

Chapter-5 | Unit-1 | Pharmacognosy

Laxatives

The drugs are loose the bowels (Intestine) or the drugs producing increasing and hosting intestinal evacuation.

Laxatives are indicated in constipation and in evacuation of the bowel, prior to diagnostic procedure or surgery.

Aloe

Synonyms:-

Aloe, Aloevera

Family :-Liliaceae

Biological source:-

It is the dried juice of the leaves of *Aloe barbadensis* Miller. (Curacao aloes)

Physical Characteristics

Colour	Bright yellow-ish or rich reddish brown to black.
Odour	Penetrating
Taste	Nauseous and bitter
Size	Various Size

Chemical Constituents:-

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- Aloes contain a yellow coloured crystalline substance known as barbaloin (C-glycoside) resin and aloe-emodin.
- Aloe emodin
- Barbaloin

Therapeutic efficacy :-

- Improves digestive health.
- Promotes oral health.
- Clears acne.
- Relieves anal fissures
- It used as irritant purgative
- It use for cosmetic and protective
- It also used for treatment of radiation burns.

Castor oil

Synonyms:-

Oleum Ricini

Family:-Euphorbiaceae

Biological Source:-

It is the fixed oil obtained by the cold expression of the kernels of seeds of *Ricinus communis*.

Physical Characteristics

Colour	Pale yellow or almost colourless liquid
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Odour	Nauseating
Taste	Slightly acid

Chemical Constituents:-

Triglyceride of ricinoleic acid, fatty acids.

Isoricinoleic, linoleic, stearic and isostearic acids.

Therapeutic efficacy :-

- Castor oil is used as a cathartic.
- It also used for lubrication commercially.
- Castor oil can be used as an irritant/simulative laxative.
- Castor oil is a natural emollient and a few drops may also be used to remedy dry skin, as a massage oil, and may benefit hair as a treatment. Castor oil contains ricinoleic acid, a fatty acid that comprises about 90% of the oil.

Ispaghula

Synonyms:- Isapgol, Isabgol

Family:- Plantaginaceae

Biological source:-

It consists of dried seeds of the plant known as *Plantago ovata* Forskal.

Chemical Constituent :-

- Isapgol seed contain mucilage
- It consists of **pentosan** and **aldobionic acid**.

Physical Characteristics

Colour	Pinkish-grey or brown
Odour	None
Taste	Mucilaginous, bland
Size	Length : 10 to 35 mm Width: 1 to 1.75 mm

Therapeutic efficacy :-

- It is also useful in dysentery, chronic diarrhoea, in cases of duodenal ulcers and piles.
- It works effectively as a soothing agent.
- The husk are used as demulcent, laxatives and emollient.
- It used as the treatment of chronic construction amoebic and bacillary dysentery.
- Ispaghula is used in the treatment of constipation.

Senna Leaves

Synonyms:-Tinnevelly Senna, Indian Senna

Family:-Leguminosae

Biological source:-

- It consist of dried leaflets of *Cassia angustifolia*.

Physical Characteristics

Colour	Light Green
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Odour	Faint
Taste	Bitter mucilagenous.
Size	3–5 cm long, 2 cm wide and about 0.5 mm thick

Chemical Constituents:-

- It consists not less than 2.0% of hydroxyanthracene derivatives calculated as sennoside B.
- It contains anthraquinone derivatives.
- The active constituents of the drug. They are sennoside A, sennoside B, sennoside C, and Sennoside D.
- Senna Leaves also contains rhein, kaempferol, Aloe-emodin and isorhamnetin etc.

Therapeutic efficacy :-

- Senna Leaves are used as laxatives.
- It is an irritant purgative due to presence of anthraquinone derivatives.
- It causes irritation of large intestine and have some griping effect.
- They are prescribed along with carminatives.
- Senna is stimulant cathartic and exerts its action by increasing the tone of the smooth muscles in large intestine.

Cardiotonic

- The drugs which gives Strength or energy to the activity of the heart.
- Cardiotonic drugs increase the force of the contraction of the muscle (myocardium) of the heart.

Example:- Digitalis, Strophanthusquill, Arjuna bark etc.

Classification of Cardiotonic

Digoxin:

- Digoxin is used to treat heart failure, usually along with other medications. It is also used to treat a certain type of irregular heartbeat (chronic atrial fibrillation).
- Digoxin is one of the oldest medications used in the field of cardiology.
- Treating heart failure may help maintain your ability to walk and exercise and may improve the strength of your heart. Treating an irregular heartbeat can decrease the risk for blood clots, an effect that may reduce your risk for a heart attack.

Milrinone:

- This medication is used for the short-term treatment of heart failure. It works by making your heart beat stronger and by relaxing certain blood vessels so that the amount of blood that is pumped from the heart is increased.

Dexazoxane:

- The heart from damage of continued treatment with chemotherapy agents known as anthracyclines in women with breast cancer.
- Dexrazoxane is an agent that protects patients treated with anthracyclines against cardiac side effects

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Phenyephrine:

- Phenyephrine is a decongestant that is used to treat stuffy nose and sinus congestion caused by the common cold, hay fever, or other allergies.

Lisinopril :

- Lisinopril is used to treat high blood pressure (hypertension) in adults and children who are at least 6 years old.

Dopamine:

- Dopamine is a medication form of a substance that occurs naturally in the body. It works by improving the pumping strength of the heart and improves blood flow to the kidneys.

Dobutamine:

- Dobutamine is used short-term to treat cardiac decompensation due to weakened heart muscle.
- Dobutamine is usually given after other heart medicines have been tried without success.

Digitalis

Synonyms:-

Digitalis leaves, Foxglove leaves

Family:-Scrophulariaceae.

Biological Source:- It consists of dried leaves of *Digitalis purpurea* at 60°C below temperature after collecting the leaves.

Chemical Constituents:-

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- Cardiacglycosides (Cardenolideas) 0.2 to 0.45 % Purpurea glycosides.
- They also contains few other glycosides like oderoside H, glucogitaloxin, gitaloxin, verodocin and glucoverodoxin.

Therapeutic efficacy (Uses)

- It is effective in congestive cardiac failure to increase cardiac output and relieve venous congestion.
- The drug is also used to slow the rate of ventricular contraction in patients with atrial fibrillation or flutter.
- Digitalis directly increases the contractile power of the heart muscle, enabling a disease-weakened heart to keep up with the body's demand for heart action
- It increases excitability to cardiac muscles.

Arjuna

Synonyms:-

Arjun bark, Arjun, Terminalia Arjuna rab

Family:- Combretaceae

Biological source:- Arjuna consists of dried stem bark of the plant known as *Terminalia arjuna* Rob.

Chemical Constituents:-

- It contains triterpenoid saponins, arjunolic acid, arjunic acid arjungenin.
- It also contains β -sintoerol, ellagic acid and arjunic acid.

Uses:-

- The bark of Arjun is astringent, sweet, acrid, cooling, aphrodisiac, urinary astringent, and expectorant, but, chiefly used as cardio tonic as it improves blood supply to heart.

