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Diploma in Pharmacy 1st Year
Pharmacognosy
Important Questions
Chapter 5 : Study of Crude Drugs

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Chapter 5
Study of Crude Drugs
IMPORTANT Questions

Q1. What are Laxatives ? Give some examples with biological source, Family, Chemical Constituents and Uses.

Ans.

LAXATIVES

- Laxatives are used for curing acute and chronic constipation, (haemorrhoids), treating anorectal and preparing the bowel for colonoscopy.
- Although constipation affects all age group individuals, it especially affects the pregnant women and elderly individuals.
- Constipation is mostly treated by modifying diet.
- Laxatives are the well-known, highly advertised, and commonly used OTC drugs, which exert a therapeutic effect on the GIT.
- Conventionally, these drugs were classified as stimulant/irritant, saline and osmotic cathartics, bulk-forming agents, stool softeners, and Tubricants.

Examples of Laxatives

Aloe

- Aloe vera is a plant species of the Aloe genus.
- It grows wildly in tropical climates and is also cultivated due to its agricultural and medicinal values.

Synonyms

Mussabar, Kumari, and Aloes.

Biological Source

- Aloe vera is the dried juice obtained from the leaves of various species of aloe like Aloe perryi Baker (Scotorine aloe), Aloe vera Linn, (Curacao aloe), and Aloe africana (Cape aloe).
- It is one of the most familiar of all the medicinal herbs.
- Out of the more than three hundred species of aloe, only four are believed to have medicinal properties.
- The most potent medicinal effects are believed to come from aloe vera (also called Aloe barbadensis), which is frequently produced in gel form.

Family

Liliaceae

Chemical Constituents

- Aloe is made up of 30% of aloin which is a mixture of barbaloin, p-barbaloin, and isobarbaloin isomers

Therapeutic Efficacy

Aloe vera has the following therapeutic properties:

1) Its gel is stabilised and added with a preservative to be used in the form of pure gel or applied as a Motion.

2) Its gel is effectively used in stomach and mouth ulcers.

3) Its gel is also helpful in treating burns and aiding wound healing..

4) Ointment of aloe gel is used in the treatment of skin Irritations, burns caused by sun, heat or radiation.

5) Enzymes obtained by extracting its gel possess analgesic properties, and have shown to inhibit thermal damage and vascular permeability in mice.

Castor Oil

Castor oil is a vegetable oil having anti-inflammatory and antibacterial properties

Synonyms

Castor bean oil, castor oil seed, ricinus oil, oil of palma, and olrum ricini.

Biological Source

- Castor oil is obtained by cold expression from the seeds of Ficina communi Linn.

Family

Euphorbiaceae

Chemical Constituents

- Castor oil contains about 80% of triglyceride of ricinoleic acid. The fatty acids present in the drug are isoricinoleic, noleic stearic and isostearic acids

Therapeutic Efficacy

1) It acts as a cathartic due to the irritant action of ricinoleic acid

2) Commercially it is used for lubrication.

3) Sometimes it is consumed orally as an aromatic castor oil or in the form of capsules

4) It is an ingredient of abortifacient paste, and ricinoleic acid is an ingredient in contraceptive creams and jellies.

5) Atropine and cocaine used for ophthalmic purposes are suspended in it.

Ispaghula

- Ispaghula is also known as plantago seeds and psyllium husk
- The term plantago is a Latin term which means sole of the foot (it refers to the leaf shape).
- Isabgol is hygroscopic, and swells and expands to become mucilaginous

Synonyms

Isabgul, Ispagol, Ishahgula, spongeal seeds, Indian psyllium, and Flea seed.

Blological Source

- Ispaghula is the dried ripe seeds of Plantago pryllium L. Plantago arenaria, P. ramosa (Spanish or French psyllium seed). Plantage ovata (blood or Indian plantago seed), on Plantago amplexicaulis.)

Family

Plantaginaceae

Chemical Constituents

- Ispaghula seeds, contain 10% mucilage in their enidermis

Therapeutic Efficacy

Ispaghula has the following therapeutic properties:

1) The seeds and husk are used as demulcent, laxative, and emollient.
2) It is used for treating chronic constipation, amoeble and bacillary dysentery.
3) Its mucilage is used in tablet preparation.
4) The crushed seeds are used in the form of poultice for relieving rheumatic pain.
5) It effectively works as a soothing agent, thus, is used in duodenal ulcers and piles.

Senna

- Senna is a herb used as a laxative.
- It is also known as Wild senna, Cassia marilandica, or locust plant.
- In the at times, the Arabian physicians used senna as cathartics

Synonyms

Folia senna, and Tinnevelles senna

Biological Source

- Senna is the dried leaflets of Cassia angustifolia

Family

Leguminosae

Chemical Constituents

- Senna contains mainly two anthraquinone glycosides called as sennoside A and sennoside B (not less than 2.5%) which account for its purgative property

Therapeutic Efficacy

Senna has the following therapeutic properties:

1) It is mainly used as a purgative
2) It is used as a stimulant cathartic
3) Its inherent action is associated with griping; thus it is dispensed with the carminatives to counteract the undesired effect.

Q2. What are Cardiotonic ? Write biological source, Family, Chemical Constituents and Uses of Digitalis, Arjuna.

Ans.

CARDIOTONIC

→ Cardiotonics have a positive inotropic action, as a result of which the heart beats stronger and slower.

→ Cardiac glycosides (sugar-containing substances made from plants),phosphodiesterase inhibitors, and dobutamine (sometimes used in end-stage heart failure to increase myocardial contractility in dose a dependent manner) are some examples of cardiotonics, Digoxin (a preparation of digitalis) is the major cardiac glycoside.

Digitalis

- The genus Digitalis has around twenty species of herbaceous, perennial, or biennial shrubs.
- The digitalis plant is also known as foxgloves.

Synonyms

Digitalis leaves and Foxglove leaves.

Biological Source

- Digitalis is dried leaves of Digitalis purpurea, dried at a temperature below 60°C, immediately after collecting the leaves. The leaves should not contain more than 5% of moisture.

Family

Scrophulariaceae

Chemical Constituents

- Digitalis contains 0.2-0.45% mixtures of both primary and secondary cardiac glycosides (cardenolides).

Therapeutic Efficacy

Digitalis has the following therapeutic properties:

1) It enhances the contraction force of heart muscles

Arjuna

- Arjuna is a tree bark used in Ayurveda medicinal system for maintaining cardiovascular health pertaining to the heart itself.

Synonyms

Arjun bark and Arjun

Biological Source

- Arjuna is the dried stem bark of Terminalia arjuna Rob

Family

Combretaceae

Chemical Constituents

- Arjuna bark contains hydrolysable tannins (abont 15%). triterpenold saponin, arjunolic acid, arjunic acid, and arjunogenin

Therapeutic Efficacy

Arjuna has the following therapeutic properties:

1) The juice of its leaf has been used in traditional Ayurvedic medicine system for treating dysentery and ear ache.
2) It helps in maintaining normal cholesterol levels, as it possesses antioxidant properties.
3) It strengthens the heart muscles and maintains the normal functioning of heart.
4) It improves the functioning of cardiac muscles.
5) It is used for treating coronary artery disease, heart failure, oedema, angina and hypercholesterolemia.

Q3. Define Carminatives and G.I regulators. Write detail note on Coriander, Fennel, Cardamom, Ginger, Clove, Black Pepper, Asafoetida, Nutmeg, Cinnamon.

Ans.

CARMINATIVES AND G.I. REGULATORS

- Carminatives are soothing drugs which act by relieving stomach and intestinal pain, and expelling gas from GIT by peristalsis.
- Fennel, ginger, coriander, cinnamon, nutmeg, asafoetida, clove, etc. are some examples of cardiotonics.G.I. regulators like stomachic, stimulants, appetizers, aromatics, antiemetic, sialogogues, and chologogues are used for regulating the activity of GIT.

Coriander

- Coriander is a herb grown once in a year.
- It is also well known by the names of cilantro or Chinese parsley.
- All its parts are edible but fresh leaves and dried seeds are mostly used for cooking purpose.

Synonyms

Coriander fruits. Chinese parstey. and Indian parsley.

Biological Source

→ Coriander is the fully dried ripe fruits of Coriandrum Sativum

Family

Umbelliferae.

Chemical Constituents

- Coriander is chemically constituted with volatile oil (0.3-1%), fixed oil (135%) and proteins (20%))

Therapeutic Efficacy

Coriander has the following therapeutic properties:

1) Lowers Blood Sugar Level
2) Ease Digestive Discomfort
3) Fight Food Poisoning
4) Help Urinary Tract Infections

Fennel

- Fennel yields both a herb as well as a spice.
- All the plant parts of fennel (roots, stalks and leaves, with the spice obtained from dried seeds) are eatable.
- Fennel has it origin in the Mediterranean.
- It is an ancient and common plant Known to the ancient Greeks and spread throughout Europe by Imperial Rome

Synonyms

Large fennel, Sweet fennel, Fennel fruit, Saunt (hindi), Fructos, and Focniculi,

Biological Source

♣ Fennel is the dried, ripe fruits of Foeniculum vulgare Mill

Family

Umbelliferae

Chemical Constituents

➢ Fennel contains 2-6.5% volatile oil and 12% fixed oil. The volatile oil contains 50-60% phenolic ether and 18-20% fenchone as its major constituents which impart a distinct odour and taste to the fruits.

