RESINS

(Benzoin, Guggul, Myrrh)

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BENZOIN

BENZOIN:

- **SYNONYM:** Sumatra benzoin, Loban (Luban), Benzonium, Gum benjiamin, Siam benzoin.

BIOLOGICAL SOURCE:

- It is balsamic resin obtained from incision on stem of ***Styrax benzoin*** **Dryand (Sumatra benzoin) or** ***Styrax paralleloneurus*** **Perkins** and from other species of ***Styrax*** is known in the market as Sumatra benzoin or it may also contain balsamic resin from ***Styrax tonkinesis*** & other species commercially known as Siam benzoin, belonging to family **Styraceae.** It should contain not less than 25% of total balsamic acids with reference to dry alcohol soluble matter.

Styrax benzoin Dryand – Sumatra benzoin

Styrax paralleloneurus- Sumatra benzoin

Styrax tonkinesis - Siam benzoin

Styrax subdenticulata – Penang benzoin

GEOGRAPHICAL SOURCE-

- Indigenous to south eastern Asia & East Indies.
- Sumatra benzoin- Sumatra islands, Malacca, Malaya, Java & Borneo.
- Siam benzoin- Thailand, Vietnam & Laos
- ***S. subdenticulata***--- Penang benzoin.

GEOGRAPHICAL SOURCE-

- The plant from which benzoic is obtained are large trees indigenous to south eastern Asia and East indies
- Sumatra benzoin is mostly derived from the cultivated plants in Sumatra Island.
- Siam Benzoin is come mostly from the provience of Luang Probang of Thialand
- it is also produced in Vietnam and Laos.

MORPHOLOGY:

Sumatra benzoin

- **Colour: -** Grayish brown to gray.
- **Odour: -** Aromatic & characteristic.
- **Taste: -** Sweetish & slightly acrid.
- **Size: -** It occurs in the form of lumps of varying sizes or tears. Tears are externally yellowish, milky white; the surface is uneven when heated fumes of benzoic & cinnamic acids are produced.

Siam benzoin

- **Colour: -** Yellowish brown to rusty brown.
- **Odour: -** Agreeable & vanilla like.
- **Taste: -** Sweetish & slightly acrid.
- **Size: -** It occurs as hard brittle masses and when heated it is softened & becomes plastic.

COLLECTION & PREPRATION

- Benzoin trees are not grown in India. (Imported from Indonesia).
- Benzoin is a pathological resin & Collected from 6 year old plant.
- Incisions are made at base of plant.
- Do not collect first yellowish exudates (No medicinal value) .
- Later exudates are collected, Dried.
- Size reduction is carried out & Packed, AY10kg

CHEMICAL CONSTITUENTS:

- Sumatra benzoin contains free balsamic acids 25 % (benzoic and cinnamic acid (20%) and ester derived from them.
- Triterpenoid acids such as sumaresinolic acid & sia resinolic acid are also present. The major constituent of Siam benzoin (less amt. of cinnamic acid) is an ester Coniferyl benzoate (About 76%)
- The drug also contains styrol, vanillin & phenyl propyl cinnamate.
- Siam benzoin differs from Sumatra variety that it contains insufficient cinnamic acid to give an odour of benzaldehyde when warmed with potassium permagnate solution.

Chemical test

- Alcoholic sol. of benzoin + H_20 – Milky white colour.
- Heat benzoin in test tube- close T.T. with glass slide--- observe slide under microscope--- crystals of cinnamic acid.
- Benzoin + ether + 2-3 drops of H_2S0_4 –

  Dark brown –Sumatra

  Dark purple-Siam
- Benzoin + $KMn0_4$ ------warm

  Smell of benzealdehyde- Sumatra

  No odour-Siam

Uses :

- It is used as an irritant expectorant, carminative & diuretic.
- It is externally used as antiseptic & protective.
- It is used in the form of compound tincture of benzoin & as an inhalation especially in the treatment of upper respiratory tract infection.
- It is preferred to retard rancidity of fat & oils in the preparation of benzoated lard.
- Industrially it is used to fix the odour of incense, soaps, perfumes & several other cosmetics & to mask the taste of Pharmaceutical preparations.

6. GUGGULU

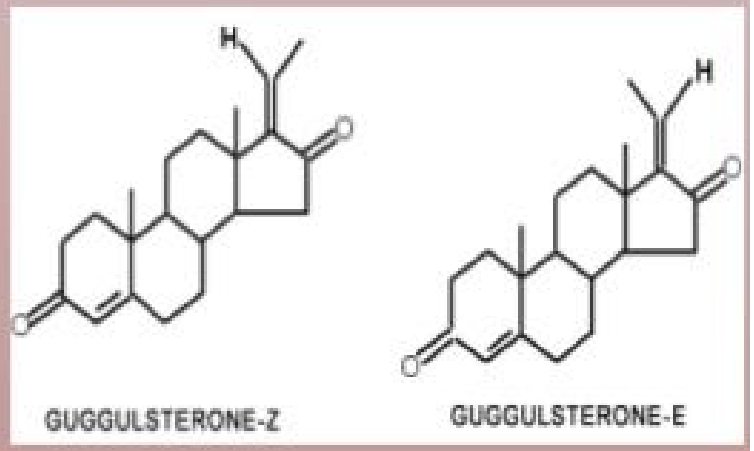
- Syn: Guggulu, Maishaksha
- Source: gum resin obtained from ***Commiphora mukul, Commiphora wightii***
- Family: Burseraceae
- GS: native to Africa but throughout India (Gujarat, Rajasthan)
- Characters:
- Viscid brown tears; fragment pieces, balsamic odor & bitter-acrid taste

