and gives red colour with ruthenium red.

Morphological Characters:

Senna leaflets are 3-5 cm long, 2 cm wide and about 0.5 mm thick. It shows acute apex, entire margin and asymmetric base. Outline is lanceolate to ovate lanceolate. Pubescent lamina is found on both the surfaces. Leaves show greyish green colour for Alexandrian senna and yellowish green for Tinnevelly senna. Leaves of Tinnevelly senna are somewhat larger, less broken and firmer in texture than that of Alexandrian senna. Odour of leaves is slight but characteristic and the taste is bitter, mucilagenous. Both the types of leaflets show impression or transverse markings due to the pressing of midrib

Uses:

1. Senna leaves are used as laxative.

2. It causes irritation of large intestine and has some griping effect. Thus they are prescribed along with carminatives.

3. Senna is stimulant cathartic and exerts its action by increasing the tone of the smooth muscles in large intestine.

OBSERVATION:

Morphological character of Coriander.:

Character	**Description**
Size	
Shape	
Colour	
odour	
Taste	

Label of the diagram:

EXPERIMENT NO. 3 **DATE:**

TO STUDY MORPHOLOGICAL IDENTIFICATION OF CORIANDER.

Aim: To study morphological identification of Coriander.

Biological Sources: Coriander consists of dried ripe fruits of Coriandrum sativum Linn., belonging tofamily Umbelliferae.

Chemical Constituents:

Coriander consists of about 1% of volatile oil. The chief volatile components are D-(+)-linalool (coriandrol), along with other constituents like borneol, p-cymene, camphor, geraniol, limonene, and alpha-pinenes. The fruits also contain fatty oil and hydroxycoumarins. The fatty oils include acids of petroselic acid, oleic acid, linolenic acid; whereas the hydroxycoumarins include the umbelliferone and scopoletine. Coriander leaves are also rich in Vitamin A.

Morphological Characters:

The fruit is a cremocarp, subspherical in shape, Yellowish-brown in colour. The size of the fruit is 3 to 4 mm in diameter, with aromatic odour, and spicy, aromatic taste.

Uses:

1. It is used as aromatic, carminative, stimulant, alterative, antispasmodic, diaphoretic and flavouring agent.

2. It is also used as refrigerant, tonic, and appetizer, diuretic, aphrodisiac, and Stomachic.

3. Coriander can be applied externally for rheumatism and painful joints.

OBSERVATION:

Morphological character of Fennel:

Character	Description
Size	
Shape	
Colour	
odour	
Taste	

Label of the diagram:

EXPERIMENT NO. 4 **DATE:**

TO STUDY MORPHOLOGICAL IDENTIFICATION OF FENNEL

Aim: To study morphological identification of Fennel

Biological Sources:

Fennel consists of the dried ripe fruits of Foeniculum vulgare Miller, belonging to the family Umbelliferae.

Chemical Constituents:

The primary constituents of volatile oil are 50 to 60% of anethole, a phenolic ester, and 18 to 22% of fenchone, a ketone. Fenchone is chemically a bicyclic monoterpene which is a colourless liquid and the odour and taste is pungent and camphoraceous. The oil of Fennel has B-pinene, anisic acid, phellandrine, and anisic aldehyde. Fennel also contains about 20% fixed oil and 20% proteins.

Morphological Characters:

The fruit is an entire cremocarps with pedicels, oval-oblong and 5 to 10 mm long, 2 to 4 mm broad. It has greenish-brown to yellowish brown colour with five prominent primary ridges and a bifid stylopod at the apex.

Uses:

1. Fennel is used as stomachic, aromatic, diuretic, carminative, diaphoretic, as a digestive, pectoral, and flavouring agent.

2. Fennel can increase production of bile.

3. It is used in the treatment of infant colic, to promote menstruation in women, and can increase lactation.

4. It also acts as antipyretic, antimicrobial and anti-inflammatory

OBSERVATION:

Morphological character of Cardamom:

Character	**Description**
Size	
Shape	
Colour	
odour	
Taste	

Label of the diagram:

EXPERIMENT NO. 5 **DATE:**

TO STUDY MORPHOLOGICAL IDENTIFICATION OF CARDAMOM.

Aim: To study morphological identification of Cardamom.

Biological Sources:

Cardamom consists of the dried ripe seeds of Elettaria cardamomum Maton, belonging to family Zingiberaceae.

Chemical Constituents:

The seeds contain 3 to 6% of volatile oil along with fixed oil, salts of potassium, a colouring principle, nitrogenous mucilage, an acrid resin, starch, ligneous fibre and ash. The active constituent of the volatile oil is cineole. Other aromatic compounds present are terpinyl acetate, terpineol, borneol, terpinene, etc. The oil is colourless when fresh, but becomes thicker, more yellow and less aromatic on storage.

Morphological Characters:

It is a five-sided fruit with green to yellowish brown colour and sweet aromatic odour and taste. Fruits are glabrous and straight.

Uses:

1. Cardamom is used as an aromatic, carminative, stimulant, stomachic, expectorant,

diaphoretic, digestive, appetizer, and flavouring agent.

2. It is used in the treatment of respiratory disorders like asthma, bronchitis, cough, nausea, vomiting, indigestion, headache, diarrhoea, colds, for flatulence.

3. It is also used as a spice in cooking.

4. The infusion of decoction of dried fruit of cardamom is useful for the treatment of sore-throat, indigestion, vomiting, flatulence, and other intestinal disorders.

OBSERVATION:

Morphological character of Nutmeg:

Character	Description
Size	
Shape	
Colour	
odour	
Taste	

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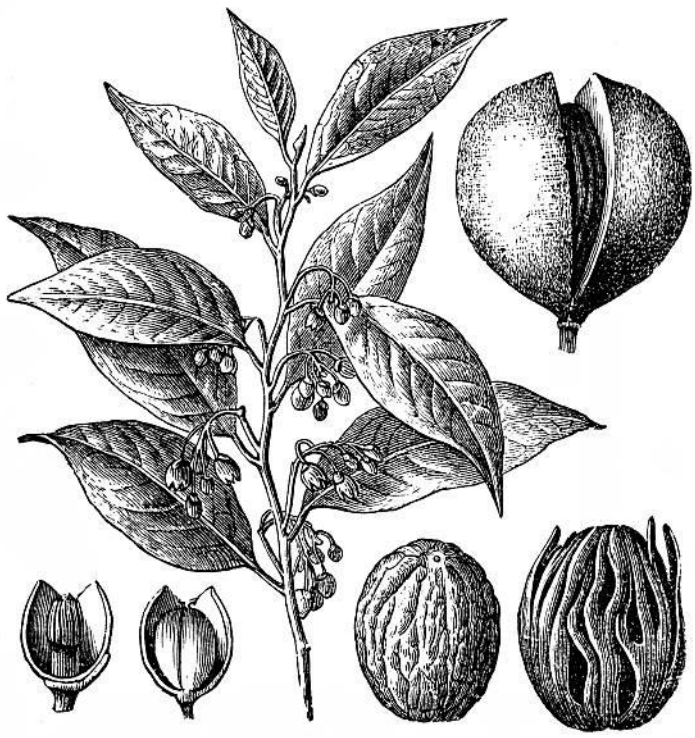

EXPERIMENT NO. 6 **DATE:**

TO STUDY MORPHOLOGICAL IDENTIFICATION OF NUTMEG

Aim: To study morphological identification of Nutmeg.

Biological Sources:

Nutmeg is the kernel of the dried ripe seed of Myristica fragrans Houtten, belonging to family Myristicaceae.

Chemical Constituents:

Nutmeg consists of 5 to 15% volatile oil, lignin, stearin, starch, gum, colouring matter. and 0.08% of an acid substance. The volatile oil contains clemicine, myristicin geraniol, borneol pinene, camphene, and dipentene. Myristicin is a poisonous compound. It mainly contains myristic, palmitic, oleic lauric and other acids. It also contains eugenol, safrol, p-cymene and is-oeugenol in small quantity.

Morphological Characters:

Nutmeg is the kernels consisting of outer and inner perisperm, endosperm and embryo; it has an ovoid or broadly elongated shape with a size of 2 to 3 cm length and 15 to 2 cm wide. The kernels are grayish brown in colour, with numerous reddish brown spots on them. One end of the nutmeg has a small depression indicating the position of micropyle and slightly by its side it has the position of hilum. The line of raphe extends to opposite end of the kernel to the depression called chalaza. The embryo is present in a small cavity inside the endosperm.

Uses:

1. Nutmeg is aromatic, carminative, flavouring agent.

2. It is used for flatulence, in nausea and vomiting.

3. It has narcotic action and peripherally it irritates and produces anaesthetics action, since it irritates intestine and uterus it can cause abortion.

