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# Diploma in Pharmacy 1<sup>st</sup> Year

## Pharmacognosy

### Experiment

To perform the physical and chemical tests of Benzoin.

#### **Aim:**

To perform the physical and chemical tests of Benzoin.

#### **Reference :**

Dr. Gupta G.D , Dr. Sharma Shailesh , Kaur Navjit , “Practical Manual of Pharmacognosy” Published by Nirali Prakashan , Pg.No 115 - 119

#### **Biological Source :**

Benzoin occurs in two forms, ie., Sumatra and Siam. 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 tonkinensis* and other species known as Siam Benzoin on a commercial scale it should contain not less than 25% of total balsamic acids calculated in terms of dry alcohol soluble matter. It belongs to family *Styracaceae*.

#### **Materials and Apparatus Required**

Test tube, conical flask, beaker, drug sample, litmus paper, porcelain dish, microscope, glass slide, alcoholic solution, water, benzoin, ether, conc. sulphuric acid, potassium permanganate solution, and ferric chloride solution (alcoholic).

## Theory

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.

## Physical Tests

### 1) Sumatra Benzoin

- i) **Colour:** Greyish-brown or grey.
- ii) **Odour:** Aromatic and characteristic.
- iii) **Taste:** Sweetish and slightly acrid.
- iv) **Shape:** Lumps of varying sizes or tears, which are yellowish and milky white in colour.
- v) **Surface:** Uneven.
- vi) **Extra Feature:** On heating, it produces fumes of benzoic and cinnamic acids.