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- It is also useful in ulcer treatment, fractures, cirrhosis of liver, ischaemic heart disease, and hypertension.
- Arjuna bark is used as a diuretic and astringent.

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Carminatives and Gastro Intestinal Regulators.

Carminative

- The word carminative is derived from Latin word:-

(Carminare : To cleanse)

- The drugs which used relieving pain in the stomach and intestine is Known as carminative.
- The carminatives are prescribed in indigestion, gastric discomfort and loss of appetite.

Examples of carminatives are fennel, coriander, cardamom, clove, cinnamon, caraway etc.

G.I regulators/ Gastric intestinal regulators.

- The gastrointestinal regulators are the agents which regularise the activity of G.I tract and include bitter stomach, anti-emetics and appetizers.

Coriander

Synonyms:- Coriander fruits

Family:-Umbelliferae

Biological Source:-

- These are fully dried ripe fruits of the plant known as *Coriandrum sativum* Linn.

Physical characteristics / Organoleptic characters:-

Colour: Yellowish-brown to brown

Odour :- Aromatic

Taste :- spicy and characteristic

Size:- 2 to 4 mm in diameter and 4.8 mm in length (Fruit)

Chemical Constituents:

- Coriander seed contain coriandrol (D-linalool)
- It yield from 0.3 to 1% and proteins (20%) are other contents of the drug.
- Coriander leaves are rich in vitamin A content.
- Fruit contains protein, fat, carbohydrates, fiber, calcium, phosphorus and iron. Leaves are reported to be a good source of vitamin C and carotene.
- The odor of the fruit is due to an essential oil present in it.
- This oil possesses linalool and pinene.

Therapeutic efficacy:-

- It used as flavouring agents
- Coriander oil is used along with purgative to prevent gripping.

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- It also used as volatile oil as an aromatic, carminative stimulant.
- Treat Osteoporosis
- Prevents Anemia
- Coriander contains both Cineole and linoleic acid. These elements pose antirheumatic and antiarthritic properties which help reduce skin inflammations.
- Coriander prevents flatulence and controls spasmodic pain

Fennel

Synonyms:

- Fennel fruits,
- FructusFoeniculumsaunf
- AnethumpanmoriumRoxb.
- Fleming,
- AnethumrupestreSalisb.
- Foeniculumazoricum Mill.
- FoeniculumdivaricatumGriseb.
- Foeniculumofficinale

Family:Umbelliferae

Biological Source:

- It consists of dried ripe fruits of the plant known as *Foeniculum vulgare*.
- It should contain less than 1.4% of volatile oil.

Physical characteristics / Organoleptic characters:-

Colour: Green to Yellowish-brown

Odour: Sweet aromatic

Taste: Strongly aromatic and mucilaginous

Size: 5 to 10 × 2 to 4 mm

Chemical Constituents:

- It consists of 3 to 7% of volatile oil.
- The chief active constituent of volatile oil is a ketone, Fenchone and Anethole.
- It also contained protein, fat, minerals, fibre and carbohydrates.
- Total phenolic content in organic fennel oil was 262.59 ± 15.5 mg Gallic Acid Equivalents/l(44) . The phenolics identified in the fruit of this plant were neochlorogenic acid (1.40%), chlorogenic acid (2.98%), gallic acid (0.169%) etc.

Therapeutic efficacy:-

- It is used as a carminative, aromatic and stimulant.
- It also used as flavouring agents.
- Fennel is an herbal supplement which can be used as treatment of infants and nursing children suffering from colic and dyspeptic disease.
- It also be used for its anti-inflammatory, analgesic and antioxidant.

- It Use to treat menstrual disorders, dyspepsia, flatulence and cough.
- It Roots were employed as purgative.
- Fennel was used by the ancient Egyptians as a food and medicine.

Cardamom.

Synonyms:

Cardamom fruit, Cardamom seeds.

Family:-Zingiberaceae

Biological source:-

- It consists of the dried ripe fruits of *Elettaria cardamomum* Maton

Organoleptic characters:-

Colour:Green to pale buff

Odour: Aromatic, agreeable and pleasant

Taste: Strongly aromatic

Size: Capsule (Fruits) 2 cm in length.

Chemical Constituents:-

Terpineol

Borneol

Therapeutic efficacy:

It is used as a flavouring agents

Cardamom is used as a aromatic carminative and stimulant.

It is used in the treatment of respiratory disorders like asthma, bronchitis, cough, nausea, vomiting, indigestion, headache, diarrhea, colds, for flatulence, also used as a spice in cooking.

Ginger

Synonyms:Zingiber, Zingiberis, sonth

Family:-Zingiberaceae

Biological Source:

- Ginger consists of rhizomes of *Zingiber officinale*

Organoleptic characters:

Colour: Buff Coloured

Odour: Agreeable and aromatic

Taste: Agreeable and pungent

Size: Rhizomes of ginger

Chemical Constituents:-

- Ginger contain about 1 to 2% of volatile oil, an acrid resinous matter (5-8%) and starch.
- The pungent principal of ginger is gingerol which is Yellowish oily substance.

Therapeutic efficacy:

Ginger is used as a stomach an aromatic a carminative stimulant.

It is used as a flavouring agents.

Ginger oil is used in mouth washes, ginger beverage and liquors.

Clove.

Synonyms:-Caryophyllum, clove flower, clove bud, Laung

Family:Myrtaceae

Biological source:

It consists of dried flower buds of *Eugenia caryophyllus*.

Organoleptic characters:-

Colour- Crimson to dark brown

Odour: Slightly aromatic

Taste: Pungent and Aromatic

Size: 10 to 17.5 mm in length, 4mm in width and 2mm thick.

Chemical Constituents:

- It contains not less than 15% (V/W) of clove oil.
- The clove oil contains eugenol (70 to 90%) eugenal acetate, methylamylketone, caryophyllenes and small quantities of esters, alcohols.

Therapeutic efficacy:

Clove is used as a dental analgesic, Carminative stimulant flavouring agents aromatic and antiseptic.

It also used in preparation of cigarettes.

The clove oil is used in perfumery and also in manufacture of vanillin.

Black Pepper.

Synonyms: Kalimirch, Madagascar pepper, *Piper nigrum*.

Family: Piperaceae

Biological Source:

It consists of dried unripe fruits of *Piper nigrum* Linn.

Organoleptic characters:

Colour: -Blackish - Brown or greyish black.

Odour:- Aromatic and pungent

Teste :- Bitter

Size :- 3.5 to 6 mm in diameter.

Chemical Constituents:-

It should contain not less than 2.5% of piperine on dried basis.

Pepper contain an alkaloid piperine (5-9%) Volatile oil (1.25%) pungent resin (6.0%) piperidine and starch (about 30%)

Therapeutic efficacy.

The fruits are used as aromatic, stimulant.

Asafoetida.

Synonyms:- Asafoetida, Gum Asafoetida, Devil's dung, Hing

Family:- Umbelliferae

Biological source:-

It obtained by making incision from living Rhizomes and roots of *Ferula*, *Foetida*, *Regal*. *Ferula Rubricaulis* and other species of *Ferula*.

