Clinical 6

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Methods of extraction

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Different methods:

1. Maceration.
2. Digestion.
3. Infusion.
4. Percolation.
5. Decoction.
6. Continuous hot extraction.

1) Maceration:

- The plant material is macerated at room temperature for several hours.
- polar solvents as water and alcohol are used in this method .

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2) ***Digestion:***

- Done at elevated temperature (35 - 40°c).
- Suitable for hard organs as barks and wood to facilitate the penetration of the solvent into the tissues.

3) Infusion:

- The solvent here is water.
- The plant material is placed in a suitable container (pot) and boiling water is poured over it.
- Cover with lid and then left to stand for 15-20 minutes after which the extract is decanted.

4)Percolation:

- The powdered plant material is placed in a percolator.
- Subjected to a slow flow of fresh solvent (at the top of the plant material)
- Extract (percolate) is received from the other side of the percolator with slow flow rate.

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5) Decoction:

- When the plant material is boiled with the solvent (water) for about 10 minutes.
- Allow to stand for about 30 minutes.

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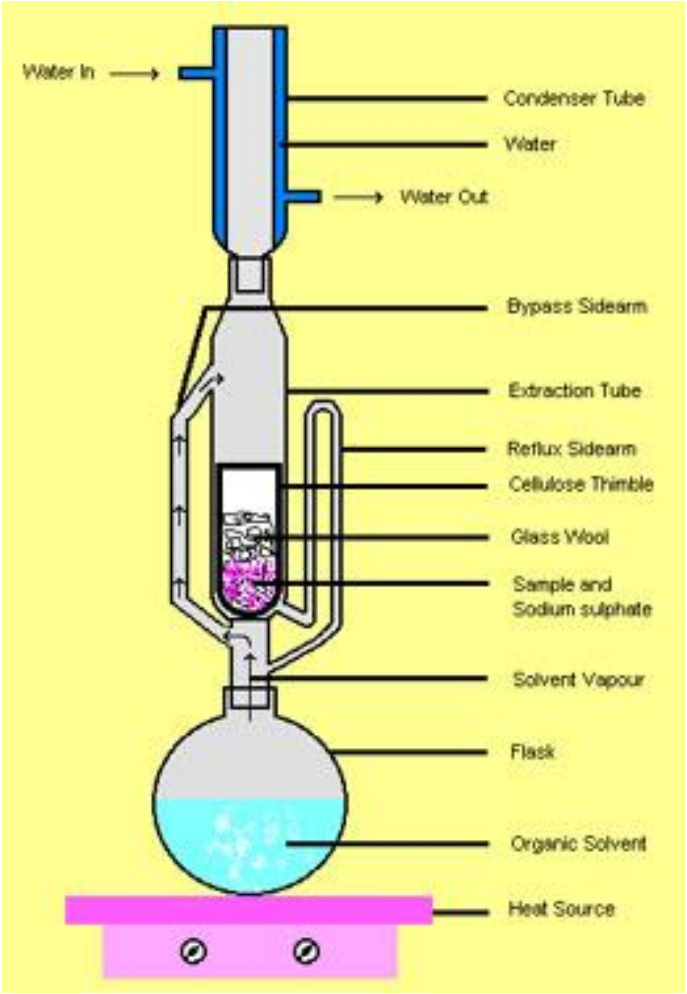
6) Continuous hot extraction:

- Plant material is continuously extracted with the solvent(s) in a special apparatus called soxhlet.