4. Oil of Nutmeg is used to conceal the taste of various drugs and as a local stimulant to the gastrointestinal tract.

OBSERVATION:

Morphological character of Black pepper:

Character	Description
Size	
Shape	
Colour	
odour	
Taste	

Label of the diagram:

EXPERIMENT NO. 7 **DATE:**

TO STUDY MORPHOLOGICAL IDENTIFICATION OF BLACK PEPPER

Aim: To study morphological characters of Black Pepper.

Biological Sources:

It consists of dried unripe fruits of Pipper nigrum Linn. belonging to family Piperace

Chemical Constituents:

It chiefly contains alkaloids piperine and piperidine. Colourless (1-2.5%) volatile oils are phellandrene, caryophyllene, camphene, and pinene. The pungency is due to alkaloids piperine and resin.

Morphological Characters:

Its fruits are globular in shape, 3.5 to 6 mm in diameter. The external surface is dark brown or greyish-black. The surface is strongly reticulated, wrinkled with remains of stigma at apex. The pericarp is thin and encloses a single white kernel with hollow center. This kernel contains perisperm, a small endosperm and embryo. Perisperm is horny in outer part

Uses:

1. Carminative.

2. Stomachic.

3. Stimulant.

4. Flatulent.

5. Anti-arthritis.

6. Useful in sore throat, piles and dyspepsia.

7. Useful in treatment of gonorrhoea and chronic bronchitis.

8. Commercially it is employed as condiment, spice and as pungent principle.

9. Recently it is reported to enhance the bioavailability of certain drugs

e.g. antibiotics.

OBSERVATION:

Morphological character of Cinnamon:

Character	Description
Size	
Shape	
Colour	
odour	
Taste	

Label of the diagram:

EXPERIMENT NO. 8 **DATE:**

TO STUDY MORPHOLOGICAL IDENTIFICATION OF CINNAMON

Aim: To study morphological identification of Cinnamon.

Biological Sources: Cinnamon is the dried inner bark of the coppiced shoots of Cinnamomum zeylanicum Nees, belonging to family Lauraceae.

Chemical Constituents:

Cinnamon contains about 10% of volatile oil, tannin, mucilage, calcium oxalate and sugar. Volatile oil contains 50 to 65% cinnamic aldehyde, along with 5 to 10% eugenol terpene hydrocarbons and small quantities of ketones and alcohols.

Morphological Characters:

Cinnamon is either in single- or double-compound quills, with a size of 1 m length, 0.5 mm thickness, and 6 to 10 mm diameter. The outer surface has yellowish brown colour having longitudinal lines of pericyclic fibre and scars and holes representing the position of leaves or the lateral shoots. The inner surface is darker than the outer. Cinnamon has a fragrant perfume; taste aromatic and sweet.

Uses:

1. It is used as aromatic, carminative, flavouring agent.

2. It is used as analgesic, antiseptic, anti-rheumatic, antispasmodic, demulcent, digestive, expectorant, stomachic, diaphoretic, antibacterial, antifungal, etc.

3. It stops vomiting, relieves flatulence and is given with chalk and as astringents for diarrhoea and haemorrhage of the womb.

4. It is also used in the treatment of bronchitis, colds, palpitations, nausea, congestion, and liver problems.

5. Commercially it is used in preparation of some perfumes, dendrifices and candies.

OBSERVATION:

Morphological character of Clove:

Character	Description
Size	
Shape	
Colour	
odour	
Taste	

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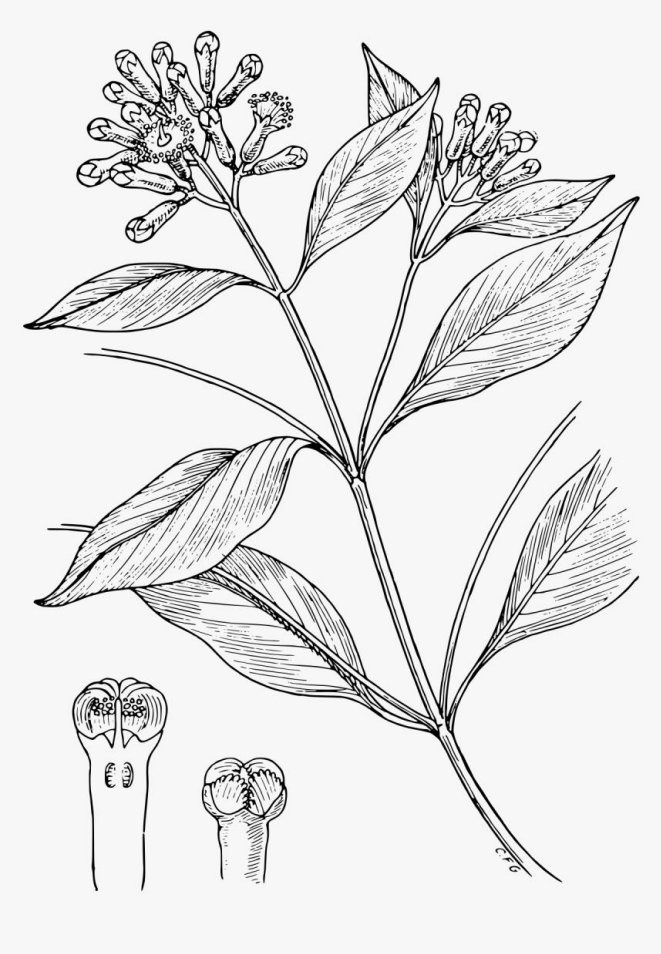

EXPERIMENT NO. 9 **DATE:**

TO STUDY MORPHOLOGICAL IDENTIFICATION OF CLOVE

Aim: To study morphological identification of Clove.

Biological Sources:

Clove consists of the dried flower buds of Eugenia caryophyllus Thumb, belonging to family Myrtaceae.

Chemical Constituents:

Clove contains 14- 21% of volatile oil. The other constituents present are the eugenol, acetyl eugenol, gallotannic acid, and two crystalline principles; a and B-caryophyllenes, methyl furfural, gum, resin, and fibre. Caryophyllin is odourless component and appears to be a phytosterol, whereas eugenol is a colourless liquid. Clove oil has 60-90% eugenol, which is the cause of its anesthetic and antiseptic properties.

Morphological Characters:

Clove is reddish-brown in colour, with an upper crown and a hypanthium. The hypanthium is sub-cylindrical and tapering at the end. The hypanthium is 10 to 13 mm long, 4 mm wide and 2 mm thick and has schizolysigenous oil glands and an ovary which is bilocular. The crown region consists of the calyx, corolla, style and stamens. Calyx has four thick sepals. Corolla is also known as head, crown or cap; it is dome shaped and has four pale yellow coloured petals which are imbricate, immature, and membranous. The ovary consists of abundant ovules. Clove has strong spicy, aromatic odour, and pungent and aromatic taste.

Uses:

1. Clove is used as an antiseptic, stimulant, carminative, aromatic, and as a flavouring agent.

2. Eugenol is used for the commercial production of vanillin.

3. Dentists use clove oil as an oral anaesthetic and to disinfect the root canals.

4. Clove oil can stop toothache. A few drops of the oil in water will stop vomiting, eating cloves is said to be aphrodisiac.

5. Eugenol is also used as local anaesthetic in small doses.

OBSERVATION:

Morphological character of Ephendra:

Character	**Description**
Size	
Shape	
Colour	
odour	
Taste	

Label of the diagram:

EXPERIMENT NO. 10 **DATE:**

TO STUDY MORPHOLOGICAL IDENTIFICATION OF EPHEDRA

Aim: To study morphological identification of Ephedra.

Biological Sources:

Ephedra consists of the dried aerial parts of Ephedra gerardiana Wall, Ephedrasinica Stapf, and other Ephedra species, belonging to family Ephedreaceae.

Chemical Constituents:

Ephedra contains alkaloids Ephedrine (water-soluble salt of an alkaloid), Pseudoephedrine (analog of ephedrine), Nor-pseudoephedrine (analog of ephedrine). The leave and stems of ephedra also contain many potentially active compounds, such as tannins, saponin, flavone and volatile oils.

Morphological Characters:

It consists of cylindrical woody stem that is grey or greenish in colour. Nodes, internodes, scaly leaves and terminal buds are present in the stems. The distance between the internodes is 3-4 cm and the nodes bare the scaly leaves. They are bitter in taste.

Uses:

1. Ephedrine is antiallergenic, anti-asthmatic, antispasmodic, decongestant, cough suppressant, stimulant and vasoconstrictor.

2. Pseudoephedrine is decongestant, cough suppressant and nor-pseudoephedrine is peripheral vasodilator used to treat angina.

3. As a whole it is decongestant; it opens sinuses, increases sweating, dilates bronchioles (anti-asthmatic use), diuretic, CNS stimulant, raises blood pressure, alleviates aches and rheumatism, alleviates hay fever/colds, etc.