Organoleptic characters

Colour: Yellowish-white changing to reddish brown

Odour: Penetrating and alliaceous

Taste: Bitter

Size: Tears are 0.5 to 3 cm in diameter.

Chemical Constituents:

- Asafoetida contain resin (40 to 65 %) and volatile oil (4 to 20%).
- The resin of the drug consists chiefly asaresinotannol in the free or combined form with ferulic acid.
- Umbelliferone is absent in drug (Distinction from galbanum).

Therapeutic efficacy:-

- It is used as carminative, nervine tonic, flavouring agent, intestinal antiseptic.
- It also used in veterinary medicine and for culinary purposes.

Cinnamon.

Synonyms: cinnomom bark, kalmi - Dalchini, Ceylon cinnamon

Family: Lauraceae

Biological source:- It consists of dried inner bark of shoots of coppiced trees of *Cinnamomum zealanica*.

Organoleptic characters:

Colour: Dull yellowish brown

Odour: Aromatic

Taste: Quills compound

Chemical Constituents:

1. Cinnamon bark :-

- It consists about 0.5 to 1.0% of volatile oils and 1.2% of tanins.
- It also contain calcium oxalate, starch and mannitol.

2. Cinnamon oil :-

- 60-70% cinnamaldehyde
- 5 - 10% evgenol
- It also contain benzaldehyde cuminaldehyde and terpenes (Phellondrene, pinene, cymene, caryophyllane)

Therapeutic efficacy:-

- It used as flavouring agents and antiseptic.
- Bark is used as a carminative, stomachic and mild astringents.
- It is also used as a spice and condiment.
- It also used as the preparation of candy, perfumes.

Nutmeg.

Synonyms: Myristica, Nux Moschata, jaiphal

Family: Myristicaceae.

Biological Source:

It dried from kernels of seeds of *Myristica fragrans* Houtten

Organoleptic characters:-

Colour: -Greenish- brown or brown (Kernels)

Odour: - Strongly aromatic

Taste: -Pungent and aromatic

Size: -Length - 20 to 30mm (Kernels)

Broad - 20mm (Kernels)

Chemical Constituents:-

- It contain Elemicin, myristicin and saffrole.
- It other constituents is contain geraniol, terpineol.
- Nutmeg principally contains volatile oil (5 to 15 percent) and fat (30 to 40 percent). It also contains phytosterin, starch, amyloextrin, colouring matters and a saponin.

Therapeutic efficacy:

- Cancer.
- Diarrhea.
- Intestinal gas.
- Kidney disease.
- Nausea.
- Nutmeg and its oil are used as stimulants, flavouring agents and carminatives.
- The expressed fatty oil and the volatile oil have been used externally in chronic rheumatism.

Astringents

- The substance that cause the contraction or shrinkage of tissue and that dryup secretions.
- They are capable of arresting haemorrhages and reducing secretions of mucous membrane of stomach or intestine by precipitating proteins.

Black Catechu

Synonyms: Cutch, kattha, khadir, khair

Family: Leguminosae

Biological source: It consists of dried aqueous extract of the heartwood of the plant *Acacia Catechu*.

Organoleptic characters:

Colour - Light brown to black

Odour- None

Taste - Very astringents

Size - 2-5 to 5 cm

Chemical Constituents:-

- It contains about 10% of acacatechin.
- The other chemical contents of black Catechu are Catechu red, quercetin, and gum.

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- Acacatechin is also known as Acacatechin.

Therapeutic efficacy:

- It is used as styptic and antidiarrheal agent.
- It used for relaxed condition of throat, mouth and gums.
- Kattha is used as a astringents and for cooling and digestive purposes.
- It also used for printer inks.

Myrobalan

Synonyms:- Chebulic myrobalan, harde, haritaki.

Family: Combretaceae.

Biological Sources

- Myrobalan is the mature dried fruits of *Terminalia chebula*,

Chemical Constituents

- Myrobalan contains about 30% of the hydrolysable tannins, which consists of chebulinic acid, chebulagic acid and D-galloyl glucose.
- It contains free tannic acid, gallic acid, ellagic acid, and resin myrobalanin. Anthraquinone glycosides, sennosides have been reported in myrobalan.

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Therapeutic efficacy

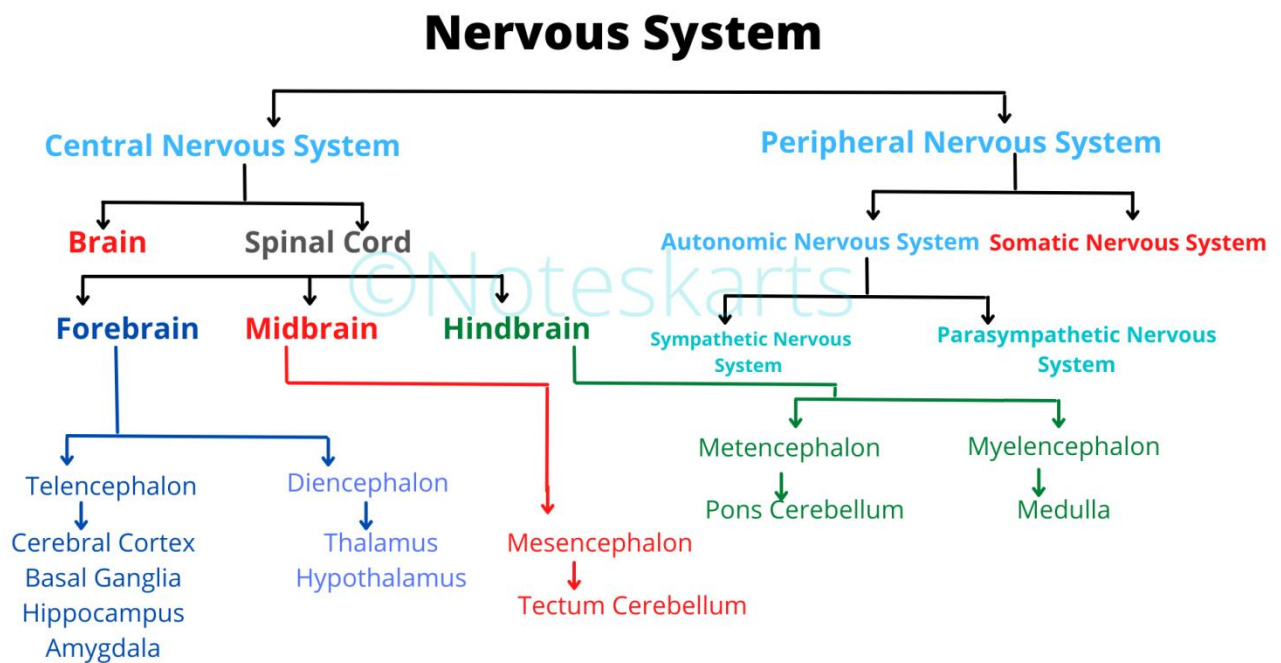
- Myrobalan is reputed in Indian system of medicine as a drug for various types of diseases.
- It is used externally in chronic ulcers, wounds, piles, and as stomachic.
- It is one of the drugs of the well-known preparation 'Triphala'.
- powder of myrobalan is used in dental preparations
- It is used in dyeing and tanning industry and also in treatment of water used for locomotives.