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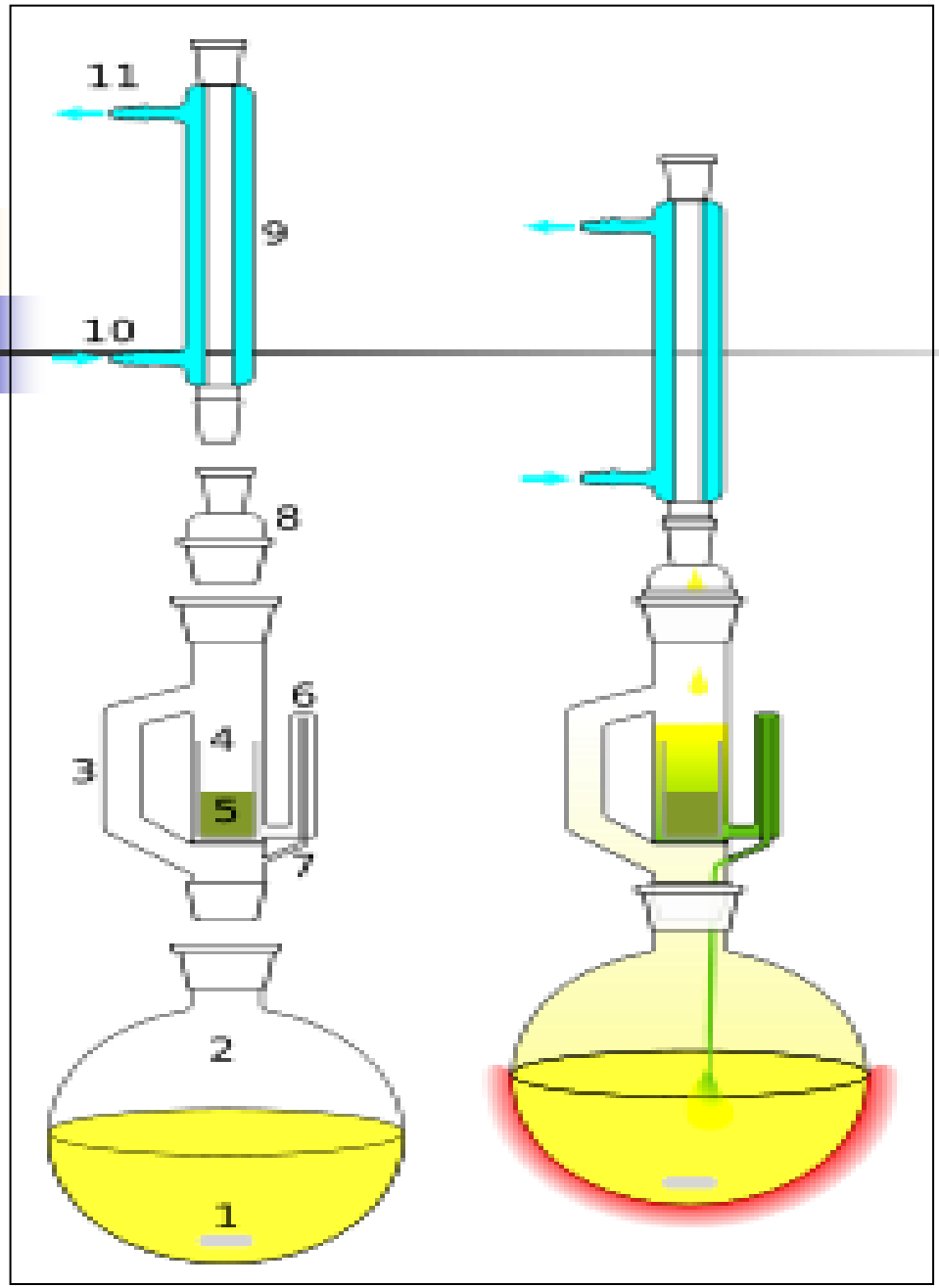