Therapeutic Efficacy

Fennel has the following therapeutic properties:

1) It is a common Ingredient of cough and stomach mixtures.
2) It is used in diseases related to chest, spleen, and kidney
3) Ancthole is added in mouth and dental preparations.

Cardamom

→ Cardamom is a spice made from the seeds of several plants belonging to the family Zingiberaceae

Synonyms

Cardamom fruit, Elaichi, Hail, and Cardamom seeds.)

Biological Source

Cardamom is the dried ripe fruits of Elettaria cardamomum

Family

Zingiberaceae

Chemical Constituents

▪ The chemical constituents of cardamom fruits are volatile oil (2.5-6.2%), starch (50%), fixed oil (1-10%), and calcium oxalate.)

Therapeutic Efficacy

Cardamom following therapeutic properties:

✓ It stimulant and carminative,
✓ In India green caedamom (A. subulatum) is used for treating teeth and gum infections.
✓ It is used preventing treating throat troubles, congestion of lungs, and pulmonary tuberculosis.
✓ It is used inflammation of eyelids.

Ginger

- The generic name ginger Zingiber, which has been derived from the Greek word Zingiberis which turn has been derived from Singabera (Sanskrit name ginger).
- It is use since ancient times India well in China, and the 1st century traders had transported ginger the Mediterranean region.

Synonyms

Zingiber and Zingiberis,

Biological Source

- Ginger the rhizomes of Zingiber officinale Roscoe, scrapped to remove the outer skin and dried the sun. It known as Jamulen ginger the market.

Family

Zingiberaceae

Chemical Constituents

- Ginger contains volatile oil (1-4%), starch (40-60%), fat (10%), fibre (596), inorganic material (6%), residual moisture (10%), and acrid resinous matter (5-8%), Ginger oil is made up of monoterpene hydrocarbons.

Therapeutic Efficacy

Ginger has the following therapeutic properties:

1) It is used as a stomachic, aromatic, carminative, stimulant, and flavouring agent.
2) Its powder is effective in motion sickness.
3) Due to its adsorbent, aromatic, and carminative properties on GIT, it enables adsorption of toxins and acid enhanced gastric motility; thus blocking the effects of GI reactions and nausea.

Black Pepper

- Black pepper is the fruit of black pepper plant belonging to Piperaceae family.
- It is used as a spice as well as a medicine.
- Its major chemical constituent, piperine, is responsible for its spiciness.

Synonyms

Pepper, Piper nigrum, and Maricha.

Biological Source

- Black pepper is the dried unripe fruit of perennial climbing vine, Piper nigrum Linn. It contains not less than 2.5% of dried piperine

Family

Piperaceae

Chemical Constituents

- Black pepper contains piperine (5-9%), volatile off (1) 25%), a pungent resin (6.0%), piperidine, and starch (20%). The yellow coloured volatile oil contains phellandrene and caryophyllene.

Therapeutic Efficacy

Black pepper has the following therapeutic properties:

1) Its fruits are aromatic, stimulant, stomachic, and carminative.
2) It also stimulates the taste buds, thus increases the production of gastric juice.
3) Its pungent tasting oil is used as a spice.
4) It also enhances the bioavailability of some drugs.

Asafoetida

- ➲ The name Asafoetida has been derived from the Latin word fortid which means smelly, Asafoetida is a genus of perennial herbs.
- ➲ It has a very distinct, pungent odour.
- ➲ It is a spice used as a digestive aid, in food as a condiment, and making pickles.

Synonyms

Gum Asafoetida and Devil's dung

Biological Source

Asafoetida is the oleo-gum resin obtained by incision from the rhizomes and roots of Ferula foetida.

Family

Umbelliferae

Chemical Constituents

- ✓ Asafoetida contains resin (40-6556), gum (20-25%), and with ferulic acid, volatile oil (4-20%). The chief resin of asafoetida is asaresinotannol present either in free form or is combined

Therapeutic Efficacy

Asafoetide has the following therapeutic properties.

1) Its 2% (w/v) suspension is used as a repellant against dogs, cats, deer, rabbits, etc.
2) It is used in veterinary to apply over the bandages of dogs so they do not chew them.
3) Sometimes it is used as carminative, expectorant, and laxative.
4) It is also a powerful nerving stimulant, used in nervous disorders related to hysteria.
5) It is also used as intestinal flatulence

Nutmeg

- Nutmeg is a spice with several health benefits.
- It relieves pain, soothes indigestion, strengthens cognitive function, detoxifies the body, boosts skin health, alleviates oral conditions, reduces insomnia, increases immune system function, prevents leukaemia, and improves blood circulation.

Synonyms

Semen myristicle, Myristics, and Jayfat.

Biological Source

- Nutmeg is the kernel of the dried ripe seeds of Myristica fragrans Houtten, deprived of its arillus and seed coat and with or without a thin coating of lime.

Family

Myristicaceae

Chemical Constituents

- ♠ Nutmeg contains volatile oil (5-15%) as its active constituent. The oil is secreted in large bubble-like cells in the inner perisperm.

Therapeutic Efficacy

Nutmeg has the following therapeutic properties:

1) It is an aromatic, carminative, and flavouring agent.
2) It shows a narcotic and anaesthetic action on the central nervous system.
3) Peripherally it shows irritant action and irritates the intestine and uterus, thus is an abortifacient.
4) Recently it has been used to control diarrhoea related to certain carcinomas.

Cinnamon

★ Cinnamon obtained from the inner bark of the trees of genus cinnamomum is majorly used in sweet and savoury foods.

Synonyms

Cinnamon bark, Kalmi-Dalchini, and Ceylon cinnamon.

Biological Source

→ Cinnamon is the dried inner bark of the shoots of coppiced trees of Cinnamomum zeylanicum Nees., (syn. Cinnamomum vertum).

→ It should contain 1.0% or more of volatile oil

Family

Lauraceae

Chemical Constituents

♦ Cinnamon contains many essential constituents such as volatile oil (0.5-1.0%) and phlobatannins (1.2%)

Therapeutic Efficacy

Cinnamon has the following therapeutic applications supporting the development of modern medicine:

1) It is highly enriched in carminative, stomachic, and mild astringent properties.
2) It may be employed as a flavouring agent, stimulant, an aromatic, and an antiseptic
3) Cinnamaldehyde (chemical constituent of Cassia cinnamon) is able to defend against several fungal and bacterial infections
4) The bark can be used to treat type 2diabetes by maintaining the levels of glucose and lipids.

Clove

♦ The unopened pink coloured buds of cloves are found in evergreen clove trees.
♦ Same as the other spices, they are available throughout the year.
♦ Cloves are known to provide a warm, sweet, and aromatic taste.

Synonyms

Caryophyllum, Clove flower, and Clove buds.)

Biological Source

♦ Clove is the dried flower buds of Eugenia caryophyllus. It should contain 15% (v/w) or more of clove oil.

Family

Myrtaceae

Chemical Constituents

➲ Clove contains about volatile oil (15-20%) and tannins (10 13%) in the form of gallotannic acid, resin, chromone, and eugenin.
➲ About 70-90% of eugenol, eugenol acetate, caryophyllenes, and trace amounts of esters, ketones, and alcohols are present in the volatile oil of clove

Therapeutic Efficacy

✓ Clove is applied directly to the gums (used topically) for toothache, for pain control during dental work, and for a complication of tooth extraction called “dry socket.” It is also applied to the skin as a counterirritant for pain and for mouth and throat inflammation.

Q4. What are the Astringents & Myrobalan, and Write about Black Cateches.

Ans.

ASTRINGENTS

- Astringents are a group of substances which causes contraction or shrinkage of body tissues, and also dries the body secretions.
- The term astringent has been derived from a Latin term adstringere which means to bind fast.)

Myrobalan

→ This plant is mainly known for its fruit which is edible and has the same name.
→ In India, myrobalan is considered a sacred tree.
→ Its fruit is very nourishing but it has a sour taste.
→ The fruits possess health benefits in both dried and fresh forms.

Synonyms

Emblic, Emblic Myrobalan,, Indian Gooseberry, Malacca Tree, or Amla

Biological Source

- Myrobalan consists of dried and fresh fruits of Emblica officinalis Gaertn (Phyllanthus emblica Linn.)

Family

Euphorbiaceae.

Chemical Constituents

- The fruits of myrobalan are a rich natural source of vitamin C, fat (about 0.5%), phyllemblin, and tannin (5%).

Therapeutic Efficacy

Myrobalan has the following therapeutic uses:

1) It is very helpful in skin diseases.
2) It is required for glowing skin and it delays wrinkles and skin loosening.
3) It facilitates hair growth by stimulating the hair follicles and it also improves hair texture.
4) It lowers cholesterol and blood sugar level.
5) It also proves beneficial in chronic cough, childhood and allergic asthma, and tuberculosis.

Black Catechu

- Black catechu occurs in black, shining pieces or cakes, and is sold under the name of Catechu.
- It grows in deciduous trees reaching up to a height of 9-12m.
- This plant has short hooked spines and bipinnately compounds green leaves with 50 pairs of feather-like leaflets.