Drugs acting on Nervous system

Nervous system of human being is classified into two type.

1. Central Nervous System
2. Peripheral Nervous System

Classification of Nervous System



1. Central Nervous System:-

- The CNS consists of the brain and spinal cord.
- The brain plays a central role in the control of most bodily functions, including awareness, movements, sensations, thoughts, speech and memory.
- There are many different types of drugs that work on the CNS, including anaesthetic, Anticonvulsant, anti-emetics, antiparkinson agents, muscle relaxants etc.

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2. Drug Acting on autonomic nervous system:-

- It is considered as automatic nervous system and controls the functions like respiration, circulation, digestion and maintenance of body temperature.

Hyoscyamus

Synonyms:- Henbane, Hyoscyamus leaves

Family:- Solanaceae

Biological source:- It consists of dried leaves and flowering tops of the plant known as *Hyoscyamus niger* Linn.

Chemical Constituents:- It constituent of Henbane leaves is the alkaloid hyoscyamine, together with smaller quantities of atropine and hyoscyne also known as scopolamine.

Therapeutic efficacy:-

- It is used as antispasmodic hypnotic and mild diuretic.
- It is used for relieve pain in cystitis.
- It is used to relieve the gripping caused by drastic purgatives and is a common ingredient of aperient pills.
- It also used to relieve the spasms urinary tract.
- It is used sedative and anti-asthmatic.

Belladonna

Synonyms:- Belladonna leaf, Belladonna herb

Family:- Solanaceae

Biological source:- It consists of dried leaves and other aerial part of *Atropa belladonna* Linn.

Chemical Constituents:-

It contain alkaloids (l-hyoscyamine) and belladonnine and other components are atropine, apoatropine as choline belladonnine, cuscohygrine, chrysa-tropic acid and other components.

Therapeutic efficacy:-

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- It used to reduce secretion of sweat salivary and gastric glands.
- It used in parasympathetic depressant.
- Narrow-angle glaucoma
- A bladder obstruction, enlarged prostate, or other urination problems
- A stomach or bowel obstruction (including paralytic ileus) severe ulcerative colitis or toxic megacolon;

Ephedra

Synonyms:- Ma-haung

Family:- Ephedraceae

Biological source:- Ephedra consists of dried young stem of *Ephedra gerardiana* Wall

Chemical Constituents:-

Ephedra contains about 1 to 1.5% of total alkaloids of ephedrine.

The different alkaloids of ephedra:

- Ephedrine or ephedrine
- L-methyl ephedrine
- D- methyl iso-ephedrine
- Ephedrine,
- Pseudoephedrine,

Therapeutic efficacy:-

- Athletic performance. Taking ephedra by mouth with caffeine is no more effective than taking caffeine alone for improving athletic performance.
- It is used for early relief of asthma.
- It use for whooping cough.
- It use for nasal congestion, cough, fever, and chills.

Opium

Synonyms:- Raw opium

Family:- Papaveraceae

Biological source:-

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- Opium consists of dried latex obtained from the unripe capsules of the plants, *Papaver somniferum*.

Chemical Constituents:-

- It contains alkaloids which occur naturally in the largest amounts are morphine, narcotine, codeine, etc.

Therapeutic efficacy:-

- It is used to reduce atherosclerosis
- It is used for relief of pain
- It is also used as an antidiarrheal for common cold and cough and insomnia.
- It works by slowing the movement of the intestines.

Tea leaves

Synonyms:- fig leaf, chaipatti, augur, crystal ball gazer

Family:- Theaceae

Biological source:- The biological source of tea is prepared leaves and leaf buds *Thea sinensis*

Chemical Constituents:-

- The leaves are a rich source of caffeine (1–5%). It also contains theobromine and theophylline in minor quantities.
- The colour of tea leaves is due to tannin (10–20% gallic acid).
- The agreeable odour is due to the presence of a yellow volatile oil.
- Tea leaves also contain protein, wax, resin and ash.

Therapeutic efficacy:-

- It is used as a stimulant, astringent and also as a diuretic.
- It is used in the treatment of cancer, heart disease, and diabetes; encourages weight loss; lowers cholesterol; and brings about mental alertness.
- Tea also appears to have antimicrobial qualities.

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Coffee seeds

Synonyms

Coffee bean, coffee seed, Arabica coffee, Arabian coffee, Abyssinian coffee, Brazilian coffee.

Family:- Rubiaceae

Biological Source

- The biological source of coffee is its dried ripe seed *Coffea arabica* Linn

Chemical constituents:

- Caffeine is the main chemical constituent of coffee present in coffee bean.
- Other chemical constituents are tannins, fixed oils and proteins are also present in coffee bean.
- The amount of caffeine present in coffee bean is 2-3 % .
- Amount of tannin is 3-5%.
- 13% proteins and 10-15% fixed oils are present in coffee bean.
- The coffee contain sugars in the form of dextrin, glucose and chlorogenic or caffeotannic acid.
- The seed contain caffeine as the salt of chlorogenic acid and combined with potassium.
- Also contain nicotinic acid.

Therapeutic efficacy:-

- It has cardiostimulant action.
- It work as counterirritant, hypnotic and lactagogue.
- Coffee is used in the folk remedy for fever, gout, diarrhea, cough and headache.
- It is also a folk remedy for asthma, atropine-poisoning, jaundice, malaria, migraine, necrosis, opium- poisoning, sores and vertigo.
- It is used to stimulate diuretic action due to presence of caffeine.
- It also have toxic effect due to CNS depressant drugs.
- It is used as flavoring agent as in ice cream, pastries, candies.

COCA

Synonyms

Coca, Cuca, Cocaine, Folium cocae, Peruvian coca, Truxillo coca, Java coca, Bolivian coca.

Family:- Erythroxylaceae

Biological source:

- The biological source of coca is its dried leaves *Erythroxylon coca*.

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Chemical constituents:

- The major chemical constituent of coca is alkaloids and it is about 0.7-1.5% of total alkaloids.
- It consists of cocaine, cinnamyl cocaine and alpha-truxilline or cocaine.
- In Java coca, tropacocaine and 4 crystalline glucosides are present in addition with other chemical constituents.
- Cinnamylcocaine is the chief chemical constituent of coca.
- Hygrine, hygroline, cuscohygrine, dihydrocuscohygrine and tropacocaine also isolated from the leaves of coca.
- They also contain cocatannic acid.

Therapeutic efficacy:-

- The major chemical constituent of coca, cocaine has stimulant action on CNS.
- Leaves are used to relieve from hunger and fatigue.
- Coca leaves are used as stimulant of cerebral area and muscle stimulant.
- It is especially used during convalescence, to get rid from nausea, vomiting and pains of stomach without upsetting the digestion.
- It also has local anesthetic action on skin and mucous membrane.
- It is used as dental anesthesia and in minor local surgery of eye, ear, nose and throat.
- The chemical structure of cocaine leads many synthetic anesthetics like anesthesia, Novocain and stovain.