OBSERVATION:

Morphological character of Rauwolfia:

Character	**Description**
Size	
Shape	
Colour	
odour	
Taste	

Label of the diagram:

EXPERIMENT NO. 11 **DATE:**

TO STUDY MORPHOLOGICAL IDENTIFICATION OF RAUWOLFIA

Aim: To study morphological identification Rauwolfia,

Biological Sources:

Rauwolfia consists of dried roots of Rauwolfia serpentine Benth, belonging to familyApocynaceae.

Chemical Constituents:

Rauwolfia contains about 0.7-2.4% total alkaloidal bases from which more than 80 alkaloids have been isolated. The prominent alkaloids isolated from the drug are reserpine, rescinnamine, v-reserpine, rescidine, raubescine and deserpidine. The other alkaloidal components are ajmalinine, ajmaline, ajmalicine (8-yohimbine), serpentine, serpentinine, tetrahydroreserpine, raubasine, reserpinine, isoajamalineand yohambinine. • **Morphological Characters**:

The roots and rhizomes are almost identical in external characters. The drug occurs in cylindrical or slightly tapering, tortuous pieces, 2 10 cm long, 5 22 mm in diameter. The roots are rarely branched. Rootlets, 0.51 mm in diameter, are rare. The outer surface is greyish-yellow, light-brown or brown. Young pieces contain slight wrinkles, while old pieces have longitudinal ridges. Bark exfoliation is present in old samples leaving behind patches of exposed wood. The fracture is short. Pieces of rhizome closely resemble the root, but may be identified by small central pith. They are attached to them with small pieces of aerial stem. Slight odour is felt in recently dried drug which decreases with age; taste is bitter.

Uses:

1. Rauwolfia is used as hypnotic, sedative and antihypertensive.

2. It is specific for insanity, reduces blood pressure and cures pain due to affections of the bowels.

3. Ajmaline, which has pharmacological properties similar to those of quinidine used in the treatment of cardiac arrhythmias.

4. The usual antihypertensive dose of rescinnamine is 500 µg, two times a day. Higher doses may cause serious mental depression.

OBSERVATION:

Morphological character of Gokhru:

Character	**Description**
Size	
Shape	
Colour	
odour	
Taste	

Label of the diagram:

EXPERIMENT NO. 12 **DATE:**

TO STUDY MORPHOLOGICAL IDENTIFICATION OF GOKHRU

Aim: To study morphological identification of Gokhru.

Biological Sources:

In Ayurveda two types of Gokhru are used, that is, Bada and Chota Gokhru. The smaller or chhota Gokhru is the dried ripe seeds of Tribulus terrestris Linn., belonging to family Zygophyllaceae. Bada Gokhru is the dried ripe fruit of Pedalium murex Linn. belonging to family Pedaliaceae.

Chemical Constituents:

The dried fruit consists of steroidal saponins as the major constituent. The hydrolyzed extract consists of sapogenins such as diosgenin, chlorogenin, hecogenin and neotigogenin. The flavonoid derivatives reported from the fruits includes tribuloside and number of other glycosides of quercetin, kaempferol and isorhamnetin. It also consists of common phytosterols, such as, ß-sitosterol, stigmasterol and cinnamic amide derivative.

Morphological Characters:

The fruits are yellowish in colour, globose, 1.2 cm in diameter containing five woody, densely hairy, spiny cocci. Large pointed spines are present in each coccus. Two smaller and shorter spines are directed downwards. Several seeds are present in each COCCUS.

Uses:

1. The fruit has cooling, anti-inflammatory, antiarthritic, diuretic, tonic, aphrodisiac properties.

2. It is used in building immune system.

3. It is also used in various gout and kidney diseases.

4. It is a common ingredient of some preparations like Chyawanprash and Dashmoolarishta..

OBSERVATION:

Morphological character of Punarnava:

Character	Description
Size	
Shape	
Colour	
odour	
Taste	

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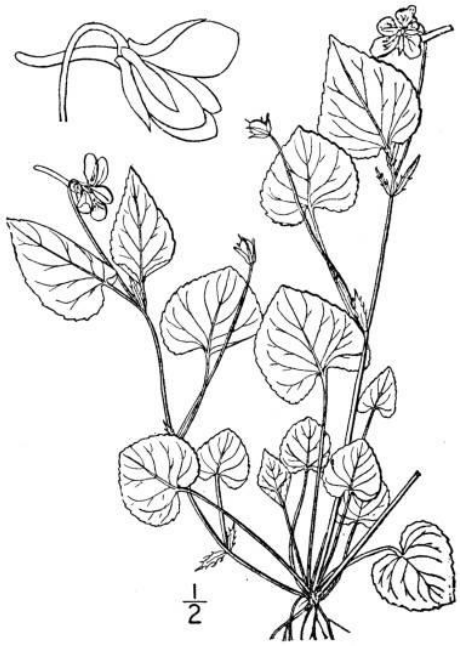

EXPERIMENT NO. 13 **DATE:**

TO STUDY MORPHOLOGICAL IDENTIFICATION OF PUNARNAVA

Aim: To study morphological identification of Punarnava.

Biological Sources:

Punarnava consists of dried or fresh aerial parts of Boerhavia diffusa Linn. belonging to family Nyctaginaceae.

Chemical Constituents:

It contains mixture of alkaloids (0.04%) punaravine and punarvoside. It also contains potassium nitrate, potassium sulphate, etc. B-sitosterol, palmitic acid, stearic acid, allantoin (a nitrogenous compound).

Morphological Characters:

The plant is perennial herb generally found in rainy season. Plant is pubescent and glabrous. Stem is greenish purple, prostrate, cylindrical. Leaves occur in unequal pairs, opposite, petiolate, ovate, rounded at apex and at the base, margin entire. Flowers are small and pinkish red in colour.

Uses:

1. It is used as a diuretic.

2. It is used in oedema and in various liver disorders, ascites (cirrhosis of liver).

3. It is also used as an anti-fibrinolytic agent.

OBSERVATION:

Morphological character of Cinchona:

Character	**Description**
Size	
Shape	
Colour	
odour	
Taste	

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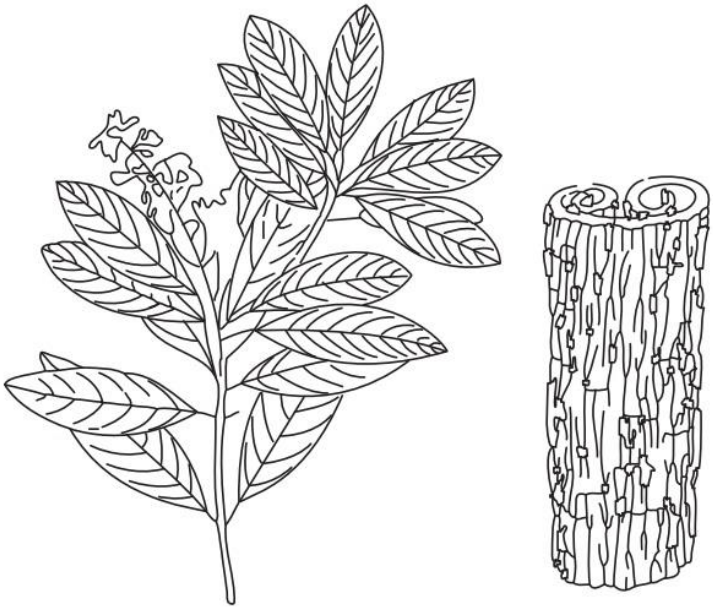


EXPERIMENT NO. 14 **DATE:**

TO STUDY MORPHOLOGICAL IDENTIFICATION OF CINCHONA

Aim: To study morphological identification of Cinchona.

Biological Sources:

Cinchona is the dried bark of the stem or of the root of Cinchona calisaya Wedd, Cinchona ledgeriana Moens, Cinchona officinalis Linn., and Cinchona succirubra Pavon, belonging to family Rubiaceae.

Chemical Constituents:

More than 30 alkaloids have been reported in cinchona. The chiefly identified alkaloids are quinidine, quinine, cinchonine and cinchonidine. These constituents are the stereoisomers of each other like quinine is stereoisomer of quinidine and cinchonine is stereoisomer of cinchonidine. Other than these, it also consists of bitter glycoside, starch grains, calcium oxalate crystals and crystalline acid like quinic acid..

Morphological Characters:

Colour	The outer surface is yellowish to brown, with short fractures and the inner surface varies in all the four species; like Cinchona calisaya and Cinchona ladgeriana is yellowish, Cinchona officinalis is slightly brown and Cinchona succimbra is reddish brown.
Odour	Distinctive
Taste	Highly bitter and astringent.
Shape	Curved, quill or double quill.
Size	30 cm long and 2-7 mm thick.
Extra features	The outer surface consists of longitudinal and transverse cracks, fissures and ridges.

