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Diploma in Pharmacy 1st Year

Pharmacognosy

Experiment

To perform the physical and chemical tests of Castor oil.

Aim:

To perform the physical and chemical tests of Castor oil.

Reference :

Dr. Gupta G.D , Dr. Sharma Shailesh , Kaur Navjit , “Practical Manual of Pharmacognosy” Published by Nirali Prakashan , Pg.No 130 - 134

Biological Source :

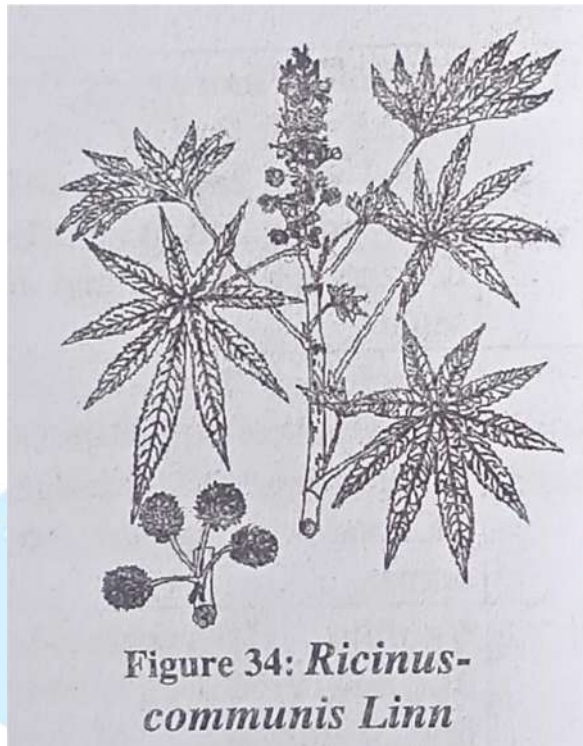
Castor oil is the fixed oil obtained by cold expression of the seeds of *Ricinus communis* Linn., which belongs to family Euphorbiaceae.

Materials and Apparatus Required

Test tube, conical flask, beaker, burner, petroleum ether, and alcohol.

Theory

Castor oil is a vegetable oil made from the seeds of the castor bean It is a colourless to pale yellow liquid with a different taste and odour. It has a boiling point of 313°C and a density of 0.961g/cm³ It is made up of a mixture of triglycerides, with ricinoleates accounting for around 90% of the fatty acids.



Physical Tests

- 1) **Colour:** Pale yellow or almost colourless liquid.
- 2) **Odour:** Slight and characteristic.
- 3) **Taste:** Bland initially but later becomes slightly acrid, and usually nauseating.
- 4) **Nature:** Viscous and transparent liquid.
- 5) **Solubility:** Soluble in alcohol (an exception to the category of fixed oils). miscible in chloroform, solvent ether, glacial acetic acid, and petroleum ether, insoluble in mineral oil.

Chemical Constituents

Castor oil is mostly composed of ricinoleic acid triglycerides nearly about 80%. Other glycerides are also found in drug, with isoricinoleic, linoleic, stearic and isostearic acids representing the fatty acids. Ricinoleic acid is responsible for the viscosity of castor oil.



Heptaldehyde (heptanal), undecenoic acid, and sebacic acid are also found in castor oil. Castor seeds have a kernel content of 75% and a hull content of 25%. Seeds range in weight from 0.1-1g Phosphorus is abundant in castor seeds, with the majority of it in the form of phytin. Hull is mineral-rich and contains the alkaloid ricinine, as well as resin, colour, and other substances. The oil content of the kernel ranges between 36-60% Lipase, maltase, and invertase are among the enzymes found in castor seeds. Ricin, a proteinous toxic component that makes up about 3% of the total seeds, is poisonous.

Chemical Tests

Sr. No.	Tests	Observations	Inferences
1)	Add 5ml of light petroleum ether (40° -60°) to 10ml of castor oil.	A clear solution is obtained, and by adding roughly 15 mL of petroleum ether, unclear mixture is obtained.	Presence of castor oil.
2)	Add oil and equal volume of alcohol and cool for 3hrs at 0°C.	A clear liquid is obtained.	Presence of castor oil.

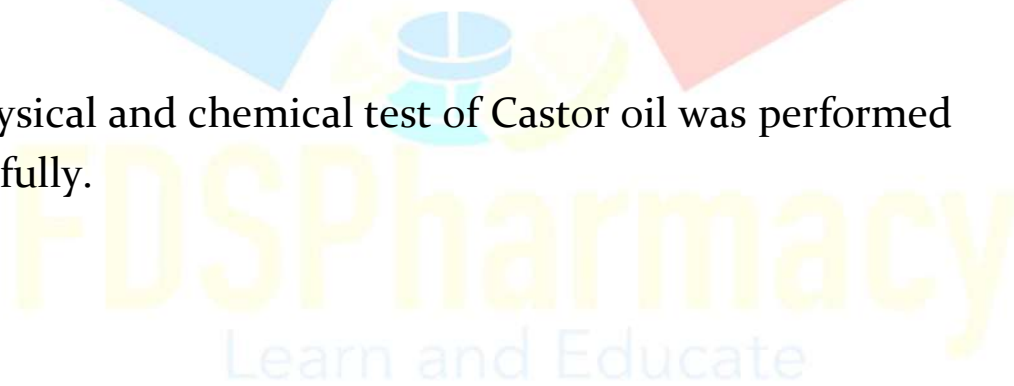
Uses

- 1) Castor oil has a cathartic effect. Commercially, it is also used for lubricating. Dehydrated Castor Oil (DCO) and Hydrogenated Castor Oil (HCO) are two more types of castor oil that are utilised in industry for a variety of uses Other commercially manufactured molecules from castor oil include fatty acids such as ricinoleic acid, heptaldehyde, and undecenoic acid.
- 2) The irritating effect of ricinoleic acid is responsible for castor oil's cathartic properties.
- 3) Castor oil is commonly used orally, as fragrant castor oil, or in capsule form.
- 4) Ricinoleic acid is used in contraceptive creams and jellies, and it is utilised in abortifacient paste.

- 5) Atropine and cocaine are suspended in castor oil for ophthalmic use.
- 6) It is also used as an emollient in lip-stick formulations and as a sulphorecinolate in tooth formulations, where it is a potent bactericide.
- 7) Other cosmetic uses for the oil include perfumed hair oil and hair fixers, as well as the commercial manufacturing of sebacic acid, a raw material for resin synthesis.
- 8) It is utilised in the manufacturing of rigid, semi rigid foams and urethanes known as elastomers, which are used in trolley wheels
- 9) Castor oil is used to make the fungicide undecylenic acid, which is used in the production of nylon 11. Castor cake is a source of the lipase enzyme

Result :

The physical and chemical test of Castor oil was performed successfully.



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