Anti-Hypertensives

- The drugs which are used to treat of high blood pressure are called Antihypertensive.
- Antihypertensive therapy seeks to prevent the complication of hypertension such as strokes and myocardial infarction.
- The word hypertension is derived from hyper above tendere to stretch due to narrowing of peripheral blood vessel.

Rouwolfia

Synonyms:- Rouwolfia root, snake-root, chhotachand

Family:- Apocynaceae

Biological source:- It consists of dried roots of the plant known as *Rouwolfia serpentina*

Chemical Constituents:-

The chemical constituents of rauwolfia are alkaloids. Also it contain phytosterol, fatty acids, Reserpine and rescinnamine are alkaloids which have main therapeutical effect in rauwolfia. Also it contain indole alkaloids and iridoid glycoside, 7- epiloganin, which is a new sucrose derivative. It also contain ajmaline and ajmalicine.

Therapeutic efficacy:

- Rauwolfia has been studied for the treatment of mental diseases,
- Rauwolfia treated migraine headaches effectively

- Rauwolfia has been studied as a treatment for autistic children between the ages of 3.5 and 9 years.
- It leads to generalized vasodilatation and lowering of blood pressure by action on the vasomotor centre.
- It soothes the general nervous system by depressant action on the cerebral centers

Anti Tussives

- The drugs which are used to suppress cough through either a central or a peripheral mechanism.
- The word antitussives was derived by Latin word.

Tussis - cough

- The drugs which act upon the pulmonary centers that hasten expectoration

Vasaka leaves

Synonyms:- Adhatada

Family: Acanthaceae

Biological source:- It consists of dried as well as fresh leaves of the plant *Adhatoda vasica* Nees.

Chemical Constituents:-

- Vasaka leaves contain quinazoline alkaloids such as vasicine, vasicinone and 6-hydroxy vasicine.
- It also contains volatile oil, betain and vasicine and Adhatoda acid.

Therapeutic efficacy:-

- It used as bronchodilator
- It used to preparation of syrup act an Expectorant.
- Vasicine shows oxytocic property like oxytocin and methyl ergotamine.
- It helps in asthma and reduces inflammation of airways and lungs.
- Vasaka has good results in dyspepsia, gastritis or acidity.
- It reduces acid formation in the stomach.
- It reduces inflammation of sinuses and fights off infections

Tolu balsam

Synonyms:- Balsam of Tolu

Family:- Leguminosae

Biological source:- It obtain from the trunk of *Myroxylon balsamum* Linn.

Chemical Constituents:-

- It contain large amount of benzyl cinnamyl esters of benzoic and cinnamic acid.
- Small quantities of vanillin and styrol present in tolu balsam

Therapeutic efficacy

- It used as Expectorant and flavouring agent

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- It use as antiseptic
- It is also used in the preparation of confectionary chewing gums and perfumery.

Ant rheumatics

- The drug used to the treatment of rheumatism and known as antirheumatics.
- It can reduce joint damage associated with inflammatory disorders of the joints.

Colchicum seed

Synonyms:- Indian Colchicum

Family: Liliaceae

Biological source:- Colchicum consists of dried seeds of the plant *Colchi-cum autumnale* Linn.

Chemical Constituents:-

Colchicum seeds contain alkaloids, colchicine and demecolcine.

Therapeutic efficacy:

- Colchicum seed are used in gout and rheumatism.
- It can control the malignant tumor but are highly toxic.
- It also in horticulture.

Anti-tumour

- The drugs are used in the treatment of cancer.
- The cancer or carcinogenic growth is an abnormal mass of new tissue growing of the body.

Vinca

Synonyms:- Periwinkle, Vinca rosea, Catharanthus.

Family: Apocynaceae

Biological source:- It is the dried whole plant of *Catharanthus roseus*

Chemical constituents :

- Vinca contain indole alkaloids in large amount, mainly vincristine and vinblastine.
- Vinca also contain other alkaloids such as ajmalicine, serpentine and lochnerine as a chemical compound.
- When coupling of indole alkaloids such as catharanthine and vindoline occur, they produce vinca alkaloids.

Therapeutic efficacy:

- It is used to treat lymphomas
- The Hodgkin's disease is treated by vinca because it contains vinblastin as a chemical constituent.
- Also it helps to treat non-Hodgkin's lymphomas .

- Acute lymphocytic leukemia is treated by the help of vincristine part of vinca herb.

Antidiabetics

The drug that works to lower abnormally high glucose levels in the blood which are characteristic of the endocrine system disorder known as diabetes mellitus

Or

- The agent used in treatment of diabetes (Diabetes Millitus are known as antibiotics.
- The inability of the body to utilise glucose due to failure of pancreas to secrete insulin in sufficient quantity.

Gymnema

Synonyms: Gudmar, Madhu nashini

Family: Asclepiadaceae

Biological source: It consist of the leaves of the plant known as *Gymnema sylvestre*

Chemical Constituents:

They contain hentriacontane, pentriacontane, phytin alpha (α) and β (beta)-chlorophyllis, resin, tartaric acid etc.

Therapeutic efficacy :

- It used as antidiabetics, stomachia, stimulant laxatives and diuretic.
- It used to treat eye diseases, allergies, constipation, cough, dental caries etc.

Pterocarpus

Synonyms: Bijasal, Indian kino tree, Metaborkino Asana, Rakta-chandan

Family: Leguminosae

Biological source: It consists of the juice of the plant *Pterocarpus marsupium*

Chemical Constituents:

- Pterocarpus contains about 70–80% of kinotannic acid, kino-red, k-pyrocatechin (catechol), resin and gallic acid.
- Kinotannic acid is glucosidal tannin, whereas kino-red is anhydride of kinoin.
- Kinoin is an insoluble phlobaphene and is produced by the action of oxydase enzyme.
- It is darker in colour than kinotannic acid.

Therapeutic efficacy:

- It used as astringent

- It also used as the treatment of diarrhoea.
- It used in dyeing, tanning and printing.

Diuretics

A diuretic is any substance that promotes diuresis the increased production of urine

It also known as water pills

Or

Diuretics help your kidneys put extra salt and water into your urine.

They are used treatment of edematous and other non-edematous disease condition.

Gokhru

Synonyms:- Puncture uine

Family: Zygophyllaceae

Biological source: It consists of ripen fruit of the plant *Tribulus terrestris* Linn.

Chemical Constituents:

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- The hydrolysed extract consists of sapogenins such as diosgenin, chlorogenin, hecogenin and neotigogenin.
- Certain other steroidal such as terestroside F, tribulosin, trillin, gracillin, dioscin have also been isolated from the aerial parts of the herb.
- It also consists of common phytosterols, such as, β -sitosterol, stigmasterol and cinnamic amide derivative, terestiamide.

Uses:

- It used as Diuretic tonic
- It used as the treatment of Calculos effections and painful micturition.
- They are also used as aphrodisiacs and in gout.
- It use in preparation of chyavanprash, Dashamoolarishta.
- It used in treatment of gonorrhoea.