Synonyms

Catechu, Catechu Nigrum, Cutch Khadir (Sanskrit), Katha (Hindi), Katha (Gujarati), Cashoo, Peru catechu, and Cachou.

Biological Source

- Black catechu is the dried aqueous extract obtained from the heart wood of Acacia catechu.

Family

Leguminosae

Chemical Constituents

- Black catechu contains tannic acid (7.5-35%), catechin (10-15%), acacatechin (2-12%), philobatannin (25-35%), gum (20-30%), and quercitrin. Minor constituents of black catechu are quercitin, catechu red, and moisture.

Q5. Write some Drugs Acting on Nervous System ?

Ans.

DRUGS NERVOUS SYSTEM ON ACTING

- Central Nervous System (CNS) and the Peripheral Nervous System (PNS) together make up the nervous system.
- The PNS further divides into the Somatic Nervous System (SNS, regulating sensation and motor control of skeletal muscle) and the Autonomic Nervous System (ANS, regulating involuntary functions such as heart rate and gut motility).
- The ANS further divides into the sympathetic nervous system (works when the body is active, this increases heart and [respiration rites) and the parasympathetic nervous system (works when the body is at rest, thus it decreases heart rate and increases gastrointestinal motility)
- Central nervous system agents are medicines affecting the CNS made up of nerves in the brain and spinal cord. The CNS processes and controls most of the functions of body.
- CNS is affected by various drugs like anaesthetics, anticonvulsants, antiemetic drugs, antiparkiniion agents, CNS stimulants, muscle relaxants, narcotic analgesics (pain relievers), non-narcotic analgesics facetaminophen and NSAIDs), and sedatives.

Hyoscyamus

- Hyoscyamus is an annual or biennial plant of Solanaceae family, and also of the nightshade family.

Synonyms

Henbane, Hyonevamus herb, and Hyoseyamus leaves)

Biological Source

- Hyoscyamus is the dried leaves and flowering tops of Hyoscyamus niger. It contains not less than 0.05% of hyoseyamus alkaloid, namely 1-hyoseyamine J

Family

Solanaceae

Chemical Constituents

- Hyoscyamus contains hyoscyamine (an alkaloid) as its chief constituent Atropine and hyoscine for scopolamines) are also present in smaller quantities.

Therapeutic Efficacy

Hyoscyamus has the following therapeutic properties:

1) It is used to counter the gripping action of purgatives.
2) It is used for relieving the spasms of urinary tract.
3) It is a sedative, hypnotic, expectorant, antispasmodic anti-asthmatic, and a mild diuretic.
4) It is used to check salivary secretion.

Belladonna

- Belladonna is a perennial herbaceous plant which is also known as deadly nightshade.
- The foliage or berries contain tropane alkaloids, and are very poisonous.

Synonyms

Poison black cherry, Belladonna leaf, Belladonna folium, and Deadly night shade leaf.

Biological Source

Belladonna is the dried leaves and flowering tops of Atropa belladonna. It should contain 0.30% or more of total alkaloids calculated as hyoscyamine.

Family

Solanaceae

Chemical Constituents

- Around 0.3-0.60% alkaloids are extracted from Atropa belladonna in which hyoscyamine is the main component

Therapeutic Efficacy

The therapeutic uses of belladonna herb are as follows:

1) It has anticholinergic and parasympathetic properties.
2) In case of poisoning of opium and chloral hydrate, belladonna is used as an antidote.
3) It is also used to decrease the secretion of sweat, gastric juice, and saliva.
4) It is used in breathing abnormalities in infants.
5) It is used for reducing sweat and other secretions.

Ephendra

→ Ephedra is a native plant of Mongolia and Central Asia. It is an evergreen shrub having ephedrine as the chief active ingredient. The principal medicinal property of ephedrine is its powerful stimulatory action on heart and nervous system.

Synonym

Ma Huang

Biological Source

- Ephedra is the dried young stems of Ephedra nebrodensis Tinco, Ephedra gerardiana Wall, Ephedra sinica Stapf, Ephedra equisetina Bunge, and other species of ephedra.

Family

Ephedraceae

Chemical Constituents

♠ The primary amino alkaloids found in ephedra are ephedrine, n-methyl ephedrine, nor-ephedrine, pseudo ephedrine, etc. he, etc.

Therapeutic Efficacy

Ephedra possesses the following therapeutic properties:

1) Ephedrine is used for providing relief from asthma and hay fever.
2) It helps in diminishing hyperaemia and increasing blood pressure for long term.
3) It also causes mydriasis in eyes.
4) In China, the root has been used clinically for its anti sudorific (antiperspirant) activity: however, the herb possesses sudorific action.
5) It is also used in the treatment of allergic bronchial disorders.

Opium

- Opium is the dried latex extracted from the seedpods of the plant opium poppy (Papaver somniferum).
- The unripened pods are slit open for the sap to seep out, which is then dried on the outer surface of the pod.
- The resulting latex is scraped off the pod which is yellow brown in colour and bitter in taste.
- Different types of alkaloids, e.g., morphine, codeine, thebaine, and papaverine are present in this latex.

Synonyms

Raw Opium, Gum Opium, and Afeem

Biological Source

✓ Opium is the dried latex extracted from the unripe capsules of the plant opium poppy or Papaver somniferum Linn.

Family

Papaveraceae

Chemical Constituents

- The alkaloids present in the latex are derived from aminoacids, phenylalanine, and tyrosine.

Therapeutic Efficacy

Opium possesses the following therapeutic properties:

1) Hypnotic, Sedative, and Analgesic Properties
2) Stimulation of Chemoreceptor Zone
3) Antitussive Properties
4) Muscle Relaxant Properties

Tea Leaves

➲ Tea is an evergreen shrub having several alterate branches.
➲ The leaves are pointed, lanceolate, or elliptically-oblong having short petiolate.
➲ The leaves have smooth surface on both sides with a shiny green appearance, a prominent midrib, and pinnately veined on one side

Synonym

Folia thea.

Biological Source

- Tea is the leaf buds and leaves of the plant Thea Sinensis.

Family

Theaceae.

Chemical Constituents

➢ The principal constituents are caffeine (trimethyl xanthine) and tannin (10-24%), Adenine, theophylline. theobromine (dimethyl-xanthine) and its isomer, xanthine, and volatile oil are present in trace amounts.

Therapeutic Efficacy

- By inhibiting iron absorption by tannates and other ligands, caffeine helps in treating genetic haemochromatosis.
- It also helps in treating diabetes-induced blindness, which is an angiogenic related condition.
- It also plays a vital role in lowering the risk of ischemic heart disease in geriatrics.

Coffee Seeds

- The source of coffee is a coffee bean, which is a seed of the Coffea plant.
- It's the pip found within the red or purple fruit known as a cherry.
- The coffee fruit, like ordinary cherries, is classified as a stone fruit. .
- Brazil and India are the major suppliers of coffee nowadays.
- The large plantation of coffee is seen it Kamwaka, Kent and Tamil Nads At present it is cultivated in Maharashtra also

Synonyms

Coffee ored, coffee beum,

Biological Source

- It is the drid ripe med exted from Cofra ardica or C Liberica Hiern, and lack of send coat.

Family

Rubiaceae

Chemical Constituents

- Caffeine, tannin, fixed oil and proteins are the main ccenstituents of coffee bean It constitutes 2-3% caffeine. 3.5% tanmins 13% proteins, 10-15% fixed cile, chloeogenic or caffeotannic acid and sugars in the form of dextrin, glucose, etc

Therapeutic Efficacy

1) It is used as a source of caffeine Caffeine causes stimulant and diuretic effect that are main effects of coffee
2) It is used to conflict the toxic effects because of CNS depressant drugs.

Coca

- Coca is a plant, Cocaine is derived from the leaves of coca plant which is an illegal drug, andare inhaled, injected or smoked for mind-altering effects.
- Cocaine is also an FDA approved Schedule II drug.
- It means that cocaine can be pscribed by a healthcare practitioner, but the process is strictly regulated

Synonyms

Cock, Humace coca, Truxillo coca Java coca, Folia cocae

Biological Source

- Coca or coca leaves are dried leaves of Erythruxylum coc Lan (Huanaco Coca) or of Erythroxylum traillenie Rusby (Truxillo Coca)

Family

Erythroxylaceae

Chemical Constituents

- The drug constitutes 0.7 to 1.5% of total alkaloids, Tropane esters are the majority of alkaloids.

Therapeutic Efficacy

1) It acts as a local anaesthetic. It is the first known local anaesthetic through which various other synthetic substitutes with similar activities have been prepared
2) In general, coca leaves are used as stimulant, restorative and also in convulsions. The sedative and respiratory depressant effects of morphine and associated drugs are reduced by cocaine because of CNS depressant properties,

Q6. What are Anti- hypertensive ? Write biological source, Family, Chemical Constituents and Uses of Rauwolfia.

Ans.