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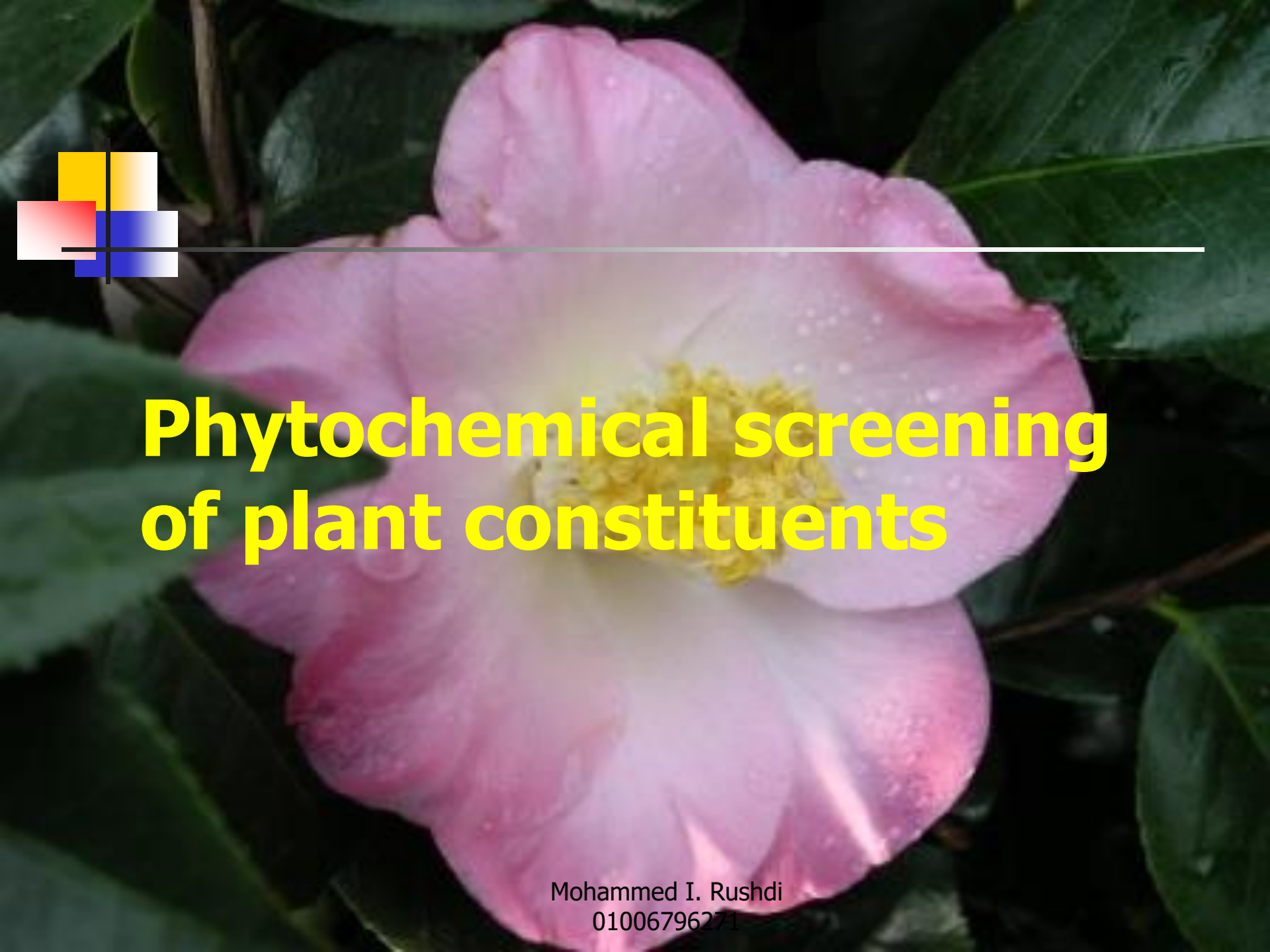

Phytochemical screening of plant constituents

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Definition

- Chemical tests that reveal the chemical constituents of the plant extract.

1. Microsublimation test
2. Test for carbohydrates and \ or glycosides
3. Test for tannins .
4. Test for flavonoids .
5. Test for alkaloid.

Microsublimation Test :

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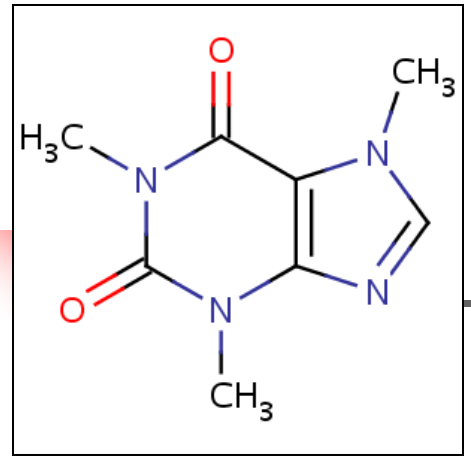
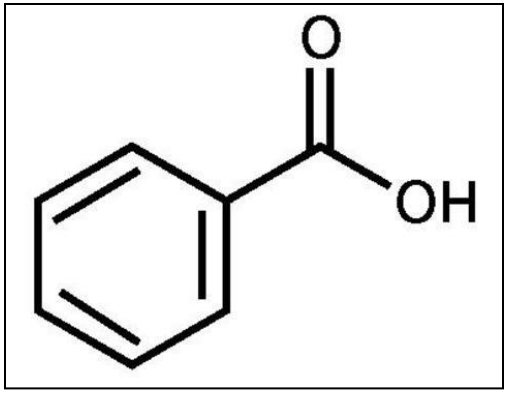