Punarnava

Synonyms: Rakta Punarnava, Hog weed, Punarnava

Family: Nyctaginaceae

Biological source:- It consists of fresh as well as dried herb known as *Boerhaavia diffusa*

Chemical Constituents:

It contain punarnavine, potassium nitrate and ursolic acid.

Uses:

- The herb is used as Diuretic and Expectorant.

- It use in the treatment of jaundice.

Anti-Dysenteric

- The dysentery is usually the bacteria from genus shigella.
- The inflammation occurs because of the exotoxins produced by certain protozoal animals like Amauba shigella and certain ciliate protozoans etc.

Ipecacuanha

Synonyms: Ipecac

Family:- Rubiaceae

Biological source :

It consists of dried roots or the rhizomes of *Cephaelis ipecacuanha*

Chemical Constituents:

- It contain cephalis acuminata and cephalis ipecacuanha, alkaloids, cephalis psychotrine and ematamine.
- The root also contain ipecacuanhic acid, glycoside ipecacuanhin, starch and calcium oxalate.

Therapeutic efficacy:

- Ipecac is emetic and used as an expectorant and diaphoretic and in the treatment of amoebic dysentery.
- It is used to treat amoebic dysentery.

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- It have local irritant action.
- Ipecac has the property of emetic.

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Pharmacognosy | Chapter – 5 | Unit -5

1. **Antiseptics and Disinfectants:** - Benzoin, Myrrh, Neem, Turmeric.
2. **Antimalarial :-** Cinchona, Artemisia
3. **Oxytocic :-** Ergot
4. **Vitamins:-** Cod Liver Oil, Shark Liver oil
5. **Enzymes :-** Papaya, Diastase, Pancreatin, Yeast

Antiseptics and Disinfectants: -

Antiseptics:

- They are chemical agents used to reduce the risk of infection from germs and help stop the spread of disease.
- Antiseptic are applied to living tissues often to the skin in the form of hand rubs or washes.
- Sometimes antiseptics are called skin disinfectants.

One line Definition:-

Antiseptic are chemical agent which are used to kill pathogenic microbes and stop there growth.

Disinfectants :

- Disinfectants are also chemical substance but they are used to kill bacteria and their Spores.
- They are primarily applied to non-living surface such as for cleaning your countertops or tubes and sterilization of instruments are apparatus.

Benzoin:

Synonyms: Sumatra Benzoin, Gum Benzoin, Laban

Family: Styraceae

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Biological Source: Benzoin is a balsamic resin obtained from *Styrax benzoin*.

Organoleptic Characters:

Colour	Greyish to Brown or grey
Odour	Aromatic and Characteristic
Taste	Sweetish and slightly acid

Chemical Constituents :

- Sumatra benzoin contains of free balsamic acid and their esters.
- It also contains triterpenic acids like siaresinolic acid and sumaresinolic acid.

Uses:

- It is used as expectorant carminative and diuretic.
- It is also used externally as an antiseptic and protective.
- It is used in the preparation of compound tincture of benzoin.
- It used in cosmetics industry for making soaps, perfumes.
- It is used in flavour agent in pharmaceutical preparations.

Myrrh

Synonyms: Gum myrrh, Bol myrrha

Family : Burseraceae

Biological Source: Myrrh is an obtained from *Commiphora molmol*.

Organoleptic Character:

Colour	Raddish to Brown
Odour	Aromatic
Taste	Agreeable

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Chemical Constituents:

- It contains yellowish thick volatile oil, gum of resin.
- Resin contains ether- soluble resin acid, α , β and γ commiphoric acids.
- **They volatile oil contain terpenes cuminic aldehyde eugenol etc.**

Uses:

- It is used as stimulant and an antiseptic. It is also protective.
- Myrrh is astringent to the mucous membrane
- It used in mouth washes and gargles.

Neem

Synonyms: Margosa, Nim

Family: Meliaceae

Biological Source: It consists of leaves and other aerial parts of *Azadirachta indica*.

Chemical Constituents: The active ingredients azadirachtin, Salannin and meliantriol.

Neem tree contain different constituents in different part

Seed	Azadirachtin, Salanin, Meliantrol and meliacin
Leaves	Nimbosterol and Quercetin
Bark	Nimbin, Nimbinin, Nimbidin nimbosterol
Neem Oil	Chiefly glycerides of oleic (50%) and stearic 20% acids.

Uses:

- The neem is used in antiseptic and insecticides.
- Neem oil used in fungi.

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- They are used in Anti-insect Product.

Turmeric

Synonyms: Haldi, Haridra, Indan Saffron

Family: Zingiberaceae

Biological source : Turmeric consist of dride as well as fresh rhizomes of plant known as *Curcuma longa* Linn

Chemical Constituents:

Turmeric contains volatile oil, resin, abundant zingiberaceous starch grains and yellow colouring substance known as curcuminoids.

Turnerone, zingiberene, borneal, cuprylic acid are the other constituents of turmeric oil.

Uses:-

- It is used as antiseptic expentorant.
- It used in colouring agent.

Anti malarials

Anti malarials drug is used to prevent or treatment of malaria.

Malaria is occurs due to infection by the four species of a

1. Plasmodium Malariae
2. Plasmodium vivax
3. Plasmodium ouale

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4. Plasmodium falciparum

The Disease are infected into human body due to bite of female **Anopheles mosquitos.**

Cinchona :-

Synonyms : Jesuit's bark, Peruvian bark.

Family: Rubiaceae

Biological source:- It is dried bark of cultivated trees of cinchona *Calisaya wedd.*

Organoleptic characters:

Colour	Brownish grey to white
Odour	Slight and characteristic
Taste	Bitter and astringent

Chemical Constituents:-

Cinchona contains alkaloids. It consists of approximately 30 types of alkaloids like:- Quinidine, Quinine, cinchonine, cinchotannic acids etc.

Uses:-

- It is used in stomachic and tonic.
- It used in treatment of antimalaria
- It is used as antiseptic
- It is used to treatment dyspepsia and gastric catarrh.

Artemisia

It is also known as mugworts.

Synonyms:- Mugworts, wormwood and sagebrush.

Family:- Asteraceae.

Biological Source:

Artemisia annua is an annual herbaceous plant of the Asteraceae. *Artemisia annua* (L.)

Chemical constituents:

The main constituent of the plant is artemisinin, It is a promising anti-malarial drug effective against Plasmodium vivax and P. Falciparum. The distillation of aerial parts of the plant also yield essential oil (0.2 - 0.4%) which comprised of many chemical constituents with the major compounds including myrcene (3.8%), 1,8-cineole (5.5%), artemisia ketone (66.7%), linalool (3.4%), camphor (0.6%), alpha-pinene (0.032%), camphene (0.047%), β -pinene (0.882%), borneol (0.2%) and β caryophyllene (1.2%).

Uses:

- Thick, raised scars (hypertrophic scars). Developing research suggests that applying a lotion containing mugwort and menthol directly to the skin relieves itching in severe burn victims.
- Stomach problems (colic, diarrhea, cramps, constipation, slow digestion, vomiting).
- Epilepsy.
- Irregular menstrual periods.
- Low energy.
- Anxiety.
- Diarrhea.
- Constipation.

