

## EXPERIMENT NO. 10

Aim: To Extract Atropine from Belladonna and identify by Thin layer chromatography method (TLC),

### REQUIREMENT-

1. Chemicals : Methanol, ethanol, acetic acid, petroleum ether, n-butyl alcohol, toluene, ethyl acetate, diethylamine, diethyl ether, acetone, silica gel.

2. Apparatus: Beaker, Stirrer, Measuring Cylinder, glass plate

### THEORY-

Atropine is an enantiomeric mixture of d- hyoscyanine and l-hyoscyamine, with most of its physiological effects due to l-hyoscyamine. Its pharmacological effects are due to binding to muscarinic acetylcholine receptors. It is an anti- muscarinic agent. It is obtained from the roots and leaves of *Atropa belladonna* belonging to family solanaceae, besides other species of solanaceae. Atropine is an anticholinergic medicine which is used to decrease the production of saliva and other fluid secretions during surgery. It is also used to treat spasms or cramps in the stomach, intestines, and other organs of the body. It acts as an antidote for poisoning by certain insecticides. This medicine should be used with caution in patients above 40 years of age. Atropine Sulfate is the sulfate salt of atropine, a naturally-occurring alkaloid isolated from the plant *Atropa belladonna*. Atropine functions as a sympathetic, competitive antagonist of muscarinic cholinergic receptors, thereby abolishing the effects of parasympathetic stimulation. This agent may induce tachycardia, inhibit secretions, and relax smooth muscles.

45

### EXTRACTION PROCEDURE:

- 1) Accurately weighed quantity of *Atropa belladonna* dried leaves and powdered to obtain coarse size particles.
- 2) Coarse powder is then moistened with sodium carbonate solution and extracted with petroleum ether to remove any foreign materials.
- 3) Filter the mass and again extracted with aq. Acetic acid.
- 4) Treat the aq. Acidic layer with solvent ether and separate both layers.
- 5) Discard the ether layer and treat the aq. Layer with sodium carbonate to obtain precipitates of tropane alkaloids.

## Calculations

$$\% \text{ yield} = \frac{1.75}{5.0} \times 100 = 35\%$$

$$\text{Rf value} = \frac{3.2}{5.3} = 0.60$$

46

6) Filter the precipitates and dry to obtain residue and dissolve in diethyl ether. Filter and concentrate the filtrate.

7) Atropine crystals will be separated out. Filter the crystals and dissolve in alcohol containing NaOH solution so that hyoscyamine can get converted to atropine

8) Recrystallize the atropine sulphate from acetone.

#### IDENTIFICATION BY TLC:

Atropine is identified by thin layer chromatography by using silica gel as stationary phase and Toluene: ethyl acetate: diethylamine (70:20:10) as mobile phase. After drying the TLC plate, atropine, is detected at 0.74 Rf value by using spraying Dragendroff's reagent shows orange brown color spot.

#### Result-

The percentage yield of atropine from belladonna was found to be 3.52%.

(47)

Rf value of extract of atropine from belladonna was found to be 0.66.

Name - Janish Patel  
Regd. No. 1702252052  
Grp. C