Uses:

1. It is mainly employed as anti-malarial drug.

2. It is also used as analgesic, antipyretic, protoplasmic, bitter stomachic and tonic.

3. Quinidine is cardiac depressant and Cinchonidine is used in rheumatism and neuralgia.

4. After cinchona, Artemesia also has shown promising results in cure of Malaria.

OBSERVATION:

Morphological character of Agar:

Character	Description
Size	
Shape	
Colour	
odour	
Taste	

Label of the diagram:

EXPERIMENT NO. 15 **DATE:**

TO STUDY MORPHOLOGICAL IDENTIFICATION OF AGAR

Aim: To study morphological identification of Agar.

Biological Sources:

It is the dried gelatinous substance obtained by extraction with water from Gelidium amansii or various species of red algae like Gracilaria and Pterocladia, belonging to family Gelidaceae (Gelidium and Pterocladia), Gracilariaceae (Gracilaria).

Chemical Constituents:

Agar is a complex heterosaccharide and contains two different polysaccharides known as agarose and agaropectin. Agarose is neutral galactose polymer and is responsible for the gel property of agar. It consists of D-galactose and L-galactose unit. The structure of agaropectin is not completely known, but it is believed that it consists of sulphonated polysaccharide in which galactose and uronic acid are partly esterified with sulphuric acid. Agaropectin is responsible for the viscosity of agar solution.

Morphological Characters:

Colour	Yellowish white to gray colourless.
Odour	Slight or odourless.
Taste	Mucilaginous.
Shape	Strips, flakes or coarse powder.
Size	Strips are about 60 cm in length and 4 mm wide. Wide sheets are 50-60 cm long and 10-15 cm wide..
Solubility	Insoluble in organic solvents and cold water, but soluble in hot water and forms a gelatinous solution after cooling the hot solution.

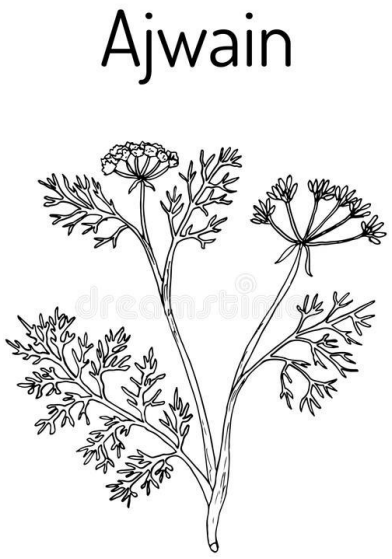
Uses:

1. Agar is used to treat chronic constipation, as a laxative, suspending agent, an emulsifier, a gelating agent for suppositories, as surgical lubricant.

2. It is extensively used as a gel in nutrient media for bacterial cultures, as a substitute for gelatine.

3. It is used as thickening agent in food, especially confectionaries and dairyproducts, in meat canning; sizing for silk and paper, in dying and printing of fabrics and textiles; and in adhesives.

Observation of T.S of ajwain:



Result :

EXPERIMENT NO. 16 **DATE:**

TO STUDY THE TRANSVERSE SECTION (T.S.) OF AJWAIN

Aim: To study the Transverse Section (T.S.) of Ajwain.

Biological Sources:

It consists of dried ripe fruits of Trachyspermum ammi Linn, belonging to family Umbelliferae.

Chemical Constituents:

It contains volatile oil about 3-4%. The main constituent of the oil is phenolic terpene called thymol (30-40%). Thymol crystallizes when oil is subjected to freeze. The other minor constituents are proteins and tannins. Its flavour and taste is due to thymol and volatile oils.

Microscopic Characters:

Transverse section of fruit shows two hexagonal structuresattached with each other by carpophores. Epicarp consists of a single layer of tangentially elongated tabular cells. Mesocarp consists of moderately thick-walled, rectangular to polygonal tangentially elongated cells having some vittae, carpophores and vascular bundles present as groups of thick-walled radically elongated cells, integument, barrel shaped of tangentially elongated cells. Endosperm consists of thin walled cells filled with embryo, oil globules, small and circular, composed of polygonal thin walled cells. The powder microscopy shows the presence of oil globules and groups of endosperm cells.

Uses:

1. Ajwain is used for its antispasmodic, stimulant, tonic and carminative properties

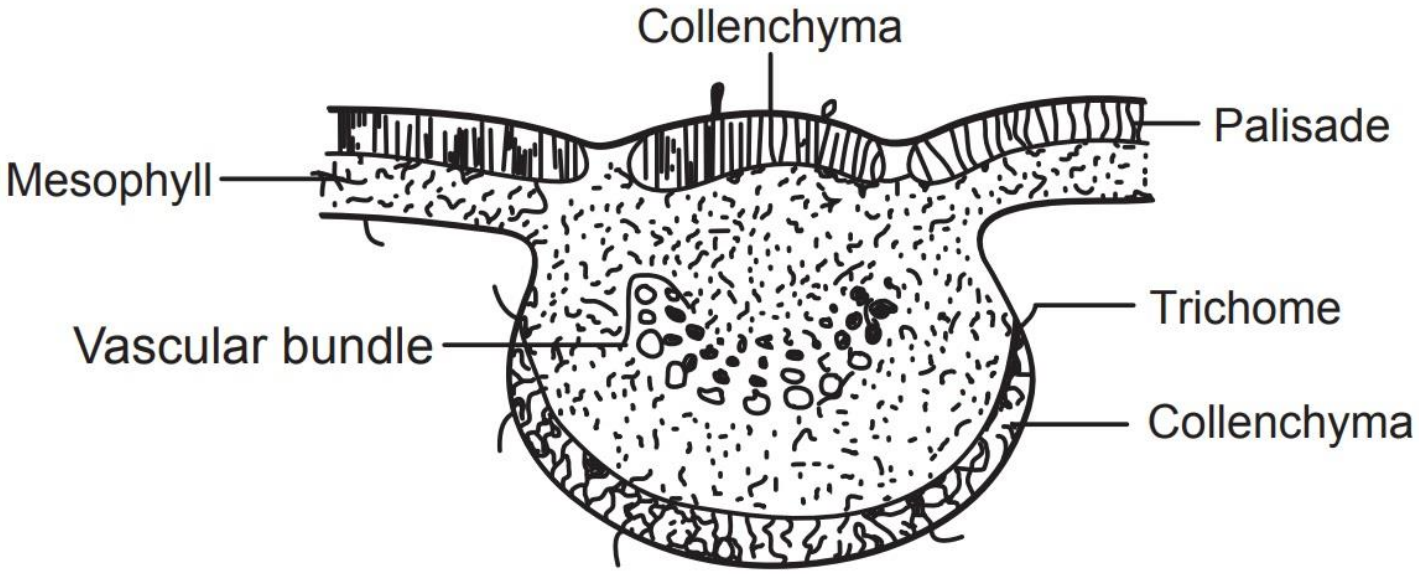
2.It is given in flatulence, dyspepsia, diarrhoea and cholera.

3.It is also effective in relaxed sore throat and in bronchitis, and often constitutes an ingredient of cough mixture.

4.Ajwain oil is used as an antiseptic, aromatic, carminative, for perfuming disinfectant soaps, and as an insecticide.

5.The oil is useful as an expectorant in emphysema, bronchial pneumonia an some other respiratory ailments.

Observation of T.S of Datura :


Collenchyma
Palisade
Mesophyll
Trichome
Vascular bundle
Collenchyma

Results:

EXPERIMENT NO. 17 **DATE:**

TO STUDY THE TRANSVERSE SECTION (T.S.) OF DATURA

Aim: To study the T.S. of Datura.

Biological Sources:

It consists of dried leaves and flowering parts of Datura metel belonging to family Solaneceae.

Chemical Constituents:

Datura herb contains up to 0.5% of total alkaloids, among which hyoscine (scopolamine) is the main alkaloid, while L-hyoscyamine (scopoline) and atropine are present in very less quantities.

Microscopic Characters:

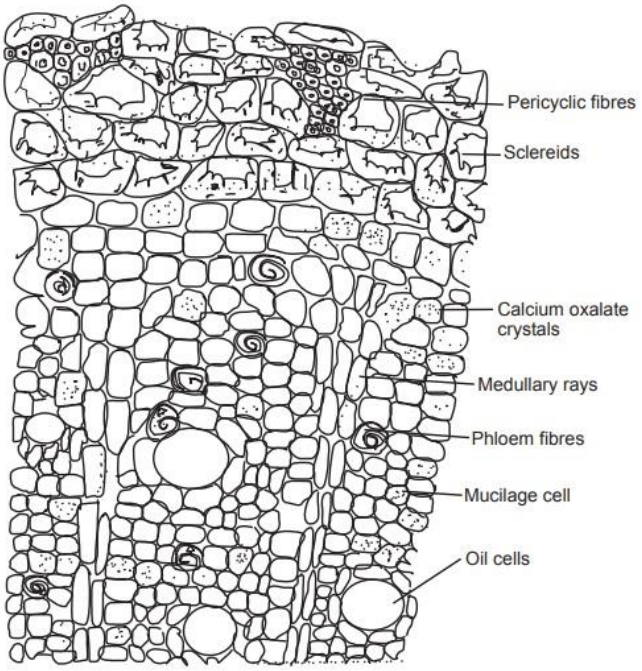
The epidermis cells of both sides show anisocytic stomata. In the lamina it has the upper epidermis which is single layer, rectangular cells covered with cuticle. Both covering and glandular trichomes are present. The covering trichomes are uni seriate, multicellular, warty and with blunt apex. The glandular trichomes have one stalk consisting of one cell and multicellular head. The mesophyll has spongy. parenchyma and palisade parenchyma in it. Palisade cells are radially elongated, single layer and compactly arranged. Spongy parenchyma are several layers, loosely arranged consisting of micro-sphenoidal crystals and vascular strands. In the midrib, strips of collenchyma appear below the upper and above the lower epidermis followed by the cortical parenchymatous cells containing calcium oxalate. The lower epidermis is similar to that of the upper one, but has more number of trichomes and stomata when compared with upper epidermis.

