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Diploma in Pharmacy 1st Year

Pharmacognosy

Experiment

To perform the physical and chemical tests of Asafoetida.

Aim:

To perform the physical and chemical tests of Asafoetida.

Reference :

Dr. Gupta G.D , Dr. Sharma Shailesh , Kaur Navjit , “Practical Manual of Pharmacognosy” Published by Nirali Prakashan , Pg.No 111 - 114

Biological Source :

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

Materials and Apparatus Required

Test tube, conical flask, beaker, drug sample, weight balance, nitric acid, conc sulphuric acid, water, phloroglucinol, conc hydrochloric acid, conc ammonia, dil ammonia, and alcohol.

Theory

The name asafoetida has been derived from the Latin word foetid 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 and, in food as a condiment, and making pickles. It belongs to family Umbelliferae.

Physical Tests

- 1) **Colour:** Yellowish-white changing to reddish-brown.
- 2) **Odour:** Intense, persistent, penetrating, and alliaceous.
- 3) **Taste:** Bitter, alliaceous, and acidic.
- 4) **Shape:** Occurs in 2 different forms, ie, tears and masses. Tears are rounded or flattened.
- 5) **Size:** Tears are 0.5-3cm in diameter.
- 6) **Extra Features:** Fresh tears are tough, which on drying becomes hard and brittle. The inner surface of tears is milky whitish-yellow, translucent, or opaque. Mass of asafoetida is agglutinated and mixed with root fragments, foreign materials, and other impurities.

Chemical Constituents

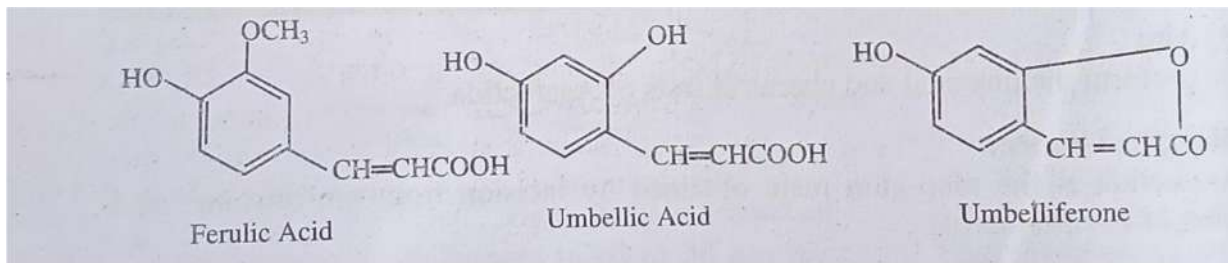
Asafoetida contains resin (40-65%), gum (20-25%), and volatile oil (4-20%). The chief resin of asafoetida is asaresinotannol present either in free form or is combined with ferulic acid.

Asafoetida does not contain free umbelliferone. Ferulic acid when treated with hydrochloric acid, converts into umbellic acid, which forms umbelliferone by losing water.



Asafoetida oil is obtained by steam distillation of the oleo-gum resin. The oil contains secondary butyl propenyl disulphide as its chief constituent.

However, di- and tri-sulphides, pinene, and other terpenes are also present in the oil. The sulphur compounds of the formulae $\text{C}_2\text{H}_4\text{S}_2$, $\text{C}_{16}\text{H}_{32}\text{S}_2$, and $\text{C}_6\text{H}_6\text{S}$ imparts odour to asafoetida.



Asafoetida also contains phellandrene, sec-butylpropenyl disulphide, geranyl acetate, bornyl acetate, a-terpineol, myristic acid, camphene, myrcene, limonene, fenchone, eugenol, linalool, geraniol, isoborneol, borneol, guaiacol, cadinol,

Chemical Tests

Sr. No.	Tests	Observations	Inferences
1)	Triturate with water	Yellowish orange Emulsion is formed.	Presence of asafoetida.
2)	Fractured surface is treated with 50% nitric acid.	Green colour is obtained.	Presence of asafoetida.
3)	Fractured surface is treated with sulphuric acid.	Red or reddish brown colour.	Presence of asafoetida.
4)	Combined Umbelliferone Test: Take 0.5 gm of drug and triturate with sand and add 5ml of hydrochloric acid. Then add 2ml of water and filter it out. Filtrate is then added to equal volume of ammonia.	Blue fluorescence (umbelliferone) appears.	Presence of asafoetida.
5)	Add phloroglucinol and conc. HCl to alcoholic extract.	Pink colour solution appears.	Presence of asafoetida.
6)	On burning asafoetida.	Yellow flame is produced.	Presence of asafoetida.

Uses

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

Result :

The physical and chemical test of Asafoetida was performed successfully.

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