ANTIHYPERTENSIVE

- The pressure exerted by blood against the walls of blood vessels is termed as blood pressure.
- When the blood pressure persistently remains high, the condition In termed as hypertension.
- As a result of this persistently high blood pressure, the beart, blood vessels, and other organs are excessively strested.
- Hypertensive patients are at a high risk of an abnormal increase in blood pressure. These patients are also exposed to secondary complications resulting in diseases affecting other vital organs.
- This is a single factor that may produce numerous other cardiovascular diseases, resulting in morbidity and premature deaths.
- It has found to affect 255 of the acdult population.
- It is in 25% a significant risk factor for death resulting from CHF, stroke, MI, and renal failure.
- In untreated cases, it results in complications such as other heart problems, kidney diseases, and stroke.
- Factors that may be responsible for contributing to the incidence of hypertension include the urban lifestyle, culture, diet and stress.

Rauwolfia

➲ Rauwolfia or sarpagandha is an evergreen plant named after its discoverer, a German doctor and traveller, Leonhard Rauwolf (1582).

➲ Due to its immense therapeutic properties it is used in Ayurvedic, Unani, and Homeopathy.

Synonyms

Ramwolfis root, Serpentina roor, Chhotachand, Sarpogandiur and Indian snake root

Biological Source

♠ Rauwolfia is the dried routs of Rauvolfia serpentina Benth.)

Family

Apocynaceae

Chemical Constituents.

→ Ramwolfia contains about 0.7-2.4% of total alknioidal tulses from which more than 80 alkaloids have been isolated

Therapeutic Efficacy

Rauwolfia has the following therapeutic uses:

1) It is a hypotensive drug having a strong sedative and hypotensive activity,
2) It is a mild tranquiliser used for removing low level of anxiety.
3) It is a rich source of indole alkaloids of medicinal value such as reserpine, ajmaline, ajmalicine, and serpentine which are used in the treatment of circulatory disorders.
4) Its roots are used for managing and lowering the blood pressure, due to the presence of reserpine which dilates the blood vessels, depresses CNS activity, and acts as a hypnotic.
5) Deserpidine and rescinnamine are also used as hypotensive and tranquilliser.)

Q7. What are Anti- Tussive ? Write some examples with biological source,Family, Chemical Constituents and Uses.

Ans.

ANTITUSSIVES

→ Antitussives subdue coughing by reducing the activity of cough centre in brain.
→ Cough is a protective refles.
→ It aids in expelling the respiratory secretions or foreign particles from the lungs and upper airway passages.
→ Antitussives are used for relieving dry cough.

Vasaka

- Vasaka is an important medicinal herb. Almost all the plant parts (roots, leaves, etc.) are used for treating various diseases. Vasaka leaves are of great importance.

Synonyms

Adhatoda, Adulsa, and Malabar nut.

Biological Source

- Vasaka is the dried and fresh leaves of Adhatoda visica Nees, Syn.

Family

Acanthaceae

Therapeutic Efficacy

1) It is used as an expectorant and bronchodilator.
2) In large doses, it is irritant and causes vomiting and diarrhoea
3) It also shows abortifacient effect due to the same reason

Tolu Balsam

- Tolu balsam is used as a fragrance and flavouring agent in pharmaceutical products.
- It also has a mild antiseptic and expectorant property.
- However no clinical data regarding Tolu balsam to treat any condition has been put forward by sthe researchers,

Synonym

Talu Bakam

Biological Source

- The solid or semi-solid balsam is obtained by incision from the trunk of Myroxylon Balsamum (Linn.).

Family

Leguminosa

Chemical Constituents

- Tola balsam contains cinnamic acid (10-15%) and Semzoic acid (6-88%)

Therapeutic Efficacy

Tolu balsam has the following therapeutic properties:

1) It is widely used as a flavouring agent in medicinal syrups, confectionery, chewing gums, and perfumeries.
2) Cinnamic and benzoic acid are antiseptics and used as a pharmaceutical aid.
3) It is also used for.

Coughs and lung congestion, Skin rashes and wounds,Skin parasites and ringworm,

Q8. What are Anti-rheumatics ? Write note on Colchicum seed.

Ans.

ANTI RHEUMATIC

- Antirheumatics are drugs used in the therapy of inflammatory arthritis, predominantly rheumatoid arthritis, but also Idiopathic juvenile arthritis, psoriatic arthritis, ankylosing spondylitis and others.

Colchicum Seed

- Colchicum autumnale, an autumn-blooming flower is also known as meadow saffron, autumn crocus or naked lady.

Synonyms

- Autumn Crocus, Wild Saffron, Meadow Saffron, European Colchicum seed, Meadow Crocus, and Colchicum root.

Blological Source

- Colchicum is the dried ripe seeds and corm of Colchicum autumnale Linn. The Indian species is obtained from C luteum Baker.

Family

Liliaceae

Therapeutic Efficiency

→ It is the drug of choice for the treatment rheumatism and gout

→ It has also been reported to poses anti-tumour activity

Q9. What are Anti- tumour ? Write biological source, Family, Chemical Constituents and Uses of Vinca, Podophyllum.

Ans.

ANTITUMOUR

- Antitumour (or anticancer or antineoplastic drug) is affective in treating malignant or cancers disease.
- Alkylating agents, antimetabolites, natural products, and homes are major class of anticancer drugs

Vinca

- Vinca (or sadabahar or periwinkle) is commonly grown in India. It has its origin in Madagascar. Two varieties of vinca, namely pink and the white coloured flower varieties are grown for their medicinal value.)

Synonyms

Catharanthus, Periwinkle, and Sadabahar

Biological Source

- Vince is the dry whole plant of Catharanthus reseus or vinca rosea

Family

Apocynaceae

Chemical Constituents

- ♦ Vinca contains a large number of indole alkaloids, of which around 20 dimeric indole dihydroindole alkaloi exhibit oncolytic activity, vincristine and vinblastine ऑनकोलि being the most significant ones

Therapeutic Efficacy

Vinca has the following thespesnic properties

1. Its leaves and stems are a source of skalah, whe bave a and anticancer properties
2 Its leaves are wind the controlling diabetes and high blood pressure
3 Its alkalde are sedative and tranquiler
4 it relieves muscle pain and depressicon

Podophyllum

- Podophyllum is the dried rhizome and rootlet of the mayapple that is used as a caustic or as a source of the more effective podophyllin

Synonyms

Indian Podophythm, Podophyllum Radix, Himalayan Mayapple.

Blological Source

- ★ Podophyllum consists of dried rhizomes and roots of Podiphyllum hexandrum Royle or Podophyllum emodi well. American podopbyllum consists of dried rhizome and roots of P.peltatum

Family

Berberidace

Chemical Constituents

- Indian Podophythm contains from 7% to 15% of known as podophyllin

Therapeutic Efficacy

1) Because of cytotoxin action, podophyllum is used in the treatment of veneral and other warts
2) It is also purgative, cholugage und bitter tonic

Q10. What are Anti-diabetics ? Write note on Pterocarpus, Gymnema.

Ans.

ANTIDIABETICS

- Antidiabetics are drugs used for controlling and stabilising the glucose level in the blood of individuals suffering from diabetes.
- These drugs are mainly used to control diabetes.

Pterocarpus

- Pterocarpus is a genus of pastropical trees.
- It is having around 35 species of which P. marsupium is one of the most famous members of this genus.

Synonyms

Bijasal, Indian kino tree, and Malabar kino.

Biological Source

- Pocarpus is the dried juice of Pierocarpus marsuplan Line. The juice is obtained from the stem and bark by making vertical incisions on them. The exuding juice is collected and dried

Family

Leguminosae

Chemical Constituents

- Kino is having around 70-80% of kinotannic acid. kino red, k-pycatechin (catechol), resin, and gallic acid.

Therapeutic Efficacy

→ Pterocarpus has the following therapeutic properties :
→ It acts as a powerful astringent,
→ It is used for treating diarrhoea, dysentery, and pasive haemorrhage toothache.

Gymnera

- The terms gymnema and sylvestre are derived from Latin origin with their meanings as naked and from the forest.

Synonyms

Gymnema, Gurmarbooti, gurmar, gurmari, gudma, and Madhunashini.

Biological Source

- Gymnema is the leaves of a perennial woody climber plant, Gymnema sylvestre R. Br. It should contain not less than 1.0% of gymnemic gymnemagenin on dried basis. acids calculated on gymnemagenin on dried basis

Family

Asclepiadacea

Chemical Constituents

- The leaves consist of pentriacontane, hentriacontane, phytin, a and B chlorophylls, resin, tartaric acid, formic acid, butyric acid, mucilage inositol. d-quercitol, gymnemic acids (anti-sweet compounds), mixture of triterpene saponines and anthraquinone derivatives.

Therapeutic Efficacy

1) prevents dental plaque and caries
2) It also has the property of reducing weight

Q11. What are Diuretics ? Write biological source, Family, Chemical Constituents and Uses of Gokuru, Punarnava.

Ans.