Uses:

1. It exhibits parasympatholytic with anti-cholinergic and CNS depressant effects.

2. The drug is used in cerebral excitement, asthma and in cough.

Observation of T.S of Cinnamon:



Results:

EXPERIMENT NO. 18 **DATE:**

TO STUDY THE TRANSVERSE SECTION (T.S.) OF CINNAMON

Aim: To study the T.S. of Cinnamon.

Biological Sources:

It consists of the dried inner bark of the shoots of coppiced tree of Cinnamomum zeylanium of family Lauraceae. Cinnamon is derived from the Arabic word Cinnamon, means sweet wood.

Chemical Constituents:

Cinnamon bark contains about 0.5-1.0% volatile oil, 1.2% tannins, mucilage, calcium oxalate, starch and sweet substances known as mannitol. The volatile oil is the active constituent of the drug. It is light yellow when freshly distilled in colour and changes red on storage. Cinnamon contains 60-70% of cinnamic aldehyde, 5-10% eugenol, cumin aldehyde and other terpenes like phellandrene, pynine, cymene, etc. Cinnamon oil is yellow to red with specific gravity 1-1.030, optical rotation 0-(-2) and refractive index 1.562-1.582.

Microscopic Characters:

Being an inner bark, the cork and primary cortex are absent. Rarely, patches of primary cortex may be present pericyclic fibres, lignified in groups of 6 to 15. Starch grains and calcium oxalate crystals in the medullary rays and parenchyma.

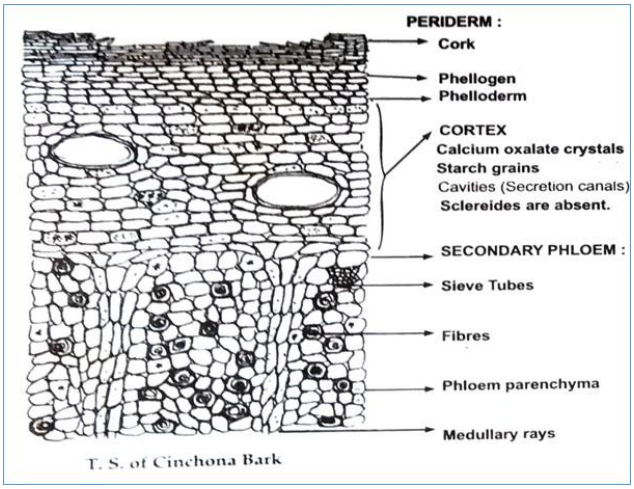
Uses:

1. Bark is used as a carminative, stomachic and mild astringent.

2. It is also used as a flavouring agent, aromatic and antiseptic.

3. Commercially, it is used as spices and also used in dentifrices and perfumes.Observation:

Observation of T.S of Cinchona:



T. S. of Cinchona Bark

Results:

EXPERIMENT NO. 19 **DATE:**

TO STUDY THE TRANSVERSE SECTION (T.S.) OF CINCHONA

Aim: To study the T.S. of Cinchona

Biological Sources:

It is obtained from dried bark of Cinchona species of Cinchona calisaya, Cinchona ledgeriana, Cinchona officinalis, Cinchona succirubra belonging to family Rubiaceae,

Chemical Constituents:

It consists of quinoline alkaloids. Quinidine, quinine, cinchonine and cinchonidine are some commonly found alkaloids in cinchona bark. These four chemical constituents present in bark are stereoisomers of each other. Bitter glycoside and starch grains are also present in cinchona. They also consist of calcium oxalate and crystalline acid like quinic acid.

Microscopic Characters:

Cinchona exhibits the typical histological characters of the bark. The cork cells are thin-walled, followed by phelloderm. The cortex consists of several secretary channels and phloem fibres. Medullary rays with radially arranged cells are present. Idioblast of calcium oxalate is the specific characteristics of cinchona bark. Starch grains are present in the parenchymatous tissues. Stone cells are rarely present in the structure. A few of the cork cells are lignified. Medullary rays are 2 to 3 cells wide. The walls of all the parenchymatous cells are dark reddish brown in colour.

Uses:

1. Cinchona is mainly used for its anti-malarial activity and it is used as anti-malarial drug.

2. It also has analgesic, antipyretic and protoplasmic properties.

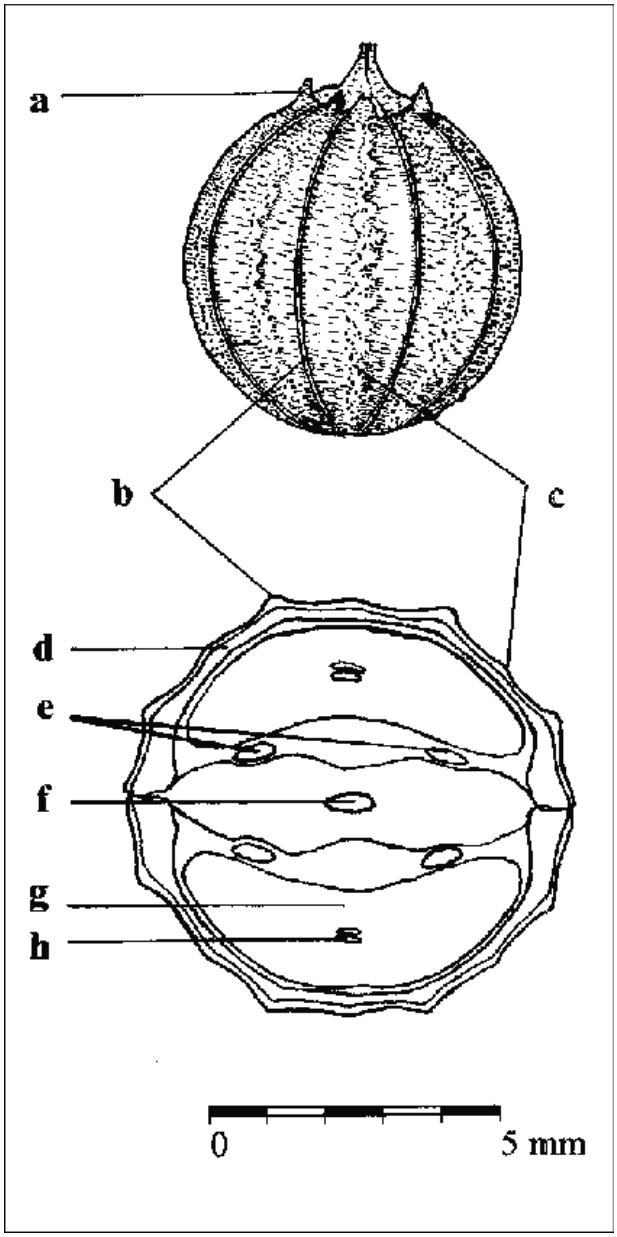
3. It is used as bitter stomachic and tonic.

4. The chief chemical constituent of cinchona, quinidine contains cardiac depressantproperty.

5. It is used to treat rheumatism and neuralgia.

6.It is used to treat cardiac arrhythmiaChemical reaction:

Observation of T.S of Coriander:



Results:

EXPERIMENT NO. 20 **DATE:**

TO STUDY THE TRANSVERSE SECTION (T.S.) OF CORIANDER

Aim: To study the T.S. of Coriander.

Biological Sources:

These are the fully dried, ripe fruits of the plant known as Coriandrum sativum belonging to family Umbelliferae.

Chemical Constituents:

Coriander yields 0.3-1 % volatile oil, 13% fixed oil, 20% protein. Volatile oil of the drug contains 90% of D-linalool or coriandrol (having an antibacterial, antiseptic. antifungal and antiviral activity). Other chemical constituents are coriandryl acetate and small quantities of geraniol and pinene. Coriander leaves are rich in vitamin A content. Coriander oil is pale yellow liquid having specific gravity 0.863 - 0,875, refractive index 1.462-1.472 and optical rotation +8 to +15°.

