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Diploma in Pharmacy 1st Year

Pharmacognosy

Experiment

To perform the physical and chemical tests of Black catechu.

Aim:

To perform the physical and chemical tests of Black catechu.

Reference :

Dr. Gupta G.D , Dr. Sharma Shailesh , Kaur Navjit , “Practical Manual of Pharmacognosy” Published by Nirali Prakashan , Pg.No 125 - 129

Biological Source :

Black catechu is dried aqueous extract obtained from the heartwood of plant Acacia catechu. It belongs to family Leguminosae.

Materials and Apparatus Required

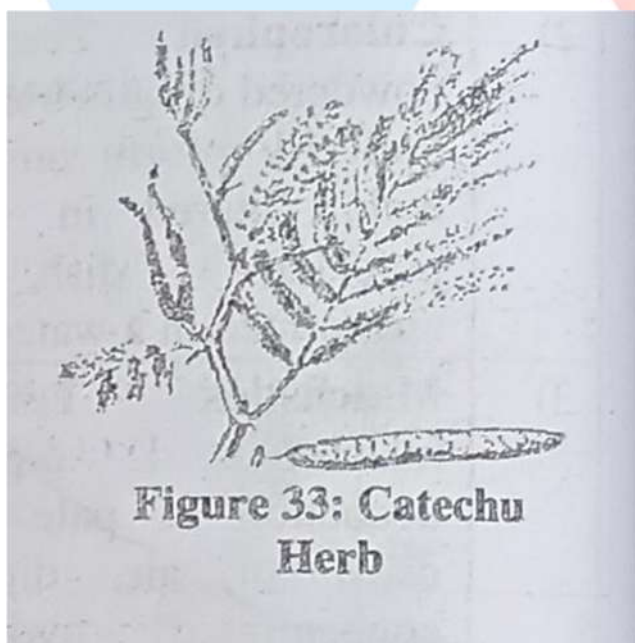
Test tube, conical flask, beaker, water bath, matchstick, burner, ethyl alcohol NaOH, petroleum ether, conc HCl, vanillin hydrochloride reagent, lime water, ferric ammonium sulphate, sodium hydroxide, and chloroform.

Theory

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 bi-pinnately compound green leaves with 50 pairs of feather-like leaflets.

Physical Tests

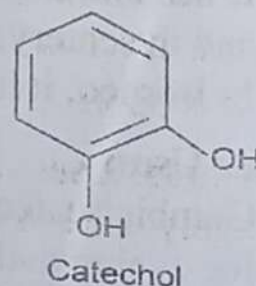
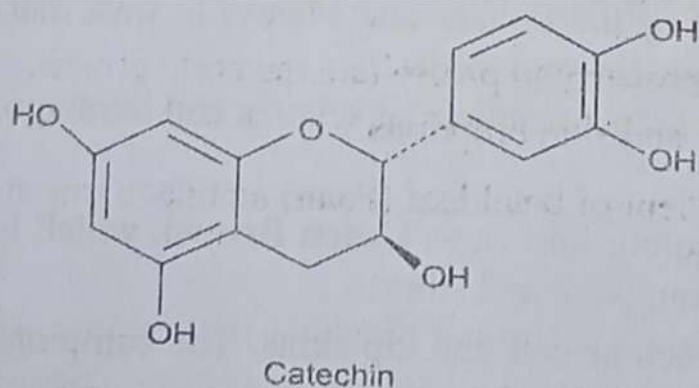
- 1) **Form:** Irregular mass, outer surface is rough and dull and rarely glossy.
- 2) **Colour:** Black
- 3) **Odour:** Odourless.
- 4) **Taste:** Bitter in the beginning and astringent afterwards.
- 5) **Fracture:** Hard and brittle, and the broken surface is dark brown with a dull gloss and porous
- 6) **Surface:** Rough, dull or slightly glossy and porous
- 7) **Solubility:** Partially soluble in cold water and alcohol, completely soluble to hot water.



Chemical Constituents

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

Acacatechin contains () epicatechin which is the trans-form of acacatechin. During the extraction of heartwood chips with boiled water, epicatechin undergoes epimerisation and racemisation to dl, acacatechin.



Chemical Tests

Sr. No.	Tests	Observations	Inferences
1)	Gambier Fluorescent Test: Drug is boiled with 2ml of ethyl alcohol, added with 2ml of NaOH solution followed by 2ml of petroleum ether, contents are shaken and allowed to settle.	Petroleum layer does not show greenish colour.	Black catechu is present.
2)	Matchstick Test: Woody side of matchstick is dipped in solution of tannin, air dried, dipped in conc. HCl and warmed over the flame of burner.	Magenta/purple coloured is obtained.	Black catechu may be present.
3)	Vanillin Hydrochloride Test: The powdered drug is added with a few drops of vanillin hydrochloride reagent.	Pink or red colour is observed.	Due to the formation of phloroglucinol, thus indicating presence of tannins.
4)	Lime Water Test: Few drops of fresh aqueous extract of the drug are added to 10ml lime water.	A brown colour is produced and on standing for 3 minutes a precipitate is formed.	Black catechu is present.
5)	Ferric Ammonium Sulphate Test: To an aqueous solution of drug (2%), solution of ferric ammonium sulphate is added; after formation of green colour sodium hydroxide is added.	Green colour changes to purple colour.	Black catechu is present.
6)	Chlorophyll Test: The powdered drug is heated with chloroform in a water bath for 1-2 minutes. The organic layer is filtered in a China dish and evaporated to dryness in a water bath.	No greenish residue is seen in China dish.	Black catechu is present.

Uses

1) Internal Uses

- i) It possesses cooling and digestive properties, hence used in GIT disturbance.
- ii) It is used in relaxed conditions of throat, mouth, and gums.
- iii) It is also used in cough and diarrhoea.

2) External Uses

- i. It is used as an astringent (property to precipitate the body protein).
- ii. It is applied to ulcers, boils and skin eruptions

3) **Industrial Uses:** It is an ingredient of betel leaf (Paan) and paan masala, so it is largely used in katha industry.

Result :

The physical and chemical test of Black catechu was performed successfully.