Caffiene

Tea



Benzoic acid

Balsam benzoin

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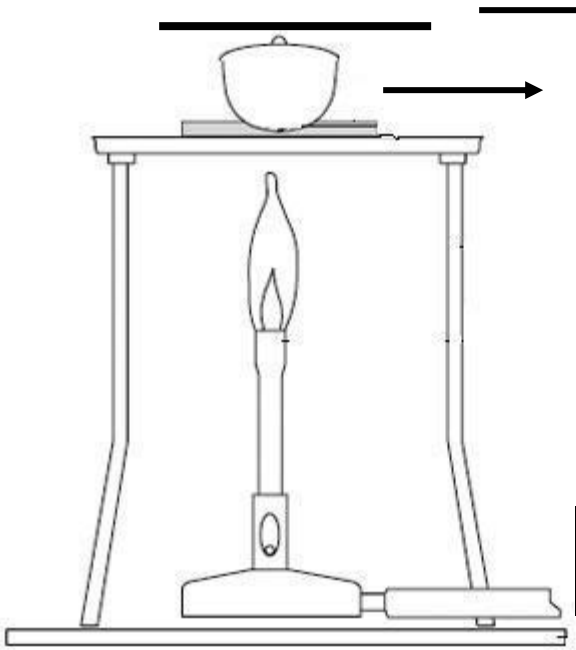
Procedure for Tea