DIURETICS

- Drugs promoting urine output are known as diuretic drugs which refer only to those agents that act directly on the kidneys.
- These drugs primarily increase the excretion of water and jons like sodium (Na), chloride (CI), or bicarbonates (HCO_3) from the body. Glomerular filtration, tubular reabsorption, and tubular secretion in kidneys determine the excretion of substances.
- Tubular reabsorption is a process which involves active transport of electrolytes and other solutes from tubular urine to tubular cells, and then to extracellular fluid. As a result, the glomerular filtration increased. The mechanism of action of diuretic drugs also involves a decrease in tubular reabsorption.
- However, these drugs have no effect on glomerular filtration rate or on the action of Anti-Diuretic Hormone (ADH) on the distal portion of nephron. Diuretics effectively treat cardiac oedema (accumulation of fluid in extravascular tissues), especially the one associated with congestive heart failure.

- They are also employed in the treatment of various disorders like nephrotic syndrome, diabetes insipidus, hypertension, nutritional oedema, oedema of pregnancy, and cirrhosis of liver. They also decrease the intracellular and cerebrospinal fluid pressure.

Gokhru

- Its name has been obtained from the sharp thorns that grow from the seeds. The Latin word tribulus is converted as caltrop which means a peaked weapon.

Synonyms

Gokshur, puncture vine, and land caltrops.

Biological Source

- Gokhru is the dried ripe fruits of Tribulus terrestris Linn.

Family

Zygophyllaceae

Chemical Constituents

- The major constituents of the dried fruits of T. terstris are steroidal saponins, including terestrosins (A, B, C, D. and E). desgalactotigonin, F-gitonin desglucolantigonin, and gitonin.

Therapeutic Efficary

Gokhru has the following therapeutic properties:

1) It is used in the treatment of diarrhoea and dysentery.
2) It promotes lactation.
3) It is used in the treatment of psoriasis and eczema
4)It has the property of diuretic because of high amount of nitrates and essential oils found in seeds

Punarnava

- Punarnava is used medicinally since ancient times. It is mainly employed by the practitioners of Ayurveda medicine. It offers a wide range of health benefits. It is beneficial for liver and prevents it from infections.

Synonyms

Hogwood, Vishkhapara, Sattha, Gahadpurma, Komme Saaranathi, and Khatam

Biological Source

- Parmava is the dried herb of the whole plant Boerhaavia diffusa

Family

Nyctaginaceae

Chemical Constituents

- Parava consists of an alkaloid, punarnavine (0.04 RIS) and an antifibrinolytic agent, permavoside. It consists potassium nitrate (6%) an oily substance, and ursolic acid

Therapeutic Efficacy

- Antioxidant Activity
- Analgesic and Anti-Inflammatory Activity
- Anti-Viral Activity
- Hepatoprotective Activity
- Antibacterial Activity

Q12. What are Anti-Dysenteric ? Write note on Ipecacuanha.

Ans.

ANTI DYSENTERIC

- Antidysenterics are drugs used for treating dysentery (an inflammatory disorder of the lower intestinal tract). Dysentery is the result of bacterial or parasitic infection causing pain, fever, or diarrhoea

Ipecacuanha

- Roots of Ipecac are a powerful emetic agent used to induce vomiting in cases of poisoning. It is a flowering plant which is native to Brazil.

Synonyms

Ipecacuanha root and Radix ipecacuanha.

Biological Source

- Ipecacuanha is the dried rhizomes and roots of Cephaelis ipecacuanha (Brotero) A. It should contain 2% or more of the ether-soluble alkaloids.

Family

Rubiaceae

Chemical Constituents

- Ipecacuanha has about 2-2.5% of alkaloids. The main alkaloids of ipecac present in the bark are:
  1) Phenolic alkaloids
  2) Cephaline.
  3) Dimethyl psychotrine

Therapeutic Efficacy

The therapeutic uses of ipecacuanha are:

1) Ipecac syrup is used as an expectorant. Since it is well tolerated by children, it is used in whooping cough.
2) Emetine hydrochloride is used parentally for the treatment of amoebic dysentery.
3) Ipecac syrup is the most effective and dependable emetic for treating systemic poisoning.
4) Ipecac and opium powder (e.g., Dover's powder) are together used as a diaphoretic.

Q13. What are Anti-Malarials ? Write biological source, Family, Chemical Constituents and Uses of Cinchona, Artemisia

Ans.

ANTIMALARIALS

→ Antimalarials are drugs used effectively in the treatment of malaria.
→ They prevent or relieve the malarial symptoms.

→ Most antimalarial drugs target the erythrocytic stage of malaria infection, which is the phase of infection that causes symptomatic illness.

Cinchona

- Cinchona is a tall, evergreen tree which on maturing attains a height of 50-100 feet.
- The medicinally important part of cinchona tree is the bark from which quinine alkaloid is extracted and used in the treatment of malarial infection.

Synonyms

Jesuit's bark, Peruvian bark, and Calisaya bark.

Biological Source

- Cinchona is the dried bark of the stem or root of Cinchona succinubra. C. ledgeriana, and C. calisaya.

Family

Rubiaceae.

Chemical Constituents

- Most important alkaloids are stereoisomers quinine and quinidine and their respective 6' demethoxy derivatives, cinchonidine and cinchonine. Quinine is the most important alkaloid and the other less: significant alkaloids are quinicine and cinchonicine.

Therapeutic Efficacy

Cinchona and its constituents have the following therapeutic user

1) Its bark is used as an antimalarial, antipyretic, and analgesic
2) Its bark is also used as an antiseptic in the treatment of abscesses, cavities, ulcers, as a mouthwash and gargle in sore-throat.
3) Cinchona is used in the treatment of small pox, antiseptic fevers, pneumonia, blood poisoning etc.
4) It is also used in the treatment of whooping cough, hay-fever, spleen enlargement, bemieranias, and other neuralgic infections
5) The barks and all cinchona preparations are valuable in intermittent fever.

Artemisia

- Artemisia, also known as mugwort, wormwood, and sagebrush is a plant of the daisy family of Asteraceae.
- It belongs to a diverse variety of plants having around 200-400 species.

Synonyms

Santonica and Worm seeds.

Biological Source

- Artemisia is an unexpanded flower-head obtained from the plant Artemisia cina Berg, Artemisia brevifolia Wall, Artemisia maritima Linn., and other species of Artemisia.

Family

Asteraceae

Chemical Constituents

Santonica possesses oil and two crystalline substances, santonin and artemisin

Therapeutic Efficacy

- Santonica is a strong anthelmintic acting against roundworm infections.

- It shows no effect on hook worms and tape worms.
- Today, the crude drug is rarely used for therapeutic purpose, and has been totally replaced by santonin.

Q14. What are Antiseptics & disinfectants ? Write note on benzoin, Myrrh, Neem, Turmeric.

Ans.

ANTISEPTICS AND DISINFECTANTS

- The term antiseptics are used for those chemical agents [that are used on animate or living bodies (e.g.. human body tissue, plant tissue, etc.).
- The chemical agents used in case of lifeless or inanimate objects (e.g.. working area, dishes, bench, etc.) are termed as disinfectants. Generally, disinfectants are bactericidal, though they may sometimes be bacteriostatic.

Benzoin

- The benzoin has four varieties and their names are Sumatra, Palembang, Penang, and Siam benzoin.
- They are easily identified by their specific look.
- Sumatra, Penang and Siam benzoin are the three derivatives which are derived from three different plants.

Synonyms

Sumatra Benzoin and Loban.

Biological Source

- Benzoin occurs in two forms Sumatra and Slam.
- The balsamic resin is derived from Styrax benzoin Dryand or Styrax paralleloneurus Perkins and another species of Styrax marketed under the name of Sumatra Benzoin.
- It may also have the balsamic resin obtained from Styrax tonkinesis and other species known as Siam Benzoin on a commercial scale.

Family

Styracaceae

Chemical Constituents

- The major constituents of benzoin resin are conifeyl benzoate, benzoic acid, cinnamic acid and p-carmaryl cinnamate, as well as triterpenoids as minor compounds

Therapeutic Efficacy

Benzoin has the following therapeutic properties

1) It acts as an irritating expectorant, a carminative, and diuretic.
2) It is used externally as an antiseptic
3) It is used in the form of compound tincture of benzoin, and as an inhalation for treating upper respiratory tract infection.
4) It is used to delay the rancidity of fats and oil in the preparation of benzoate lard.

Myrrh

- Mynh is a sap-like resin which is obtained by making Incisions in the bark of trees that belongs to the members of the Commiphora species.

Synonyms

Gum, Bol, and Myrrha.

Biological Source

- Myrrh is an oleo-gum-resin obtained from Commiphora molmol Engler and also from other Commiphora species.

Family

Burseraceae

Chemical Constituents

- Myrrh contains yellowish thick volatile oil (10%), gum (60%), resin (25-40%), and hitter principle (3-4%).

Therapeutic Efficacy

Myrrh has the following therapeutic properties:

1) It is used as a stimulant and an antiseptic.
2) It acts as a protective agent.
3) It is astringent to the mucous membrane; therefore, its tincture is used in mouthwashes and gargles.

Neem

- Neem is a very famous medicinal herb in the field of Ayurvedic medicine system. Around 5000 years ago, it was used as a traditional medicine.

Synonyms

Margosa, arishth, nim tree, and nimba.

Biological Source

- Neem consists of all the aerial parts of Azadirachta indica.