Collection

- Oleo gum resin is collected from at least 5 years old plant
- Tapped from main stem on which deep circular incisions are made
- The resin ducts occur only in bark portion near cambial layer
- Guggul oozes out as yellowish white aromatic latex like matter
- Dose of 400ml ethephon (2-chloro-ethyl phosphoric acid) three times a year enhances the secretion
- Thick branches of tree give best grade
- Each plant yield 0.5-1 kg per year

Constituents & Uses

- C21-C27 compounds; steroids, diterpenoids, carbohydrates and aliphatic esters
- Does not contain cinnamic acid, benzoic acid
- Sugar: Pentosan, pentose and furfural
- Terpene: Myrcene, caryophyllene
- Sterone: Z & E- guggulusterone
- Guggulosterol I,II, III
- Gum
- Flavonoids: quercetin, ellagic acid



- Chemical Test:
- Ethyl acetate ext + Acetic anhydride → boil, cool and 2 ml of H_2SO_4, green color develops at the junction due to presence of sterols
- Use:
- Lowers serum triglycerides, cholesterol, LDL, VLDL, Raises HDL so Hypolipidemic, Hypocholesteremic
- Inhibit platelet aggregation, increase thermo genesis, astringent, anti-rheumatic, antiseptic, expectorant, aphrodisiac, demulcent, gargle, tonsillitis, pharyngitis, ulcers
- Adulterants: Commiphora species like C. abyssinica, C. roxburghii, C. molmol and Boswellia serrata

2. MYRRH

- Syn: Arabian or Somalian Myrrh
- Source: Oleo gum resin obtained from the stem of ***Commiphora molmol, C. abyssinica, C. schimperi, C. myrrha and other species of Commiphora***
- Family: Burseraceae
- GS: North east Africa, Arabia, Somaliland, Ethiopia & Abyssinia

COLLECTION

All Burseraceae family plant possess Phloem oleo resin canal

secretion obtained by spontaneous exudation from the cracks and the fissures of bark

Sometimes by incision

yellowish white viscous fluids hardens in heat and become reddish brown mass

Coagulated mass is collected in goat skin by native tribals and sent to the market

CHARACTERS

Taste : Bitter & acrid

Shape
- Irregular tears
- Masses

Color
- Reddish brown yellow

Odor
- Aromatic

CONSTITUENTS

Volatile Oil
7-17%

- terpenes, furano sesequi terpene, esters, cuminic aldehydes and eugenol

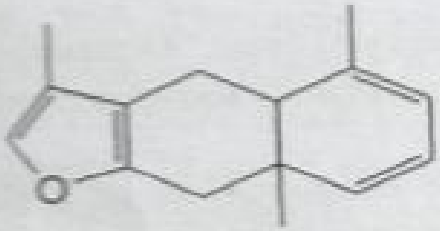
Resin
25-40%

- α, β,γ-Commiphoric acid & α, β-heerabomyrrholic acid

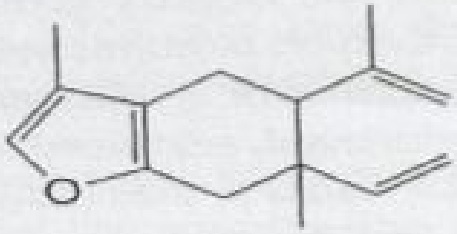
Gum
57-61%

- 3-4% impurities

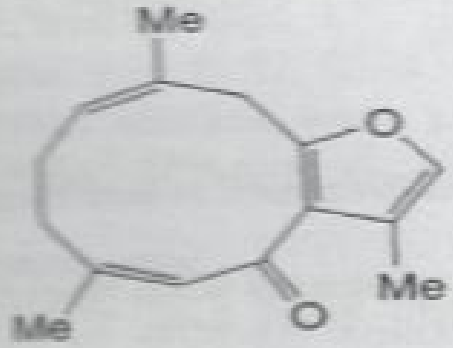
Oxidase Enzyme



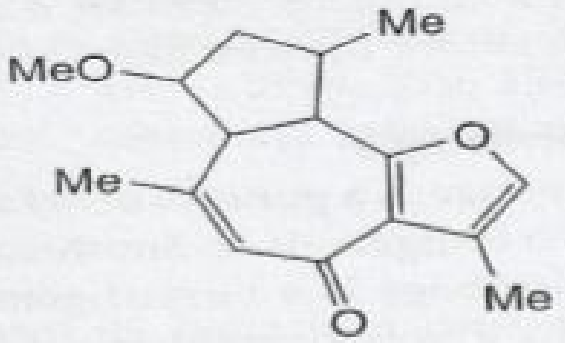
Furaneudesma-1,3-diene



Curzarene



Furanodiene-6-one



Methoxy furanoguaia-9-ene-8-one

Fig. 22.18
Constituents of myrrh.

CHEMICAL TEST & USES

- Powder + Water → after triturating → yellow emulsion
- Ethereal extract → evaporate to dryness → exposed to bromine vapor → violet color
- Uses:
- Incense sticks, perfumes, local stimulant,
- antiseptic, astringent to mucous membrane so tincture is used in mouthwash or gargle
- Adulterants: Arabian & Yemen myrrh (less fragrant and less aromatic), India: Balsamodendron mukul (Indian bdellium)


THANK YOU