Microscopic Characters:

The epidermis of the pericarp is made up of polygonal tubular cells with stomata. Epidermal cells contain prisms of calcium oxalate. Mesocarp consists of inner and outer layer of parenchyma with a layer of sclerenchyma. The seed is characteristic to umbeliferous fruits. Fixed oil globules are present in the endosperm, while volatile oil in the vittae.

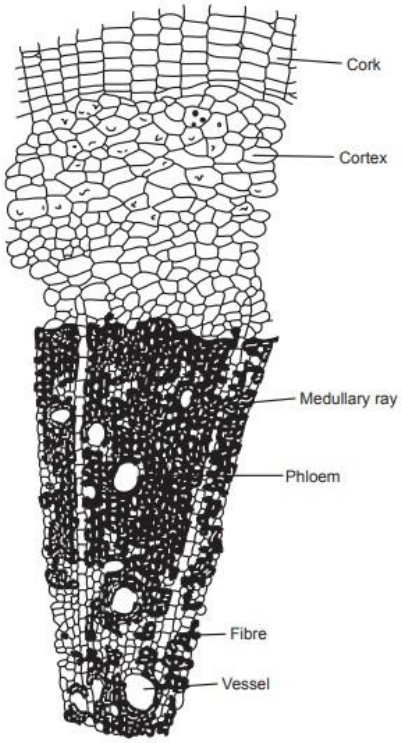
Uses:

1. The fruits as well as volatile oil are used as an aromatic carminative, stimulant, flavouring agent

2. Coriander oil is used along with purgative to prevent gripping.

3. It is an ingredient of compound spirit of orange and cascara elixir.

Observation of T.S of Ashwagandha:



Results:

EXPERIMENT NO. 21 **DATE:**

TO STUDY THE TRANSVERSE SECTION (T.S.) OF ASHWAGANDHA

Aim: To study the T.S. of Ashwagandha

Biological Sources:

It consists of the dried roots and stem bases of Withania somnifera Dunal, belonging to family Solanaceae.

Chemical Constituents:

The plants contain the alkaloid withanine as the main constituent and somniferine. pseudowithanine, tropine and pseudotropine, hygrine, isopellederine, anaferine, anahygrine and steroid lactones. The leaves contain steroid lactone, commonly known as withanolides.

Microscopic Characters:

Transverse section of root shows cork exfoliated or crushed; when present isodiamatric and non-lignified; cork cambium of two to four diffused rows of cells; secondary cortex about twenty layers of compact parenchymatous cells; phloem consists of sieve tubes, phloem parenchyma, companion cells, cambium shows four to five rows of tangentially elongated cells; secondary xylem hard forming a closed vascular ring separated by multiseriate medullary rays and a few xylem parenchyma.

Uses:

1. All plant parts are used including the roots, bark, leaves, fruit and seed are used to treat nervous disorders, intestinal infections and leprosy.

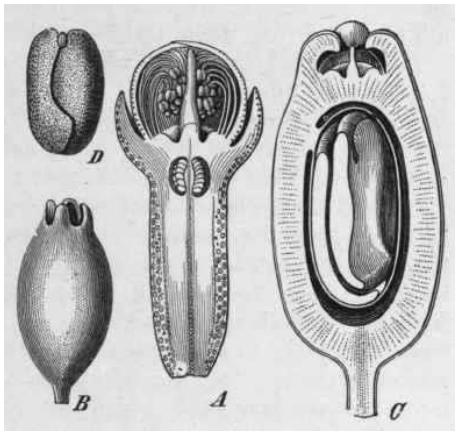
2. Ashwagandha is one of the most widespread tranquillizers used in India, where it holds a position of importance similar to ginseng in China.

3. It acts mainly on the reproductive and nervous systems, having a rejuvenative effect on the body, and is used to improve vitality and aid recovery after chronic illness.

4. It is also used to treat nervous exhaustion, debility, insomnia, wasting diseases,failure to thrive in children, impotence, infertility, multiple sclerosis, etc

.5. Externally it has been applied as a poultice to boils, swellings and other painful parts. Withania is considered as an adaptogen and so is used in number of diseases.

Observation of T.S of Clove:



Results :

EXPERIMENT NO. 22 **DATE:**

TO STUDY THE TRANSVERSE SECTION (T.S.) OF CLOVE.

Aim: To study the T.S. of Clove

Biological Sources:

Clove consists of the dried flower buds of Eugenia caryophyllus Thumb, belonging to family Myrtaceae,

Chemical Constituents:

Clove contains 14- 21% of volatile oil. The other constituents present are the eugenol acetyl eugenol, gallotannic acid, and two crystalline principles, a- and B-caryophyllenes, methyl furfural, gum, resin, and fibre. Caryophyllin is odourless component and appears to be a phytosterol, whereas eugenol is a colourless liquid. Clove oil has 60-90% eugenol, which is the cause of its anaesthetic and antiseptic properties.

Microscopic Characters:

The transverse section should be taken through the short upper portion which has the bilocular ovary and also through the hypanthium region. The transverse section through the hypanthium shows the following characters. It has a single layer of epidermis covered with thick cuticle. The epidermis has ranunculaceous stomata. The cortex has three distinct regions: the peripheral region with two to three layers of schizolysigenous oil glands, embedded in parenchymatous cells. The middle layer has few layers of bicollateral vascular bundle. In the inner portion it has loosely arranged aerenchyma cells. The central cylinder contains thick-walled parenchyma with a ring of bicollateral vascular bundles and abundant sphaeraphides. The T.S. through ovary region shows the presence of an ovary with numerous ovules in it.

Uses:

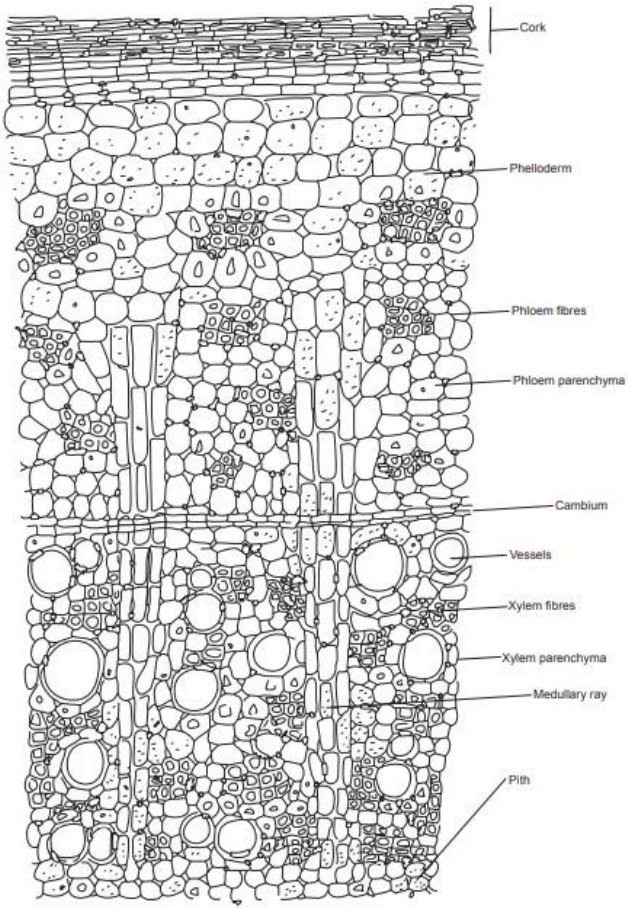
1. Clove is used as an antiseptic, stimulant, carminative, aromatic and as a flavouring agent. It is also used as anodyne, antiemetic.

2. Dentists use clove oil as an oral anaesthetic and to disinfect the root canals.

3. Clove kills intestinal parasites and exhibits broad antimicrobial properties agains

fungi and bacteria.

Observation of T.S of Liquorice:



Results :

EXPERIMENT NO. 23 **DATE:**

TO STUDY THE TRANSVERSE SECTION (T.S.) OF LIQUORICE

Aim: To study the T.S. of Liquorice.

Biological Sources:

Liquorice consists of peeled and unpeeled stolons, roots and subterranean stems of Glycyrrhiza glabra Linn, and other species of Glycyrrhiza, belonging to family Leguminosae.

Chemical Constituents:

The chief constituent of liquorice root is Glycyrrhizin (6-8%), obtainable in the form of a sweet, which is 50 times sweeter than sucrose, white crystalline powder, consisting of the calcium and potassium salts of glycyrrhizic acid. Glycyrrhizic acid on hydrolysis yields glycyrrhetic or glycyrrhetinic acid. Glycyrrhizinic acid is a triterpenoid saponin It shows especially in alkaline solution frothing but it has very weak haemolytic property. The yellow colour of the drug is due to chalcone glycoside isoliquiritin. The drug also contains sugar, starch (29%), gum, protein, fat (0.8%), resin, asparagin (2-4%), a trace of tannin in the outer bark of the root, yellow colouring matter, and 0.03% of volatile oil.