Oxytocics

- The drug which are used to stimulant effects on the motility of the Uterus.
- Oxytocic agents are medications that stimulate uterine activity and are used to induce labor, increase contractions, reduce the risk of postpartum hemorrhage immediately after birth, and expel fetal contents in incomplete abortion.

Ergot

Synonyms:- Ergot of rye Ergota

Family : Hypocreaceae

Biological Source: Ergot is the dried sclerotium of a fungus *Claviceps purpurea*.

Organoleptic characters:

Colour	Dark violet to black
Odour	Disagreeable and faint
Taste	Unpleasant

Chemical constituents:

- It contain Potent indole alkaloids.
- Ergometrine and ergometrinine are both water soluble chemical constituents of ergot.
- Ergotamine,ergotaminine, ergosinine and ergosine are water insoluble chemical constituents of ergot.
- They also contain histamine,tyramine and other amines as chemical constituents.
- They are composed of sterols like ergosterol and fungisterol.
- They contain clavinet, mannitol ,lactic acid and succinic acid as chemical composition.
- They have clavicepsin, ergoflavin, ergotic acid and betain alkaloid.

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- They have elymoclavine. Sclerythrin and ergonovine. Putriscine, cadaverine, agmatine and amino acid work as colouring matter.

Uses:

- Ergot is used in labour to assist delivery.
- It used in the treatment of migraine.
- Ergometrine is also known as Ergonovine.

Vitamins

Vitamin is an organic molecule that is an essential micronutrient which an organism needs in small quantities for the proper functioning of its metabolism.

The vitamins received through the normal well balanced diet are not treated as drugs for a healthy person.

Shark Liver Oil:-

Synonyms: Oleum Selachoids

Biological Source:- Shark liver Oil is the fixed oil obtained from the fresh and carefully preserved livers of various species of the shark mainly *Hypoprion brevirostris*.

Chemical constituents:

- It contain vitamin A
- It also contains glycerides of saturated and unsaturated fatty acids.
- The chemical constituent of shark liver oil is alkylglycerol, commonly found in mother's milk and in bone marrow.

Uses:-

- It is used in the deficiency of Vitamin-A.
- It used in Burn and Sunburn ointment.

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- It also used in this disease
- Leukemia and other cancers.
- Side effects of cancer treatment including radiation illness and lowered white cell count.
- Common cold.
- Flu.
- Skin problems.

Cod liver oil:-

Synonym :- Oleum morrhi

Family :- Gadidae

Biological Source :-

Cod liver oil is processed from fresh liver oil of cod fish *godus morrhua* and other species of *godus*

Chemical Constitution :-

- Glycerides esters of sat.acid of linoleic acid, oleic acid, myristic acid, Palmitic acid, Vit.A, VitD
- Unsaponified matter (1%)
- Cholesterol and squalene
- Fatty alcohol
- Elcosapentaenoic acid (7%)+ Docosahexanoic acid (7%) = Omega-3-fatty acid

Uses :-

- Source of vitamin
- As nutritive
- Treatment of Rickets and T.B.

Enzymes :-

Enzymes are the protein substance which server a role of catalysing the biochemical reactions.

They are colloidal in nature, heat-labile and Highly specific in action.

Papaya:-

Synonyms:

Family: Caricaceae

Biological source:- it is a cultivated fruiting tree known as *Carica papaya* Linne.

Chemical Constituents:-

It different proteolytic enzymes present in papaya latex are the mixture of papain and chymopapain the proteolytic enzymes acting on polypeptides and amides.

Uses:-

- It is used for treating Gastro Intestinal tract (GIT) disorders, intestinal parasite infections and as a sedative and Diuretic.
- It also used for nerve pains.
- Papaya leaves are used to make medicine.
- It is used in clarification of beverages and as a meat tenderiser.

Diastase :-

Synonyms: Amylose, salivary diastase, malt diastase.

Biological source:

It is one of the amylolytic enzymes present in saliva.

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Salivary diastase or ptyalin and pancreatic diastase or amylopsin found in the digestive tract of the animals.

Chemical Constituents:

It Contains dextrin, maltose, traces of glucose and amolytic enzyme diastase.

Uses:-

Diastase from various sources is used as digestant.

It is used in the production of predigested starchy foods and also for the conversion of starch to fermentable sugars in fermentation and brewing industries.

Yeast :-

Synonyms:-

Fungus, catalyst, foam, froth, leavening, fermenter.

Family:- Saccharomycetaceae

Biological Source:- Yeasts are very common in the environment, and are often isolated from sugar-rich materials.

Chemical Constituents:

They contains about 65 to 85% of moisture, members of Vitamin B group nitrogenous compounds glycogen, fat and Vitamins.

Uses:

The yeast is used in manufacture of alcohol, beer etc.

It also yeast in bread industry.

Pancreatin

Biological Source:-

Pancreatin is a digestive enzyme extracted from the pancreas of certain animals like hog, *Sus scrofa* (Suidae).

Chemical contains:

It is composed of **amylase, lipase and protease**.

Uses:

This medication contains digestive enzymes, which are natural substances needed by the body to help break down and digest food. It is used when the pancreas cannot make or does not release enough digestive enzymes into the gut to digest the food.

Depending on the amount of enzymes in your product, it may be used for indigestion, as a supplement, or as replacement therapy (such as in chronic pancreatitis, cystic fibrosis, cancer of the pancreas, after surgery on the pancreas or gut).

Pharmacognosy | chapter-5 | Unit-6

Pharmaceutical Aids, kaolin, lonolin, bee wax, Acacia, Tragacanth, sodium alginate, agar, Guar gum, Gelatin.

Pharmaceutical Aids:-

The drugs and substance which have no or little pharmacological effect but they are essentially used in the preparation of pharmaceutical dosage form like tablet, injection, emulsion etc.

Kaolin:-

Synonyms:- China clay, kaolin unproderesum, porcelain clay.

Source:- kaolin is a purified native hydrated aluminium silicate free from gritty particles.

It obtained by powdering the native kaolin, elutriation and collecting the fraction which complies with the requirements of particle size.

Chemical Constituents:-

- Kaolin is anhydrous aluminium silicate with a chemical formula $\text{Al}_2\text{O}_22\text{SiO}_22\text{H}_2\text{O}$
- The % composition are as follow.
- Silicon dioxide, Iron oxide, titanium dioxide aluminium oxide etc.

Uses:-

- It is treatment for enteritis

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- Dysentery and food poisoning
- Used as dusting powder
- Used in pharmaceutical preparation.

Lonolin

Synonyms:- wool fat

Family:- Boidae

Biological source:-

Hydrous wool fat is the purified fat like substance obtained from the wool of *Ovis aries* Linn.

Chemical Constituents:-

It contains mainly esters of cholesterol and isocholesterol with caranubic, oleoc myristic, polmitic, lanoceric and lanopalmitic acids.

It also contain 50% water.

Uses:-

It is used as water absorbable ointment base.

