ISOLATION, IDENTIFICATION AND ANALYSIS OF ALKALOIDS (ATROPINE and QUININE)

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ATROPINE

- Atropine is a tropane alkaloid obtained from *Atropa belladonna ,Datura stramonium and Hyoscyamus niger*
- Family – Solanaceae
- Used as Antispasmodic, Mydriatic etc

EXTRACTION AND ISOLATION

- Take weighed quantity of coarse powder and moisten with sodium carbonate solution.
- Extract the blended mixture in petroleum ether. Filter the petroleum ether extract
- Extract the filtrate with aqueous acetic acid (alkaloids extracted in aqueous layer)
- Extract the aqueous fraction with solvent ether and separate both fraction. Discard solvent ether fraction

- Aqueous (Acidic fraction) made alkaline with sodium carbonate solution to obtain precipitates of tropane alkaloids. Filter the precipitate and dry to obtain residue.
- Dissolve the residue in diethyl ether .Filter and concentrate the filtrate. Atropine crystals will be separated out.
- Filter the crystals and dissolve in alcohol containing sodium hydroxide solution (Hyocyamine is converted to atropine)
- Recrystallize the atropine sulphate from acetone. Separate the crystals of atropine.

IDENTIFICATION

- Vitali Morin Reaction

Take sample to this add drop of sulphuric acid followed by evaporation add 0.3 ml of 3% methanolic potassium hydroxide solution. Purple colour produce indicate presence of atropine.

T.L.C Method

Sample preparation – Dissolved 1mg of Atropine in 1ml of Chloroform

Stationary phase - Silica gel –G

Standard sample - Atropine

Detecting agent – Drangendroffs reagent to produce yellow orange Color spots

Mobile phase – Toluene - Ethyl acetate – Diethyl amine (70:20:10)

RF Value – Compare with standard Atropine (0.70)

QUININE

QUININE

Synonym – Quinine

It is a quinoline alkaloid of cinchona bark. The other important alkaloids of this drug are quinidine, cinchonine, cinchonidine, cinchonamine etc.,

Biological sources : It consists of dried inner bark of C.Calisaya, C.succirubra, C.officinalis, C.ledgeriana and hybrids of this. Family – Rubiaceae

Quinine and quinidine are stereo-isomers .

Quinine is levorotatory and quinidine is dextrorotatory

Uses :

Quinine is antimalarial

Quinidine is a cardiac depressant therefore used in cardiac arrhythmias.

ISOLATION

1. The dry powder bark material is first well mixed with about 30% of its weight of calcium hydroxide or calcium oxide and sufficient quantity of sodium hydroxide solution to make a paste. It is allowed to stand for few hours.
2. The mass is then transferred to a Soxhlet apparatus and extraction is carried out with benzene.

3. Subsequently the benzene extract is shaken with successive portions of 5% sulphuric acid.

4. The aqueous acid extract is adjusted the pH 6.5 with dilute sodium hydroxide, cool. Crystals of neutral quinine sulphate are formed.

5. These crystals are freed from cinchonine and cinchonidine by repeated recrystallization from hot water.

6.Colouring matter is removed by activated charcoal.

7.Quinine sulphate crystals are dissolved in dilute sulphuric acid and made alkaline with ammonia. Initially amorphous quinine is formed , which becomes crystalline.

8.Finally washed to remove sodium and ammonium salts and dried to 45- 55 ^{o} C.

T.L.C Method

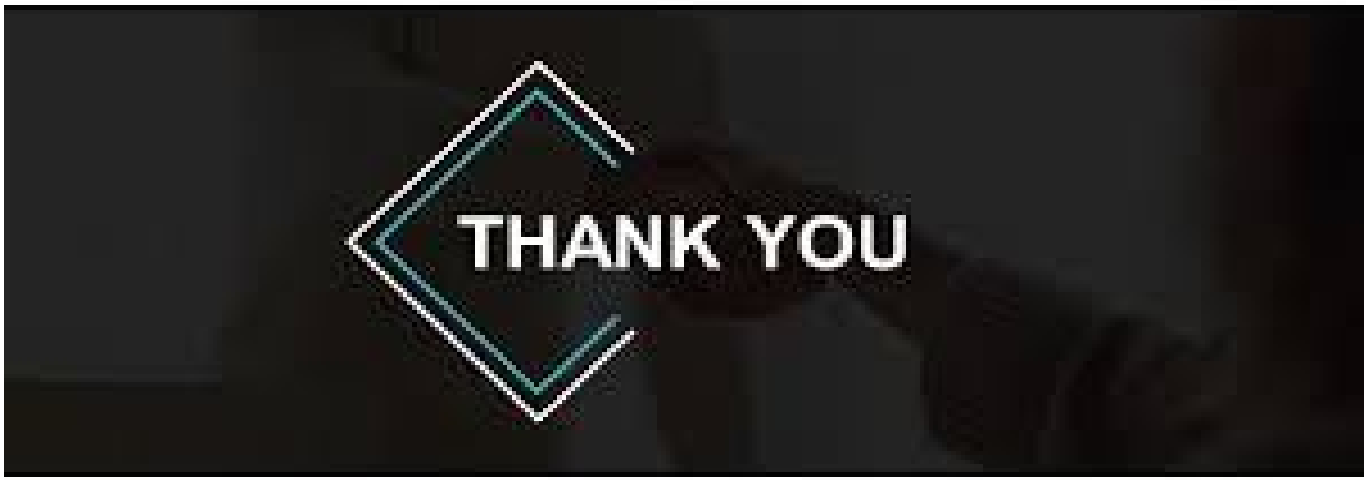
Sample preparation – Dissolved about 1mg of Quinine
or
Cinchona alkaloid in 1ml of methanol

Stationary phase - Silica gel –G

Detecting agent – Dragendroffs reagent

Mobile phase – Chloroform – Diethylamine (9:1)

RF Value – Quinine – 0.17, Quinidine -0.26


THANK YOU