Microscopic Characters:

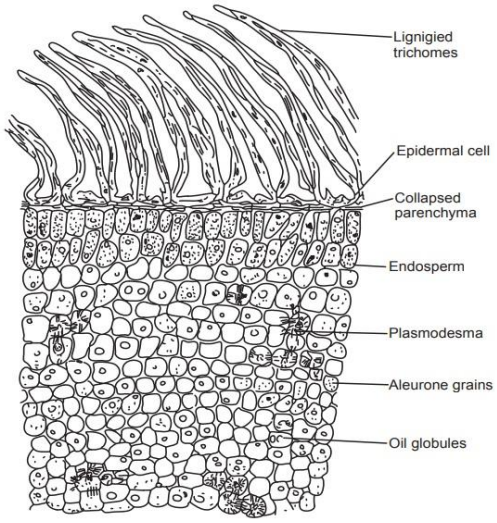
Cork consists of several rows of radially arranged thin walled tubular cells. Phelloderm is composed of parenchymatous and sometimes collenchymatous cells. Starch grains and calcium oxalate crystals are seen in phelloderm. Pericyclic fibres are found in groups. Phloem consists of sieve tissue alternating with thick walled lignified fibres surrounded by a sheath of parenchymatous cells containing prisms o calcium oxalate. Xylem vessels and xylem parenchyma are present. Medullary rays an radially elongated. Pith is present in rhizomes and absent in root.

Uses:

1. Glycyrrhiza is widely used as a sweetening agent and in bronchial problems su as bronchitis, cold, flu and coughs.

2. It reduces irritation of the throat and yet has an expectorant action. It produc its demulcent and expectorant effects.

Observation of T.S of Nux-vomika:



Results:

EXPERIMENT NO. 24 **DATE:**

TO STUDY THE TRANSVERSE SECTION (T.S.) OF NUX-VOMIKA

Aim: To study the T.S. of Nux-vomica.

Biological Sources:

It consists of dried ripe seeds of Strychnos nux-vomica, belonging to family Loganiaceae.

Chemical Constituents:

Nux vomica contains the alkaloids, Strychnine (1.25%) and Brucine (1.5%), also traces of strychnicine, and a glucoside Loganin, about 3% fatty matter, caffeotannic acid and a trace of copper. It contains about 2.5-3.5% bitter indole alkaloids. Strychnine is therapeutically active and toxic alkaloid and is located in central portion of endosperm. Brucine is chemically dimethoxystrychnine and is less toxic and has very little physiological action. It is intensely bitter and is used as a standard for determining the bitter value, of many bitter drugs. Brucine is more in the outer part Fatty matter is 3% aleurone grains and a trace of copper is present in the endosperm of the seed. The pulp of the fruit contains about 5% of loganin together with the alkaloid strychnicine.

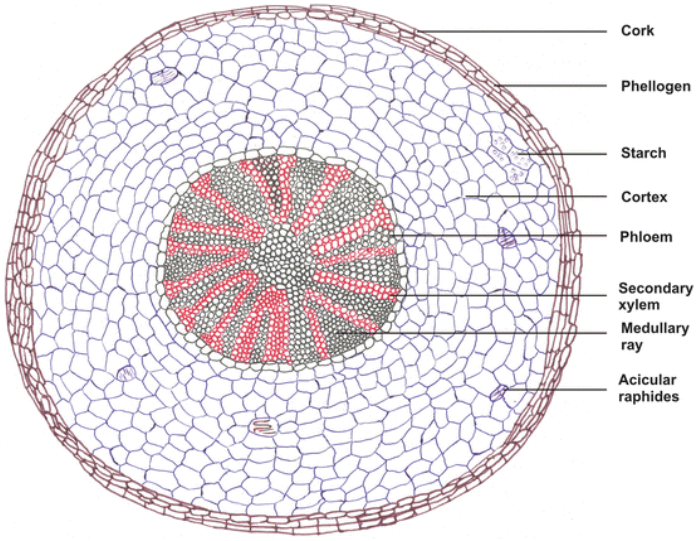
Microscopic Characters:

Epidermis consists of strongly thickened, pitted and lignified covering trichomes. The base of the trichome is large thick-walled with slit like pits. The upper part of the trichome is nearly at right angles to the base and has wavy walls. Endosperm consists of thick-walled polyhedral unlignified cells consisting of hemicellulose which swells with water and contains plasmodesma. Aleurone grains and fixed oil are present in endosperm and embryo. Calcium oxalate crystals and starch grains are absent in drug.

Uses:

1. The properties of nux vomica are substantially those of the alkaloid Strychnine. In the mouth it acts as a bitter, increasing appetite.2. Strychnine, the chief alkaloid constituent of the seeds, also acts as a bitter, increasing the flow of gastric juice; it is rapidly absorbed as it reaches the intestines, after which it exerts its characteristic effects upon the CNS.

Observation of T.S of Ipecuanha:



T. S. of Ipecac root

Results:

EXPERIMENT NO. 25 **DATE:**

TO STUDY THE TRANSVERSE SECTION (T.S.) OF IPECACUANHA

Aim: To study the TS of Ipecacuanha

Biological Sources:

It consists of dried roots or the rhizomes of Cephaelis ipecacuanha, belonging to

family Rubiaceae

Chemical Constituents:

Ipecac root contains 2-3% of total alkaloids. These include emetine, cephaeline, psychotrine and psychotrine methyl ether. All the alkaloids have isoquinoline ring system and, are present in the bark. Emetine is the active alkaloid and as it does not contain a free phenolic group, it is called non-phenolic alkaloid. Emetine base is non-crystalline, but its salts are crystalline.

Microscopic Characters:

A transverse section of the root shows a thin, brown cork, the cells of which contain brown, granular material. There is wide, secondary cortexes (phelloderm), the cells of which are parenchymatous and contain starch in compound grains with from two to eight components, or raphides of calcium oxalate. The individual starch grains are muller-shaped. The phloem is parenchymatous, containing no sclerenchymatous cells or fibres. The compact central mass of xylem is composed of small tracheidal vessels, tracheids, substitute fibres, xylem fibres and xylem parenchyma. Starch is present in the xylem parenchyma and in substitute fibres. The transverse section of ipecacuanha rhizome shows a ring of xylem and large pith. The pericycle contains characteristic sclerenchymatous cells. Spiral vessels occur in the protoxylem. The pith is composed of pitted lignified parenchyma.

Uses:

1. Ipecac is emetic and used as an expectorant and diaphoretic and in the treatment of amoebic dysentery.

2. The alkaloids have local irritant action. Emetine has a more expectorant and less emetic action than cephaeline.

Observation Table:

Description of Asafetida:

Character	Description
Colour	
Odour	
Taste	
Size	

Identification tests for Asafetida:

Sr.no	Experiment	Observation	Inferences
1	Trituration test : On trituration powerderd drug +water produces a milky emulsion		
2	Combined umbelkliferone test : Boil drug with HCL for 5 min filter it and addd ammonia to the filtrate		

Results :

EXPERIMENT NO. 26 **DATE:**

TO PERFORM PHYSICAL AND CHEMICAL TESTS FOR EVALUATION OF ASAFOETIDA.

Aim: To perform physical and chemical tests for evaluation of Asafoetida.

Biological Sources:

Asafoetida is an oleo-gum resin obtained as an exudation by incision of the decapitated rhizome and roots of Ferula asafoetida L, F. foetida, Royel, F. rubricaulis Boiss, and some other species of Ferula, belonging to family Umbelliferae.

Characteristics:

Asafoetida occurs as a soft solid mass or irregular lumps or tears, sometimes almost semi-liquid. Tears are rounded or flattened and about 5 30 mm in diameter, grayish-white or dull yellow or reddish brown in colour. Asafoetida mass is mixed with fruits, fragments of root, sand and other impurities. Asafoetida has a strong garlic-like (alliaceous) odour and a bitter, acrid and alliaceous taste. When triturated with water, it makes a milky emulsion. It should not have more than 50% of matter insoluble in alcohol (90%) and not more than 15% of ash.

Chemical Constituents:

Asafoetida contains volatile oil (4-20%), resin (40 - 65%), and gum (25%). The garlic like odour of the oil is due to the presence of sulphur compounds. Resin consists of ester of asaresinotannol and ferulic acid, pinene, vanillin and free ferulic acid. On treatment of ferulic acid with hydrochloric acid, it is converted into umbelliferone (a coumarin) which gives blue fluorescence with ammonia.

Uses:

1. Asafoetida is used as carminative, expectorant, antispasmodic and laxative.

2. It is used for flavouring curries, sauces, and pickles.

3. It is also used in asthma, whooping cough and chronic bronchitis.

Observation Table:

Description of Benzoin :

Character	Description
Colour	
Odour	
Taste	
Size	

Identification tests for Benzoin :

Sr.no	Experiment	Observation	Inferences
1	Heat the powdered drug with kmno4 solution		
2	Solution of drug +add 2-3 drops of H2So4		
3	Add 4ml solution of KMNO4 to 1g benzoin and warm		
4	25 g of benzoin + add 10ml ether .shake it well .pour 2-3 ml of this extract in porcelain dish add 2-3 drops of H2so4		

Results :

EXPERIMENT NO. 27 **DATE:**

TO PERFORM PHYSICAL AND CHEMICAL TESTS FOR EVALUATION OF BENZOIN.