Family

Meliaceae

Chemical Constituents

- Nimbidin is the bitter constituent of neem. The seeds contain 45% of oil. In 1968, complex liminoid compound, azadirachtin was isolated from the neem seeds and its structure was established in 1975

Therapeutic Efficacy

The therapeutic uses of neem are:

1) Its bark is used as a good bitter tonic, astringent, and an antiperiodic.
2) It is used in the treatment of malarial fever.
3) Its bark is also used for skin diseases.
4) Its leaves are used in the form of poultice over sores, and in the form of decoction in ulcers and eczema.
5) Its fresh tender twigs are used for cleaning teeth and in pyorrhoea.

Turmeric

- Turmeric is a spice which provides yellow colour to the curry. In India, it is in use for thousands of years as a spice as well as a medicinal herb.

Synonyms

Indian saffron and turmeric,

Biological Source

- Turmeric is the dried and fresh rhizomes of Curcuma longa Linn. (Calomestica). It should contain not less than 4% of volatile oil. C. amada, C.angustifolia. C. aromatica, C. caesia, C. zedoaria, and C. longa are some other varieties of curcuma.

Family

Zingiberateue

Chemical Constituents

- Turmeric consists of volatile oil (1-6.5%), resin. zingiberaceous starch grains, and curcuminoids (yellow coloured substances)

Therapeutic Efficacy

Turmeric has the following therapeutic uses

1) It is used as a colouring agent for ointments and creams.
2) It is used for the detection of boric acid,
3) It is used as an anti-inflammatory,
4) In China, C. wenyjuin (C. aromatica) is used for (cervical cancer.
5) It is used as an antiarthritic agent. which has been isolated from C. aromatic species.

Q15. What are Oxytocin ? Write biological source, Family, Chemical Constituents and Uses of Ergot.

Ans.

OXYTOCIC

- Oxytocics are drugs which stimulate the contraction of smooth muscles of uterus.
- The administration of an oxytocic can initiate and enhance rhythmic uterine contraction at any time, but relatively high doses are required for such responses in early pregnancy.
- Oxytoci`c agents commonly used include oxytocin, certain prostaglandins, and the ergot alkaloids.
- These drugs are used for induction and augmentation of labor at term, control postpartum haemorrhage, correct postpartum uterine atony, produce uterine contractions after cesarean section or other uterine surgery, and induce therapeutic abortion.
- These drugs are used with extreme caution in parturients with severe hypotension and hypertension, partial placenta previn cephalopelvic disproportion, or grand multiparity.
- The risk of using these agents is much higher in mothers who have undergone recent uterine surgery or who have, suffered recent sepsis or trauma.
- The most serious adverse reaction is sustained tetanic contraction of the uterus, resulting in foetal hypoxia or rupture of the uterus.

Ergot

- Ergot of Rye is a fungal disease of wheat and rye caused by a fungus Claviceps purpurea.
- Grain of rye and wheat are replaced by a dark, purplish sclerotium.

Synonyms

Ergot of Rye and Ergota

Biological Source

- Ergot is the dried sclerotium of a fungus, Claviceps parparva Tulasne, found in the ovary of the rye or Secule cereal

Family

Clavicipitaceae

Chemical Constituents

- Chemically, ergot alkaloids are indole alkaloids that peptide derivatives of lysergic acid. Therefore, these alkaloids are also known as peptide alkaloids, and its concentration is around 0.1-0.25%

Therapeutic Efficacy

Ergot and alkaloids extracted from it have the following therapeutic uses:

- → Ergotamine tartrate is used as an analgesic for treating migraine.
- → Ergotoxine methanesulphonates (mesylates) are used in geriatric patients for migraine.
- → Ergot and ergometrine maleate are used as oxytocic to enhance labour pain during delivery and also to prevent post-partum haemorrhage.
- → Lysergic Acid Diethylamide has a psychotomimetic action, therefore, is used in the treatment of psychiatric patients.
- → It is used for treatment and prophylaxis of post-abortion

Q16. Explain Vitamins ? Write biological source, Family, Chemical Constituents and Uses of Cod liver oil, Shark liver oil.

Ans.

VITAMINS

- Vitamins are natural substances found in plasms and animals and known as essential nutrients for man beings.
- The name vitamin is obtained from vital amines as it was originally thought that these substances were all amines, although not all vitamins are amines Human body uses these substances to stay healthy and support its many functions

According to the ability to be afterted in for or water, vitamins are classified as:

1) Fat-Soluble Vitamins: Vitamin A. D. and K are fat soluble vitamin
2) Water Soluble Vitamins: Vitamin B complex and Vitamin C are water solable

Different vitamins perform different functions depending on their role in biologiest processes.

- Their functions can be understood well by studying the diseases related to their deficient condition.
- The vitamins and their deficiency diseases are given below

Shark Liver Oil

- Shark liver oil as the name suggests is obtained from the livers of sharks.
- It has been used as a folk medicine for promoting wound healing and curing respiratory and digestive system problems since ancient times

Synonym

Oleum Selachoids

Biological Source

- Shacrk liver oil is the fixed oil obtained from the fresh and carefully preserved livers of various species of shack, manly Hypoprion brevirostris and Galeorhinus

Family

Carcharhinidae

Chemical Constituents

- ♣ Vitamin A is present in shark liver oil at concentration ranging from 15,000-30000 International unit per gm. The glycerides of saturated and unsaturated fatty acids are also present

Therapeutic Efficacy

Shark liver oil has the following therapeutic uses:

1) It is used in cases of vitamin A deficiency. It is also known as anti- xerophthalmic factor.
2) This oil lacks vitamin D, thus, is required to be fortified.
3) The absence of vitamin D does not make this oil suitable as a substitute of cod liver oil.
4) It is nutritive oil.
5) It is used for preparing dilute shark liver oil, shark liver oil emulsion (Indian NF), and shark liver oil with vitamin D.

Cod Liver Oil

- → Cod liver oil is a nutritional supplement made from cod fish liver.
- → It contains the omega-3 fatly acids (eicosapentaenoic acid and dooabexamic acid) like other fish oils

Synonym

Oleum morrhi

Biological Source

- It is obtained from the fresh liver of cod fish, Gadus morrhua, and other Gadus species.

Family

Gadidae

Chemical Constituents

- ➲ Vitamin A and vitamins of D group are responsible for the oil's therapeutic efficacy. A gramme of oil includes at least 255mcg of vitamin A and 2.125mcg of vitamin D.

Therpapeutic Efficacy

Cod liver oil has the following therapeutic uses

1) It is used as a dietary supplement
2) It is particularly beneficial in the treatment of rickets and TB.
3) It is used to relieve arthritis pain and stiffness
4) It is a viable therapy option for multiple sclerosis.
5) Because of its high vitamin content, it is effective in the treatment of domestic burns.

Q17. What are Enzymes ? Write note on Papaya, Diastase, Pancreatin, Yeast.

Ans.

ENZYMES

- Enzymes are proteins that catalyse or increase the rate of chemical reactions.
- The enzymes are highly specific and effective protein molecules (except RNAs) that catalyse almost all biochemical reactions.
- Sometimes non-protein coenzymes or cofactor are also required for the catalytic functions of enzymes

Some properties of enzymes are briefed below:

1) All enzymes are proteins, except group of catalytic RNAs.
2) The molecular weight of enzyme ranges from 12,000 to 1 million or more like other protein molecules.
3) The catalytic activity of enzymes is mainly due to their own primary, secondary, tertiary, and quaternary structures of protein and their specific conformation. The catalytic activity of enzyme gets destroyed in case of denaturation or dissociation into sub-units

Papaya

- Papain is an enzyme found in and extracted from papaya. It is a powerful digestive enzyme thus, is important in digestive processes involving the breakdown of tough protein fibres

Synonyms

Papayotin, Vegetable pepsin, Arbuz, Nematolyt, Caroid, Summetrin, Tromasin, Velardon, and Vermizym.

Biological Source

- Papain is the dried and purified latex of the green fruits and leaves of Carica papaya L. Papain can also be obtained from the juice of stems, leaves, and petioles (the activity is nearly the same as that obtained from the fruit latex)

Family

Caricaceae

Chemical Constituents

- Papain contains proteolytic enzymes (peptidase I) which convert the proteins into dipeptides and polypeptides.

Therapeutic Efficacy

Papain has the following therapeutic purposes:

1) It is used in preventing adhesions, in sloughing and infected wounds, in relieving the symptoms of episiotomy (incision of vulva), internally as a protein digestant, anthelmintic (nematode), and an anti inflammatory agent.
2) It is used in treating dyspepsia, intestinal and gastric disorders, and diphtheria by dissolving the diphtheria membrane.
3) It is used in surgery for reducing blood clots (in cases when thromboplasma is undesirable), and for local treatment of buccal, pharyngeal, and laryngeal disorders

Diastase

- Diastase is an enzyme found in malt and produced when the seeds germinate.
- The enzyme converts starch into me and then into glucose.
- Diatase occurs as a yellowish white; amorphous powder, with a faint characteristic odour

Synonyms

Maltin Diastase of malt Amylase, and malt exact

Biological Source

- Malt estract is obtained from the dried barley grains of one of more varieties of Hordeum vulgare Linne

Family

Poaceae

Chemical Constituents

Diastase contains dextrin, maltose, traces of glucose, and amylolytic enzyme diastase (8%),

Therapeutic Efficacy

Diastase has the following therapeutic properties

1) Malt extract and purified diastase are used as amylolytic enzymes.
2) They serve as an aid in digestion of starch.
3) They are used as balk producing laxatives.