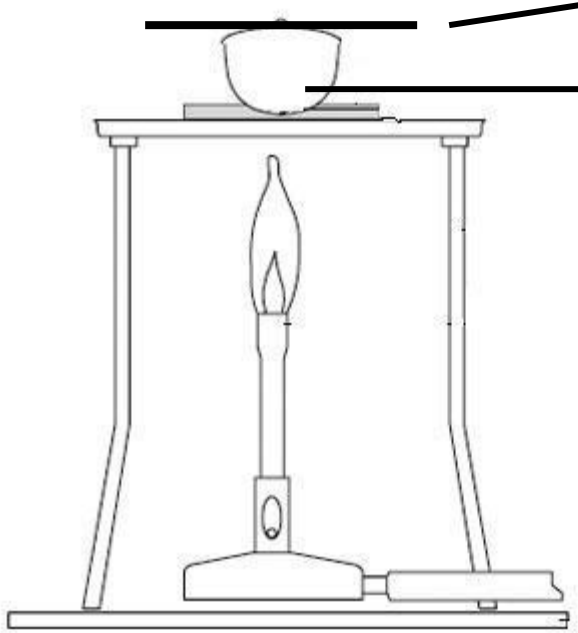
Clean slide

1 g powdered Tea

Gentle heating

Sublimate of acicular crystals of caffiene

Procedure for Balsam benzoin



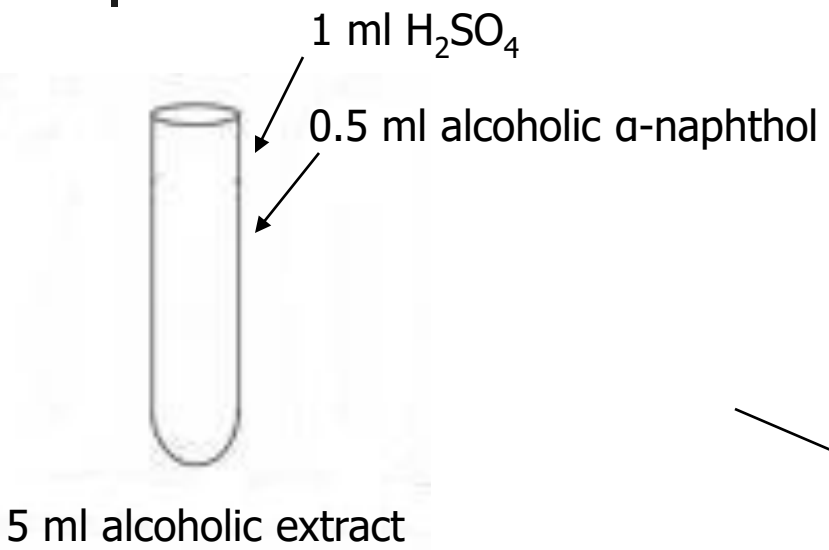
Clean slide

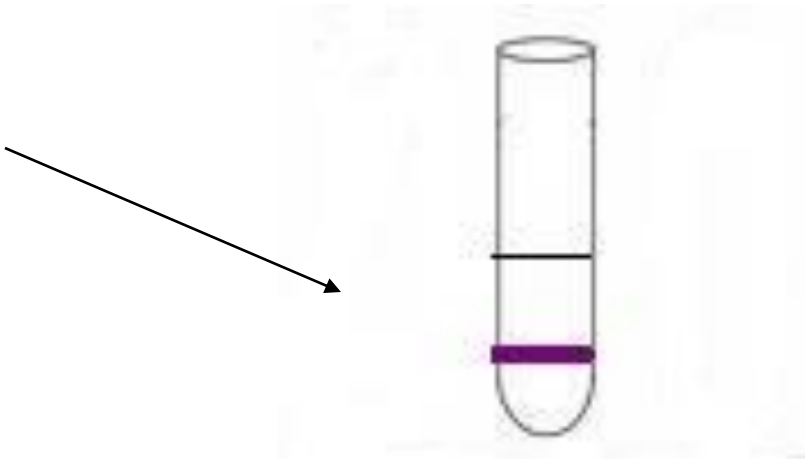
1 g powdered Balsam Benzoin

Gentle heating

Sublimate of acicular crystals of Benzoic acid

Test for carbohydrates &\or glycosides (Molisch's test)





Bluish violet ring

at the junction of 2 layers

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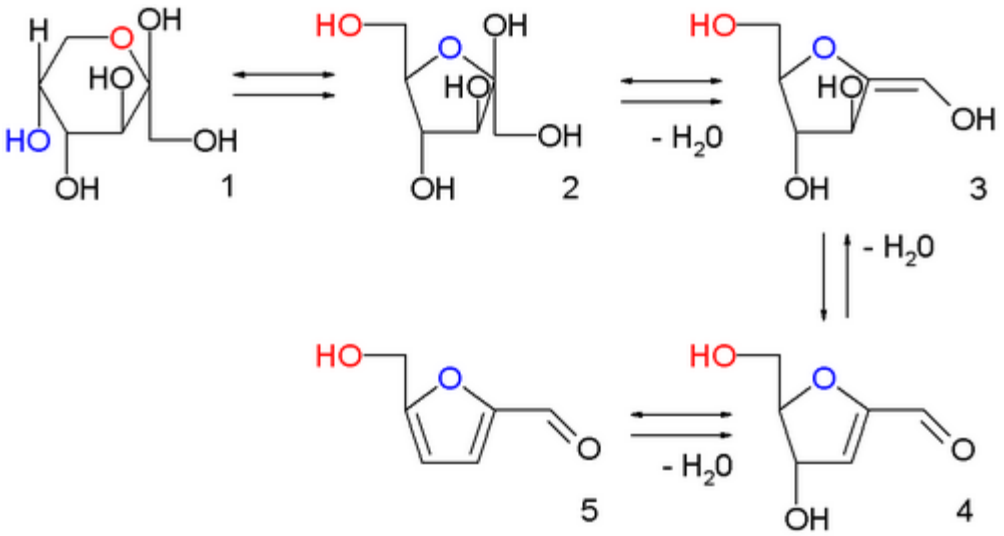
What reactions are involved ?