Aim: To perform physical and chemical tests for evaluation of Benzoin.

Biological Sources

It is a balsamic resin obtained from the incised stem of Styrax benzoin or Styrax paralleloneurus and related species of Styrax (Stryaceae) known in commerce as a Sumatra Benzoin or it may also contain the balsamic resin from S. Tonkinesis known as commerce as Siam Benzoin.

Collection and Preparation:

The method of cultivation of plant differs from region to region. The drug is collected from naturally growing plants. Six years old plant is selected for the collection of drug. Benzoin is a pathological product formed by giving incisions in the bark of a tree, near its base. The initial produce is sticky yellow, amorphous which is rejected. The next flow which oozes out is collected and utilized for medicinal purposes. The secretion solidifies sun dried and packed for marketing the yield is about 10 kg per tree.

Chemical Constituents:

Sumatra	Siam
Total balsamic acid 20%, cinnamic acid 10%, benzoic acid 6% and esters derived	It consist esters coniferyl benzoate.
Triterpenoids acid, summaracinolic acid and siaresinolic acid are present.	Free benzoic acid 10% and vanillin is present

Uses:

1. The drug is used as an expectorant, carminative and diuretic.

2. It is used externally as an antiseptic.

3. It is preferred to retard the rancidity of fats and oil in the preparation of benzoate lard.

4. Benzoin is in the form of compound tincture and as an inhalation used specifically in the treatment of upper respiratory tract infection.

Observation Table:

Description of Pale catechu :

Character	Description
Colour	
Odour	
Taste	
Size	

Identification tests for Pale catechu :

Sr.no	Experiment	Observation	Inferences
1	**Gambier-Florescence Test:** 10 g powdered drug + Alcohol. Boil and add NaOH + Lightpetroleum.		
2	**Test for Chlorophyll:** 10 g powdered drug + chloro form (5 ml). Boil and evaporate to dryness.		
3	**Match-stick Test:** Take tannin extract on match stick. Dip a matchstick in HCI and warm near the flame		
4	**Vanillin-HCI Test:** Take vanillin (1 g) + Alcohol (10 ml) Conc. HCI (10 ml).		

Results :

EXPERIMENT NO. 28 **DATE:**

TO PERFORM PHYSICAL AND CHEMICAL TESTS FOR EVALUATION OF PALE CATECHU.

Aim: to perform physical and chemical tests for evaluation of pale catechu (Gambier).

Biological Sources:

It is a dried aqueous extract of the leaves and young shoots of Uncaria gambier fromfamily Rubiaceae.

Collection and Preparation:

Propagation of Uncaria gambier is done by seeds. Seeds are sown in the nursery to raise the seedlings, which after about 9 months are planted out in the clearing about 3 meters apart. Leaves and young shoots are collected as a first crop during second year's growth. Later the crop is taken every year. The plant continues to give sufficient leaves and twigs up to 20 years, but the maximum yield is obtained during eighth year of growth. The collected leaves and twigs are transported to the factory as loose material. The material is put into large drums with about three quarters of boiling water. It is boiled or about three hours with intermittent stirring. The marc is subsequently removed by rge wooden forks and lodged on surface to drain the liquor back to the vessels. It is essed and washed. The washing is added to the extract. The combined totalueous extract is then concentrated for one and half-hour till it becomes thick, lowish-green paste. It is transferred from the vessels to wooden tubs, stirred while shot, and cooling in a stream of water to crystallize tannins. Semi-crystallizedte is again transferred to wooden trays in which it sets. They are cut into cubes by den knife and dried in Sun. The drug is also made into large blocks in kerosene

chemical constituents:

catechu contain from about 7 to 30% of pseudotannin catechin and 22 to 55% phlobatannin catechutannic acid. Both of the above components constitute over of the drug. It also contains catechu red, gambier fluorescin and quercetin. It ins indole alkaloid up to 0.05%, which includes gambirtannin and its derivatives. irtannin gives a strong fluorescence under UV light. Catechin forms white, like crystals, which dissolve in alcohol and hot water. Catechutannic acid gives colour with ferric chloride.

Observation Table:

Description of black catechu :

Character	Description
Colour	
Odour	
Taste	
Size	

Identification tests for black catechu :

Sr.no	Experiment	Observation	Inferences
1	Match-stick Test Catechin+HCI gives phloro glucinol. Burn along with lignin. Take tannin extract, dip in HCI and heat near the flame.		
2	2.Vanillin-HCI Test: Take vanillin (1 g) + Conc. HCI (10 ml).		

Results :

EXPERIMENT NO. 29 **DATE:**

TO PERFORM PHYSICAL AND CHEMICAL TESTS FOR EVALUATION OF BLACK CATECHU.

Aim: To perform physical and chemical tests for evaluation of Black catechu (Kattha).

Biological Sources:

It consists of dried aqueous extract prepared from the heart wood of Acacia catechu Wild and Acacia chundra Wild., family Leguminosae.

Collection and Preparation:

Catechu is a medium-sized tree with thorns. For preparation of the drug the tree is cut off from the ground. The main trunk and branches are cleared of foliage and thorns. The bark is stripped off, and the heartwood is made into chips. Heartwood is boiled in water in large earthen pots. The decoction is then strained and boiled in an iron pot with continuous stirring till it forms the syrupy mass, When the extract is cool enough, it is spread in the shallow wooden trays and kept for overnight. When sufficiently dry, it is cut into pieces. Since the decoction is concentrated in iron vessels, the colour of the catechu becomes darker due to its reaction with iron salts. If the syrupy extract is stirred during cooling, it develops the shining crystals of catechin and produces translucent black catechu. Now-a-days stainless steel vessels are used for the manufacture of catechu that produces a lighter coloured product. .

Chemical Constituents:

Black catechu resembles pale catechu or gambier in its composition. It contains about 2 - 12% of catechin and about 25 to 33% of phlobatannin catechutannic acid. The principle fraction of cutch has been identified as a mixture of catechin isomers which includes (-) epicatechin, acatechin, DL-acacatechin, L-acacatechin and D-isoacacatechin. It also contains 20 - 30% gummy matter, catechin red, quercetin and querecitin. It yields 2-3% of ash.

Uses:

1. It is used in medicine as astringent.

2. It cures troubles of mouth, diseases of the throat and diarrhoea. It also increases appetite.

3. In India and eastern countries, it is used in betel leaves for chewing.

4. In dyeing industries, it is used for dyeing fabrics brown or black.

Observation Table:

Description of Castor oil :

Character	Description
Colour	
Odour	
Taste	
Size	

Identification tests for Castor oil:

Sr.no	Experiment	Observation	Inferences
1	10 ml castor oil + petroleum ether (5 ml) shows a clear solution, but if the amount of light petroleum is increased to 15 ml, the mixture becomes turbid. This test is not shown by other oils.		
2	Castor oil + equal volume of alcohol. Cool clear liquid at (0°C) for 3 hours		

Results :

EXPERIMENT NO. 30 **DATE:**

TO PERFORM PHYSICAL AND CHEMICAL TESTS FOR EVALUATION OF CASTOR OIL.

Aim: To perform physical and chemical tests for evaluation of Castor oil.

Biological Sources: Castor oil is the fixed oil obtained by cold expression of the seeds of Ricinus communis Linn, belonging to family Euphorbiaceae.

Preparation:

Castor oil is obtained from castor seeds. The oil is obtained by two ways; either after the removal of the seed coat or with the seed coat. Seed coats are removed by crushing the seeds under the grooved rollers and then they are subjected to a current of air to blow the testas. The kernels are fed in oil expellers and at room temperature they are expressed with 1 to 2 tons pressure per square inch till about 30% oil is obtained. The oil is filtered, steamed 80- 100°C to facilitate the coagulation and precipitation of poisonous principle ricin, proteins and enzyme lipase present in it. Oil is then filtered and this oil with 1% acidity is used for medical purpose. Medicinal or the first grade or pale pressed castor oil is colourless or slightly yellow coloured. It is a viscid liquid which has slight odour with slightly acrid taste. Castor oil is soluble in absolute alcohol in all proportions.

Chemical Constituents:

Castor oil consists of glyceride of ricinoleic acid, isoricinoleic, stearic, and dihydroxy stearic acids. Ricinoleic acid is responsible for laxative property. Castor oil also contains vitamin F. 90% of the fatty acid content is ricinoleic acid.

Uses:

1 Castor oil is mild purgative, used as an ointment base, as plasticizer, wetting

agents, as a lubricating agent.

2. It is also used as an emollient in the preparation of lipsticks, in tooth formulation, as an ingredient in hair oil.