Pancreatin

- ★ Pancreatin is a compound made up of various digestive enzymes produced by the exocrine cells of pancreas.
- ★ Amylase, lipase, and protease make up this enzyme
- ★ The mixture is used to treat surgical pancreatecutomy, pancreatitis and cystic fibrosis that cause a lack of pancreatic secretions.

Synonyms

Diastase vera, Zynpar, Pancreatic acid, Pendriotanone

Biological Source

- → Pancreatin can be obtained from either animal or plant sources. Amylase, lipase, and protease are the primary enzymes that contain pancreatin. Pancreatin is often generated from cattle or pigs, although it can also be obtained from plants.

Family

Sudae and Bovidae

Chemical Constituents

- ♦ Amylase, lipase, and protease are all found in the pancreatin. Pancrelipase is a similar blend of enzymes that has more active lipase enzyme than pancreatin.

Therapeutic Efficacy

Pancreatin has the following therapeutic uses:

1) Pancreatic enzymes help in the breakdown of various nutrients, like proteins, fats, and carbohydrates (which converts it into body energy).
2) It promotes healthy weight gain and maintains healthy weight.
3) It promotes absorption of essential vitamins and minerals.

Yeast

- ♠ Yeast is a fungus which has a vegetative body of simple individual cell under normal growth conditions.
- ♠ It is a unicellular fungus which spreads by forming mycelia containing small and definite nuclei and reproducing by budding and ascospore foramen.
- ♠ Around 350 species of yeast are known so far.
- ♠ Yeasts are classified based on their uses and morphological characters.

Synonyms

Brewer's yeast and Baker's yeasts.

Biological Source

- ♦ Yeast is the unicellular fungal microorganism Saccharomyces cerevisiae

Family

Saccharomycetaceae

Chemical Constituents

- Yeast contains moisture (65-85% nitrogenas compounds (proteins), glycogen, fat, vitamins (thiamine, riboflavin, nicotinic acid, pantothenic acid, folic acid, biotin, etc.), ash, and enzymes (invertase, diastase, zymase and maltase

Therapeutic Efficacy

Yeast has the following therapeutic properties
It is used for manufacturing alcohol, beer, and various wines
It is used in the bread industry to raise dough

Q18. What are the Pharmaceutical Aids ? Write biological source, Family, Chemical Constituents and Uses of Kaolin, Lanolin, Beeswax, Acacia, Tragacanth, Sodium alginate, Agar, Guar gum, Gelatin.

Ans.

PHARMACEUTICAL AIDS

- Pharmaceutical aids, also known as pharmaceutical necessities are substances having a little or zero therapeutic value, but are used for manufacturing or compounding various pharmaceuticals. These substances are obtained from various animals, vegetables, minerals, and also from synthetic sources.
- Study of Pharmaceutical Aids Following are the few pharmaceutical aids which are studied in detail in this section:
  1) Kaolin,
  2) Lanolin,
  3) Beeswax,
  4) Acacia,
  5) Tragacanth,
  6) Sodium alginate,
  7) Agar,
  8) Guar gum, and
  9) Gelatin

Kaolin

- Kaolin or China clay is almost white in colour. It is different from other industrial clays in terms of its fine particle size and pure colouring. Since it can be dispersed in water, it is considered an ideal pigment.

Synonyms

China clay, paper clay, and white clay

Biological Source

- Kaolin is a group of hydrous aluminium silicates, among which kaolinite is the major mineral

Chemical Constituents

- Contains mainly the **clay mineral kaolinite** ($Al_2O_3(SiO_2)_2(H_2O)_2$), a hydrous aluminosilicate.

Therapeutic Efficacy

Kaolin has the following therapeutic uses

- ➲ It is used in mild to moderate diarrhea severe diarrhoea (dysentery), and cholera
- ➲ It is used in combination with other products to treat darrhoea and to relieve soreness and swelling within the mouth occurred due to radiotherapy

- ➲ These combination products are also used in the treatment of ulcers and chronic ulcerative colitis (inflammation in large intestine)
- ➲ Its directly applied on the skin in the form of a wet dressing (poultice) or a dusting powder.
- ➲ It is used for drying or softening the skin.

Lanolin

- The sebaceous glands of animals bearing wool secrete lanolin which is a wax.
- The form of lanolin used by humans is obtained from domestic sheep breeds raised to obtain their wool

Synonyms

Wool fat, wool wax, wool grease, hydrous wool fat, Adeps Lanae, etc.

Biological Source

- Lanolin is a fat-like stance obtained from the secretion of sebaceous glands of the sheep Ovis aries Linn. These glands are deposited onto the wool fibres

Family

Bovidae

Chemical Constituents

- The enters and polyesters of 33 alcohols (of high molecular weight) and 36 fatty adds together make up a complex mixture of Lanolin

Therapeutic Efficacy

Lanolin has the following therapeutic uses:

1) It is applied topically for treating or preventing dry skin, itching, or other skin irritation caused by diaper rash, radiation therapy skin burns, etc.
2) It is also used for treating sore and cracked nipples caused by breast-feeding

Beeswax

- ★ Bees wax is a natural wax obtained from the honey bees of the Apis genus. The worker bees produce was in scales in their abdominal segments by the eight wax producing glands.

Synonym

Cara flava, cera alba, mom, madhujan, white bees wax, and yelow bees wax.

Biological Source

- → Bees wax is the purified wax obtained from the honey comb of the bees Apis melifera and other species of Apis.

Family

Apidae

Chemical Constituents

- ♠ Bees wax is esters of monohydric alcohols having 1 straight chain acids About 80% of myricin, Le.. myricyl palmitate is present in bees wax, which is its major constituent Free cerotic acid (about 15%), melissic acid (in small quantities), and cerolein (aromatic substance) are other constituents

Therapeutic Efficacy

Beeswax has the following therapeutic uses:

1) It is used in plasters and polishes,
2) It is used in ointment for hardening purposes.
3) It is an ingredient of paraffin ointment I.P

Acacia

- Acacia is a genus of plant including different types of trees and shrubs,
- Some plants of genus acacia contain toxic chemicals that can potentially cause hair loss, affect GIT's ability to intake nutrients, and cause stunt growth.

Synonyms

Gum acacia, gum Arabic, and acacia gummi.

Biological Source

- Acacia is the dried gummy exudation obtained from the stems and branches of Acacia senegal (L.) Willd or other African species of Acacia. It is also found in the stems and branches of Acacia arabica, Willd.

Family

Leguminosae

Chemical Constituents

- Arabin, a complex mixture of calcium, magnesium, and potassium salts of Arabic acid, is the chief constituent of acacia.
- Arabic acid hydrolyses into L-arabinose, L rhamnose. D-galactose, and D-glucuronic acid.

Therapeutic Efficacy

Acacia has the following therapeutic uses

1) Its mucilage is a demulcent
2) It is an essential pharmaceutical aid for emulsification and to be used as a thickening agens
3) It is used as a binding agent in tablet formulations.
4) It is used in the granulation process of tablet manufacturing due to its compatibility with other plant hydrocolloids, starches, carbohydrates, and proteins.
5) It is combined with gelatin to form coacervates for drug microencapsulation.

Tragacanth

→ Tragacanth is the dried, gummy exudation of Astragalus species.
→ It is a small, low, bushy perennial shrub with large tap root along with the branches.
→ The root is tapped to obtain gum.

Synonyms

Gum tragacanth, gum dragon, goat's thorn, and hog gum.

Biological Source

- Tragacanth is the air dried gummy exudate, either flowing naturally or obtained by incision from the stems and branches of Astragalus gummifer Labill and other species of Astragalus.

Family

Leguminseae

Chemical Constituents

★ Tragacanth is made up of two major fractions, i.e., tragacanthin (water-soluble) and bassorin (water insoluble)

Therapeutic Efficacy

Tragacanth has the following therapeutic uses:

1) It is used as a demulcent in cough and cold preparations.
2) It is used treat diarrhoea.
3) It is used as an emollient in cosmetics.
4) It is used as a thickening, suspending, and an emulsifying agent for oils and waxes.

Sodium Alginate

♠ Sodium alginate is the sodium salt form of alginic acid and gum extracted from the cell walls of brown algae. having chelating activity.

Synonyms

Sodium alginate and Sodium polymannuronate

Biological Source

♦ Sodium alginate is the sodium salt of alginic acid, which a polyuronic acid containing reduced mannuronic, and glucoronic acids is obtained from the algal growth.

Chemical Constituents

➲ Sodium alginate is the sodium salt of alginic acid, which is a linear polymer of L-guluronic acid and D-mannuronic acid

Therapeutic Efficacy

Sodium alginate has the following therapeutic uses:

1) Its high and medium viscosity grades are used for preparing pastes, creams, and for thickening and stabilising emulsions.
2) It is a good suspending and thickening agent.
3) It is used as a binding and disintegrating agent in tablets and lozenges.
4) It is used for preparing jellies, ice cream, etc. in food industries.
5) It is also used in textile industries.