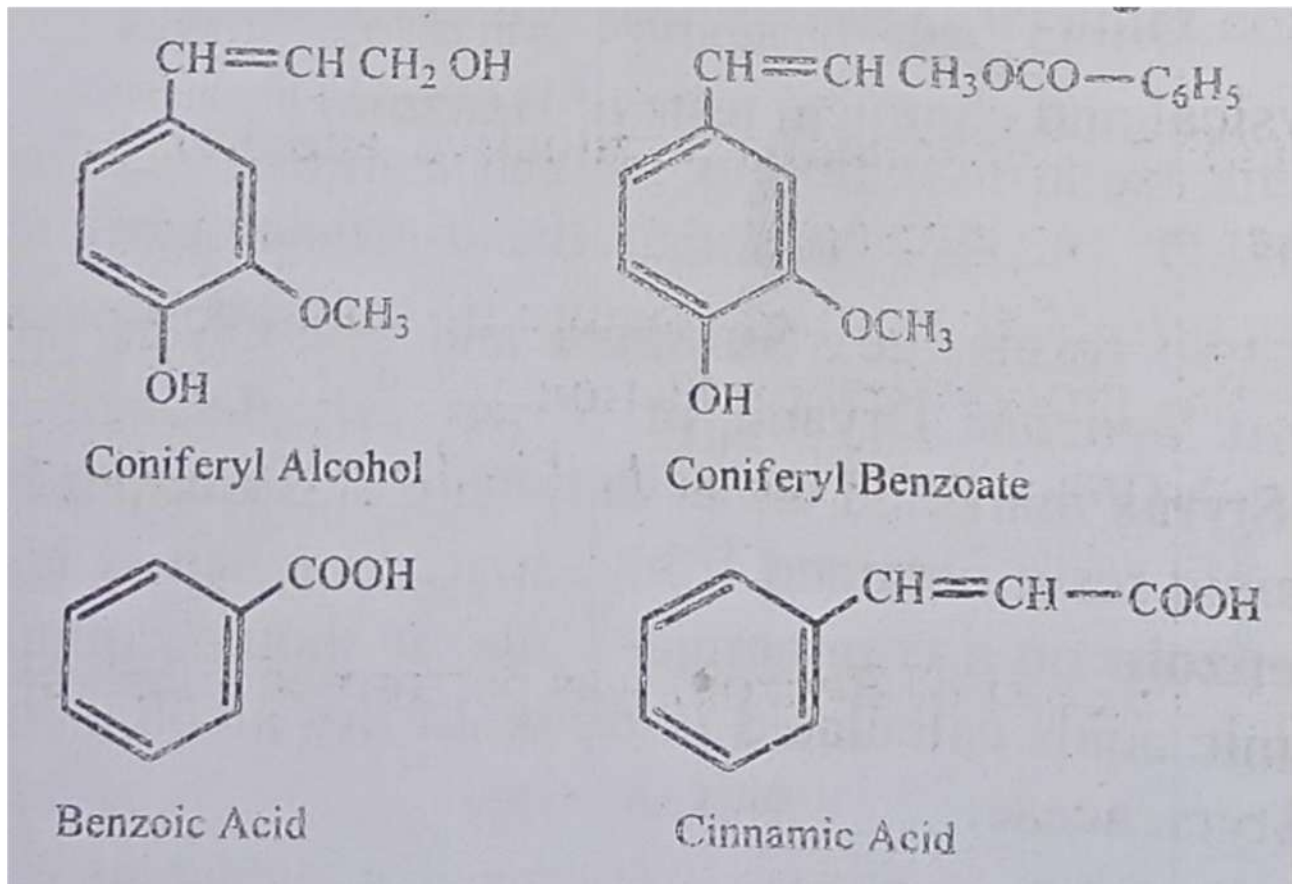
### 2) Siam Benzoin

- i) **Colour:** Yellowish-brown to rusty-brown.
- ii) **Odour:** Agreeable and vanilla-like.
- iii) **Taste:** Sweetish and slightly acrid.
- iv) **Shape:** Hard and brittle masses.
- v) **Extra Feature:** On heating, it softens into plastic.

## Chemical Constituents

- 1) Benzoin contains free balsamic acids and esters of balsamic acids.
- 2) **Sumatra Benzoin:** This variety of benzoin has benzoic acid (18% or more) and cinnamic acid (20%). Cinnamic acid is partially free and partially combined with benzo-resinol and sumarisinotannin. It also has vanillin (1%), styrol, styracin, phenyl-propyl cinnamate, and

benzaldehyde. With the combination of these constituents, Sumatra benzoin gets its specific odour.



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## Chemical Tests

Sr. No.	Tests	Observations	Inferences
1)	Heat 0.5g of substance in dry test tube.	In the upper part of the tube, evolve white vapours that condense to form white crystalline sublimate.	Presence of benzoin.
2)	Add water to alcoholic solution of benzoin.	White milky solution is formed.	Presence of benzoin.
3)	Alcoholic solution of benzoin when treated with litmus paper.	Acidic to litmus paper, i.e., turns litmus to red colour.	Presence of benzoin.
4)	Heat 0.5g with 10ml solution of potassium permanganate and then heat.	Bitter almond smell of benzaldehyde.	Presence of sumatra benzoin.
5)	2.5gm benzoin is shaken with 10ml ether. 2-3ml of this extract is poured in porcelain dish and added with 2-3 drops of sulphuric acid.	Deep reddish brown colour is produced in porcellin dish.	Presence of sumatra siam benzoin.
6)	The drug is triturated with alcohol and then filtered. Then ferric chloride solution is added (alcoholic) to the filtrate.	No bright green colour is obtained.	Presence of sumatra benzoin.
7)	Heat a small amount of benzoin in a test tube, cover the aperture with a glass slide, chill the contents, and then examine the slide under a microscope.	Crystals of cinnamic acid are observed.	Presence of benzoin conformed.
8)	4ml potassium permanganate solution is warmed with 1gm benzoin.	Odour of benzaldehyde is produced.	Presence of sumatra benzoin.

3) **Siam Benzoin:** Benzoic acid (38%) is the main component of this variety of benzoin. It is partially free and partially combined with benzoresinel and siaresinotannol. It also consists of vanillin and an oily aromatic liquid. In its pure form, it should be completely soluble in alcohol and form traces of ash.

## Uses

- 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.

## Result :

The physical and chemical test of Benzoin was performed successfully.



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