- $C_5H_{10}O_5 + H_2SO_4 \rightarrow C_5H_4O_2 + 3\ H_2O$

  Pentose Conc. Furfural

- hexose



  - $C_5H_4O_2 + 2\ C_{10}H_7OH \rightarrow$ purple- coloured product

    Furfural α - naphthol

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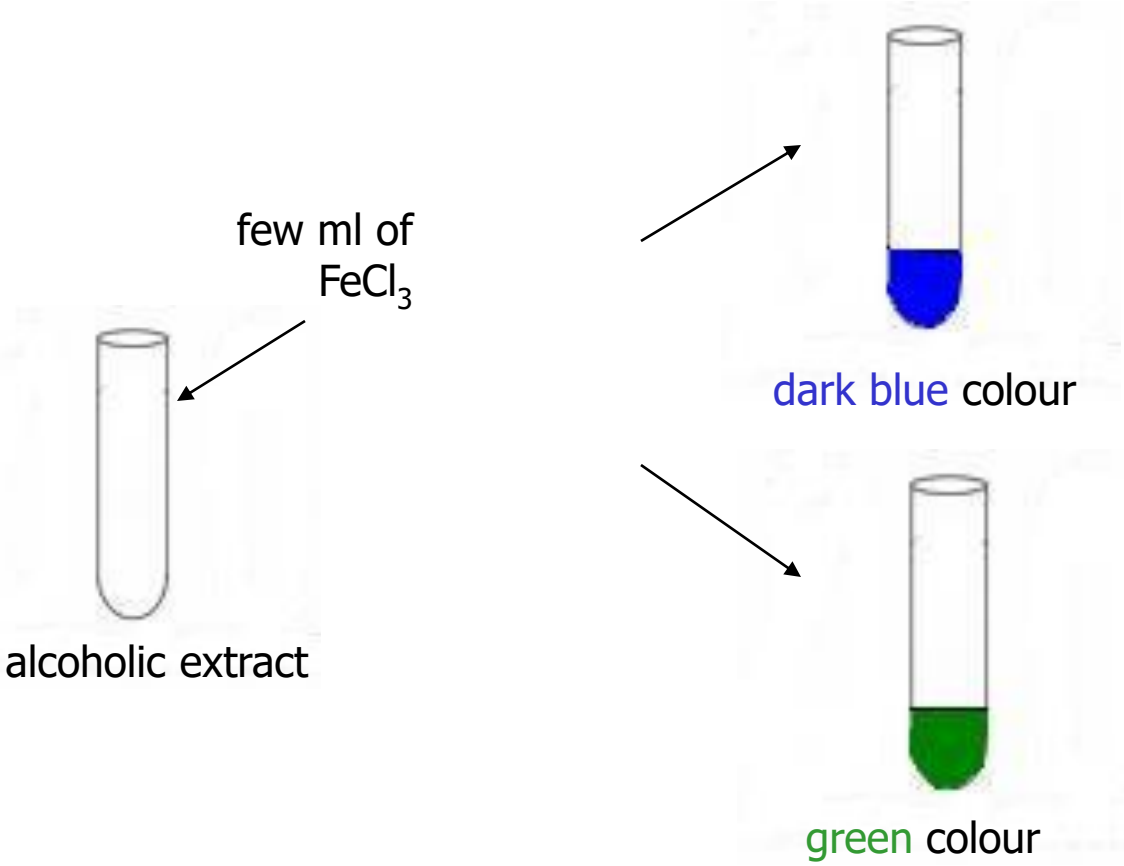
Test for tannins



pyrogallol tannin

catechol tannin

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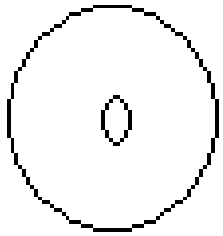
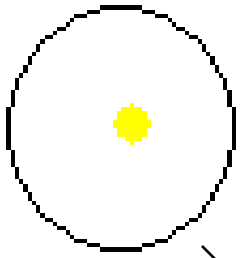
Tea

Test for flavonoids



exposed to
NH_3 vapour



conc. Alcoholic extract

dilute NaOH

yellow colour

dried alcoholic extract

Ruta, Fennel and mentha

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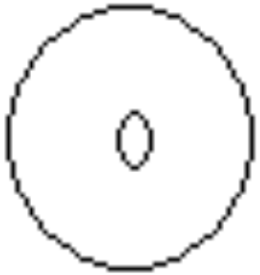
Test for alkaloids and basic nitrogenous compounds



Dragendorff's reagent

conc. Alcoholic extract

Orange colour

➢with Mayer's reagent → Yellowish white precipitate

Datura, vinca

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