Agar

- Agar is a jelly-like substance, obtained from algae, and derived from agarose (polysaccharide), which forms the supporting structure in the cell wall of certain algae species, and which is released on boiling.
- These algae are known as agarophytes belonging to the Rhodophyta (red algae) phylum.

Synonyms

Agar-agar, Chinese-isinglass, vegetable gelatin, gelose, and Japan-agar.

Biological Source

- Agar is the dried hydrophilic colloidal polysaccharide complex extracted from the agarocytes of algae belonging to the class Rhodophyceae

Chemical Constituents

→ Agar consists of agarose and agaropectin (polysaccharides).

Therapeutic Efficacy

Agar has the following therapeutic uses:

1) It is used as an emulsifying agent, bulk laxative, and a suspending agent.
2) It is used for preparing bacteriological culture medium.
3) It is used in the production of ointments and medicinal encapsulations.)

4) It is also used as a dental impression mold base

Guar Gum

- Guar gum powder is obtained from the Guar seed undergoing multiple industrial processes.
- Guar gum attains uniformity and very high viscosity at low concentrations by getting rapidly hydrated in cold water.
- Being colloidal in nature, it provides excellent thickening to the solution.

Synonyms

Guar flour, decorpa, jaguar, jaguar gum, guaran, gum cyamopsis, and cyamopsis gum.

Biological Source

➲ Guar gum is the powder of the endosperm of the seeds of Cyamopsis tetragonolobus Linn.

Family

Leguminoseae

Chemical Constituents

- Galactomannan (guaran) is the major constituent of guar gum. This substance hydrolyses to yield galactose and mannose.

Therapeutic Efficacy

Guar gum has the following therapeutic uses:

1) It is used as a bulk laxative,
2) It is used as a protective colloid.
3) Since its thickening power is 5-8 times more than starch, it is used as a thickener,
4) It is used in treating peptic ulcer.
5) It is an appetite depressant.
6) It is used as a binding and disintegrating agent tablet manufacturing.

Gelatin

- Gelatin is derived from collagen obtained from various animal body parts.
- It is commonly used as a gelling agent in food, pharmaceutical drugs, vitamin capsules, photography, and cosmetic manufacturing

Synonyms

Gel foam, puragel, and gelatinum.

Biological Source

♠ Gelatin is a product obtained by partial hydrolysis of collagen, derived from the skin, white connective tissue, tendons, ligaments, and bones of ox (Bos taurus Linn.), sheep (Ovis aries Linn), etc.

Family

Bovidae

Chemical Constituents

♦ Gelatin consists of gluten protein which hydrolyses into a mixture of amino acids.

Therapeutic Efficacy

Gelatin has the following therapeutic uses:

1) It is used in the preparation of pastilles, pastes, suppositories, capsules. pill-coatings, and gelatin sponge
2) It is used as a suspending agent, tablet binder. coating agent, stabiliser, thickener, and texturiser in food.

3) It inhibits crystallisation in bacteriology for preparing cultures.
4) It is used as a substitute for blood plasma.
5) It is also used for microencapsulating drugs in which the drug is sealed within a micro-sized capsule or beadlet, which may then be handled as a powder.

Q19. What are Miscellaneous ? Write note on Squill, Galls, Pale Catechu, Ashwagandha, Vasaka, Tulsi, Guggul.

Ans.

MISCELLANEOUS

Squill

- Squill is a plant that can be found in Africa, India, and the Mediterranean region.
- Despite grave safety issues, the plant's bulbs are occasionally utilised to create medicine. Squill is used as a rat poison for pest management.

Synonyms

Jangali pyaj, Sea onion, Urginea.

Biological Source

- Squill is made up of sliced and dried scale leaves from Urginea maritime's bulb.

Family

Liliaceae,

Chemical Constituents

- The cardiac glycosides of bufadienolides types (scillaren A and scillaren B) as well as scillatenase enzyme, are found in Indian squill.

Therapeutic Efficacy

Squill has the following therapeutic uses:

1) It is similar to digitalis as it increases vigour while decreasing the frequency of cardiac action.
2) It is also a strong expectorant, and is commonly used to treat chronic bronchitis and coughs in general.
3) It causes emesis in excessive dosages.

Galls

- Plant galls, like benign tumours or warts in animals, are aberrant outgrowths of plant tissues. Viruses, fungus, and bacteria, as well as other plants, insects, and mites, can all cause them.

Synonyms

Blue Galls, Nutgalls, Turkey galls, Aleppo galls, Galla

Biological Source

- Galls are vegetative outgrowths caused by the gall wasp.
- Adleria gallartinctorar Olivier depositing eggs on the twigs of dyer's oak, Quercus infectoria

Family

Wasp Adleria gallariinctorne Olivier - Cynipidae Quercus infectoria - Fagaceae

Chemical Constituents

- Gallotannic acid, gallic acid, ellagic acid, sitosterol, methyl betulate, methyl oleanolate, starch, calcium axalate, nyctanthic acid, roburic acid, and syringic acid are among the tannins found in galls.

Therapeutic Efficacy

Galls have the following therapeutic uses:

1) Astringents are made from galls.
2) Tanning and dyeing processes involves galls.
3) It is also utilised in the production of tannic acid and ink.

Pale Catechu

- Pale catechu is an extract occurring as dark or pale-brown coloured cubes having a dull, powdery fracture. It may also occur in the form of lozenges.

Synonyms

Gambier, Pale Catechu, Terra Japonica, and Catechu.

Biological Source

- Pale catechu is an extract prepared from the leaves and young shoots of Uncaria gambler Roxburg.

Family

Rubiaceae

Chemical Constituents

- Pale catechu contains about 7.33% (+) catechin and 22 50% catechutannic acid.

Therapeutic Efficacy

Pale catechu has the following therapeutic uses:

1) All parts of the plant have astringent properties.
2) In India, it was used as skin lotions since remote times.
3) The Malays (ancient Malaysia) also use it as a lotion. and apply it to treat burns.
4) In paste form, it is used to treat scurf.
5) It has commonly been used by the Indians and Malays to treat diarrhoea and dysentery, and as a gargle for sore throat.

Ashwagandha

- The name Ashwagandha has been derived from the Sanskrit language and is a combination of the word ashva meaning horse and gandha meaning smell.
- Thus, the roots have a strong horse-like odour.

Synonyms

Withania root and Winter cherry.

Biological Source

- Ashwagandha is the dried roots and rhizomes of Withanic somnifera.

Family

Solanaceae

Chemical Constituents

Ashwagandha comprises of the following constituents:

1) Alkaloids: Ashwagandhine, Withanine, Isopelletierine, and Anaferine.
2) Steroidal Lactones: Withanolides and Withaferins
3) Phytosterols: Sitoindosides and B-sitosterol

Therapeutic Efficacy

Ashwagandha has the following therapeutic uses:

1) It is a sedative and hypnotic.
2) It is hypotensive, and shows respiratory stimulant actions along with bradycardia.
3) It is an immunomodulatory agent.
4) Conventionally, it has been used in rheumatism, gout, hypertension, nervine, and skin diseases.
5) It prevents bony degenerative changes in arthritic conditions

Tulsi

- Tulsi is an herbaceous, branched annual plant. It can be easily grown and is regarded as the holy plant of Hindus. It also holds an important place in the ancient Ayurveda system of medicine.

Synonyms

Bisva Tulsi. Varavara, Manjariki (Sanskrit), Babui, Tulsi, Sabran, Kala-Tulsi, Baranda, Shyama Tulsi, Rama Tulsi (Hindi), and Holy Basil (English))

Biological Source

♠ Tulsi is the dried leaves of Ocimum sanctum)

Family

Labiatae

Chemical Constituents

♠ The leaves and flowering tops of tulsi contain 0.1-0.9% of bright, yellow coloured, and pleasant smelling volatile oil

Therapeutic Efficacy

Tulsi has the following therapeutic uses:

1) It is a diaphoretic, carminative, stimulant, demulcent, aphrodisiac, diuretic, fragrant, aromatic, anthelmintic, and febrifuge.
2) It is also used as an antidote to snake-poison.
3) It exhibits antimicrobial properties.
4) It also possesses anti-inflammatory properties due to the presence of eugenol oil in leaves.
5) It is used in respiratory tract infections.

Guggul

♦ Guggul is obtained from the sap (gum resin) which exudes from Commiphora wightii.
♦ In Ayurvedic medicine system, it is in use since 600 BC.
♦ In ancient literatures, it is mentioned to be useful in the treatment of atherosclerosis.

Synonyms

Palankasha and Devadhupa.

Biological Source

➲ Guggual is an oleogum-resin (oleoresin) that exudes spontaneously as a result of injury from the bark of Commiphora wightii.

Family

Burseraceae

Chemical Constituents

★ Guggul contains steroids, diterpenoids, aliphatic esters, amino acids, etc.

Therapeutic Efficacy

Guggul has the following therapeutic uses:

1) Oleogum resin obtained from guggul is used in obesity, arthritis, and rheumatism..
2) It is also used as an anti-inflammatory and hypocholesterolemic drug.
3) Its semi-purified form, patented with the name of 'Gugulip' and is marketed by Cipla, shows antihyperlipidemic activity.

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