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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 Tragacanth.

Reference :

Dr. Gupta G.D , Dr. Sharma Shailesh , Kaur Navjit , "Practical Manual of Pharmacognosy" Published by Nirali Prakashan , Pg.No 140 - 143

Biological Source :

Tragacanth is the att dried gummy exudate, either flowing naturally or obtained by incision from the stems and branches of Astragalus gummifer Labill and other species of Attragalus. It belongs to family Leguminseac.

Materials and Apparatus Required

Test tube, conical flask, beaker, burner, water bath, HCI, NaOH, Fehling's solution A and B, barium chloride solution, ferric chloride solution, ammonium hydroxide precipitated copper oxide, lead acetate, ruthenium red. N/50 iodine, and 5% alcoholic KOH solution.

Theory

Tragacanth is the dried, gummy exudation of Astragalus species (figure 36) It is a small, low bushy perennial shrub with large tap root along with the branches The root is tapped to obtain gum.

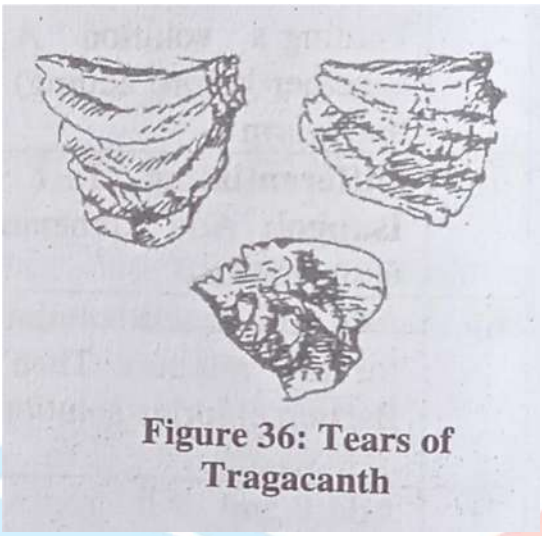

Figure 36: Tears of Tragacanth

Physical Tests

1) **Colour:** Flakes are white or pale yellowish-white.
2) **Odour:** Odourless.
3) **Taste:** Tasteless.
4) **Shape:** Curved or twisted ribbon-like flakes
5) **Size:** Flakes are 25 x 12 x 12mm in size.
6) **Fracture:** Short and horny.
7) **Appearance:** Translucent.
8) **Solubility:** Partially water soluble, swells in water to form a homogeneous, adhesive and gelatinous mass, insoluble in alcohol.

Chemical Constituents

Tragacanth is made up of two major fractions, ie, tragacanthin (water-soluble) and bassorin (water-insoluble). Both these fractions are insoluble in alcohol. These two components can be separated by simple filtration of highly dilute mucilage of tragacanth

Bassorin is present in 60-70% and tragacanthin in 30-40% concentrations. Bassorin when brought in contact with water, becomes swollen forming a gel, while tragacanthin forms an instant colloidal solution with water

Tragacanth gum also contains sugars and uronic acid units, and can be divided into three types of constituents:

1) An acidic constituent is tragacanthic acid which hydrolyses into galactose, xylose, and galacturonic acid,
2) A neutral polysaccharide hydrolyses into galactose and arabinose, and
3) A steroidal glycoside

Chemical Tests

Sr. No.	Tests	Observations	Inferences
1)	Add 0.5ml of HCl to 4ml of 0.5%w/v solution and then heat for half an hour on water bath. The hydrolyzed product is divided into 2nd parts. To neutralise the solution, add 1.5ml of NaOH solution and add Fehling's solution A and B in equal quantities (mixed before) and then heat over water bath. In 2nd part add barium chloride solution.	Red ppt of cuprous oxide is formed. No ppt is formed.	Presence of reducing sugars. Different from acacia and agar.
2)	Add tragacanth solution to 10% aqueous ferric chloride solution.	Deep yellow precipitate is formed.	Tragacanth may be present.
3)	Add conc. Ammonium hydroxide to tragacanth. Then add precipitated copper oxide to this solution.	Stringy precipitate is formed.	Tragacanth may be present.
4)	Add 20% w/v solution of lead acetate to 0.5% w/v solution.	Heavy white flocculent precipitate is formed.	Different from acacia and agar.
5)	Mount a small quantity of powder in ruthenium red and examine microscopically.	Pink colour does not occur in particles.	Different from Indian tragacanth and agar.
6)	Add N/50 iodine to 0.1gm of powder.	The mixture acquired greenish colour.	Different from acacia and agar.
7)	If the powder is heated in a 5% alcoholic KOH solution.	Canary yellow colour is obtained.	Presence of Tragacanth.

Uses

1) It is used as a demulcent in cough and cold preparations.
2) It is used to treat diarrhea.
3) It is used as an emollient in cosmetics.
4) It is used as a thickening, suspending, and an emulsifying agent for oils and waxes.
5) It is combined with acacia to be used as a suspending agent.
6) Its mucilage is used as a binder in tablet formulations and also as an excipient in pills.
7) In powdered form it is used as an adhesive.
8) It is used in lotions for topical use and also in spermicidal jellies.
9) It imparts consistence to troches.
10) It has been reported to inhibit in vitro and in vivo growth of cancer cells.

Result :

The physical and chemical test of Tragacanth was performed successfully.