It used as a common ingredient and base for water soluble creams and cosmetics.

Bee wax

Family: Apidae

Biological source:

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It is obtained from the honey comb of the bees *Apis mellifeca*.

Chemical Constituents:

- It contains straight chain monohydric alcohols with straight chain acids.
- The chief constituents is Myrcin.
- It also contains free cerotic acid, melissic acid and cerolein.

Uses:

It is also used in the manufacturing of candles, moulds and in dental and electronic industries.

Acacia:-

Synonyms: Indian Gum, Gum acacia, Gumarabic.

Family: Leguminosae

Biological source:-

- It is dried for gummy exudation obtained from the stem and branches *Acacia arabica*.

Chemical Constituents:

- It contains calcium, magnesium and potassium salts of arabic acid.

Uses:

- Acacia is a demulcent.
- It is also administered intravenously in haemolysis.

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- It is used as a suspending agent specifically in mixtures with resinous.

Tragacanth:-

Synonyms:- Gum Tragacanth, Tragacanth

Family: Leguminosae

Biological source:

It is dried obtained by making incisions on stems and branches of *Astragalus gummifer*.

Chemical Constituents:

- It consists of tragacanthic acid, xylose fructose, galactose, galacturonic, Rhamnose in small quantities.
- It is also contain starch and cellulose.

Uses:

- It is used as a demulcent and an emollient in cosmetics and also in the confectionery.
- It is used as thickening, suspending and emulsifying agent.
- It is used as binding agent in tablet and capsule.

Sodium alginate:-

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Synonyms: Algin, Sodium Polymannuronate.

Family: Phaeophyceae

Biological source:

The common species are *Macrocystis pyrifera*, *Laminaria hyperborea*, *Laminaria digitata*, *Ascophyllum nodosum* and *Durvillaea tessonina*.

Chemical Constituents:

It consists the sodium salt of alginic acid a linear polymer of L-guluronic acid and D-mannuronic acid.

Mannuronic acid is the major components.

Uses:

- It is used in food industry.
- It is used as thickening agent, gelling agent emulsifier stabilizer, texture improve.
- It is used in ice cream, jelly, beer, etc.

Agar

Synonyms: Agar-agar, Japanese-Isinglass.

Family: Rhodophyceae

Biological source:

It is the dried gelatinous substance obtained from *Gelidium amansie*.

Chemical Constituents:

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Agar consists of two different polysaccharides named as agarose and agaropectin.

It contain cellulose and nitrogen and other chemicals.

Uses:

- Agar is used as an emulsifying agent and bulk laxative.
- It is used in preparation of jellies.
- It is used in preparation of bacteriological culture medium.

Guar gum :-

Synonyms: Guar flour, jaguar gum.

Family: Leguminosae

Biological source: It is the powder of endosperm of seeds of *Cyamopsis tetragonolobus* Linn.

Chemical Constituents:

- i. Carbohydrate
- ii. Gum- Guarana, the water soluble portion of the gum and yields on hydrolysis galactose 35% and mannose 60-65%.
- iii. Small quantity of protein.

Uses:

- It is also reduces blood glucose concentration in diabetic patients and serum concentration in hyper lipidaemia.
- Protective colloids.

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- Used as binding agent and disintegrating agent in tablet formulations.
- In bulk laxatives.
- As appetite depressant.

Gelatin:-

Biological source: It is a product obtained by partial hydrolysis of collagenous materials.

Chemical Constituents:

Gelatin contains protein known as glutin.

Uses:

- Gelatin is used as a valuable dietary supplement.
- It is used in the preparation of candies, jellies, meat extracts, and as a thickener in jams etc.
- It is used as an antidote for halogen poisoning.

Pharmacognosy | Chapter-5 | Unit -7

Miscellaneous:- Squill, Galls, Pale Catechu, Ashwagandha, Vasaka, Tulsi, Guggul

Miscellaneous:-

Squill

Synonyms: Sea onion, spring squill, sea squill, scilla.

Biological source:

Squill consists of the dried slices of the bulb of white variety of *Urginea maritima* Linn.

Chemical Constituents:

Squill contains cardiac glycosides of buffadienolides types scillaren A and B and enzymes scillatenase.

The other chemicals present in proscillaridin, flavonoid, mucilage, volatile substance and sinistrin.

Uses:

- It is used in asthma.
- It is a potential substitute for foxglove in aiding a failing heart.
- It is used in pest control as rat poison.
- It is longely used for its stimulating, Expectorant and diuretic properties and is also a cardiac tonic.
- It is used to relieve edema, thin mucosa, and vomiting.

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Galls

Synonyms: Acimony, animosity, arrogance, bitterness, brass.

Family: Anacardiaceae

Biological source:

Galls are vegetable outgrowths formed on the twigs of dyer's oak *Quercus infectoria*.

Chemical Constituents:

It contains tanins known as gallotannic acid, gallic acid, ellagic acid, sitosterol methyl betulate starch, calcium oxalate and other chemical syringic acid.

Uses:

- It is used as astringent.
- It is used for tanning and dyeing.
- It is also used in the manufacturing of ink and tannic acid.

Pale catechu

Synonyms: Gambier, Catechu

Family: Rubiaceae

Biological source:

It is an aqueous extract prepared from the leaves and young shoots of *Uncaria gambier* Roxburgh.

Chemical Constituents:

It contain catechin, catechu, tannic acid and catechu red, Quercetin and Gambier fluorescein.

Uses:

It is used as astringent.

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It is used in leather and fabric industry.

Ashwagandha:

Synonyms: Balya, Vajikari, vajigandha varahakarni, hayagandha, kushthagandhi.

Family:- Solanaceae

Biological source:

It consists of the dried roots and stem bases of *Withania somnifera* Dunal.

Chemical Constituents:

Ashwagandha contain the alkaloid withanine as the main constituent and somniferine, pseudo with anine, tropine, hydrine and steroid lactones.

Uses:

- They are used in treatment of nervous disorders.
- It used to treat intestinal infection and leprosy.
- It is also used to treat nervous exhaustion, dedility, insomnia wasting diseases, failure to thrive in children etc.
- It is used in treatment of infertility.

Vasaka

Synonyms: vass, vasaka sinhasya, adulasa.

Family: Acanthaceae

Biological source:

Vasaka consists of dried as well as fresh leaves of the plant *Adhatoda vasica* Nees.

Chemical Constituents:

They contain very small amount of essential oil and quinazoline alkaloids.

Uses:

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- It used as bronchodilator
- It used to preparation of syrup act an Expectorant.
- Vasicine shows oxytocic property like oxytocin and methyl ergotamine.

Tulsi

Synonyms: Sacred basil, Holy basil

Family: Lamiaceae

Biological source:

It consists of fresh and dried leaves of *Ocimum sanctum* Linn.

Chemical Constituents:

It contains isothymusin, Ursolic acid, eugenol, and sinapic acid, rosmarinic acid etc.

Uses:

- It is use to treat heart disease and fever.
- It is used to treat respiratory problems.
- It is used to treat insect bites.
- Tulsi leaves are used to Treatment of skin problems like acne blackheads.