

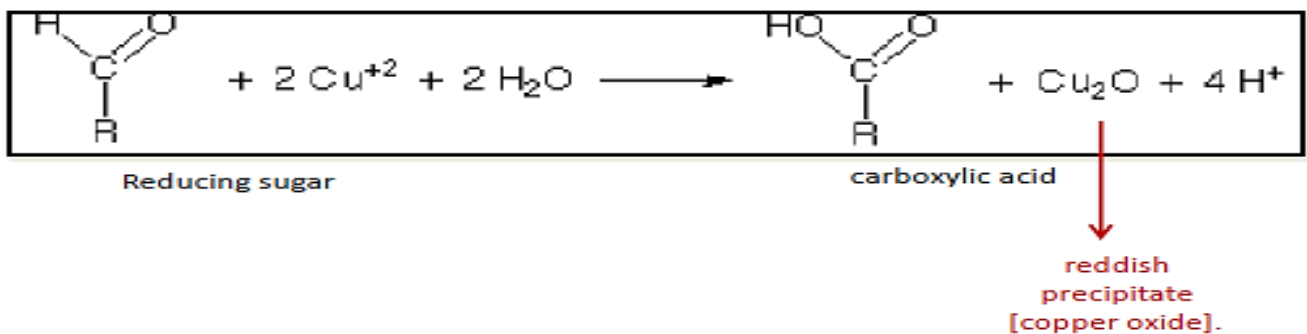


1- Benedict's Test:

To detect the presence of reducing sugars. Which contain from (Copper, Sodium citrate, Sodium carbonate, Copper II sulfate pentahydrate).

Principle :

- The copper sulfate (CuSO_4) present in Benedict's solution reacts with electrons from the aldehyde or ketone group of the reducing sugar in alkaline medium.
- Reducing sugars are oxidized by the copper ion in solution to form a carboxylic acid and a reddish precipitate of copper (I) oxide.



Method:

- Five ml of a sample solution is placed in a test tube.
- Five ml of Benedict's reagent is added.
- The solution is then heated by burner for two minutes.
- A positive test is indicated by the formation of a reddish precipitate.

Equipment:

- ❖ Test tube.
- ❖ Test tube holder.
- ❖ Pipette.
- ❖ Burner.



Results:

Observation: Color change from blue to;

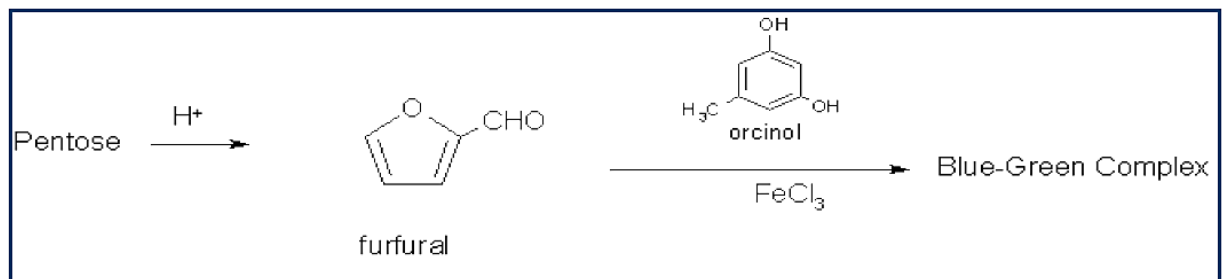
- 1- Green – 0.5 g %.
- 2- Yellow – 1.0 g %.
- 3- Orange – 1.5 g %.
- 4- Red – 2.0 g %.

2- Bial's Test:

To detect pentose (monosaccharide), Which contain from (Orcinol , HCl Conc., FeCl₃ (10%)).

Principle:

Bial's test uses concentrated HCl as a dehydrating acid and orcinol + ferric chloride [FeCl₃] as condensation reagent. The test reagent dehydrates pentose to form furfural. Furfural further reacts with orcinol and the iron ion present in the test reagent to produce a bluish or green product.





Department of Anesthesia Techniques
Title of the lecture:- Carbohydrates
Tests

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Method :

- Put 1 ml of a sample solution in a test tube.
- Add 0.5 ml of Bial's reagent (a solution of orcinol, HCl and ferric chloride).
- Heat the tubes gently in hot water bath for three minutes.

Equipment's:

- ❖ Test tube.
- ❖ Water Bath.
- ❖ Pipette.
- ❖ Beaker.

Results:

Bluish or green product.

* If the color is not obvious, more water can be added to the tube.



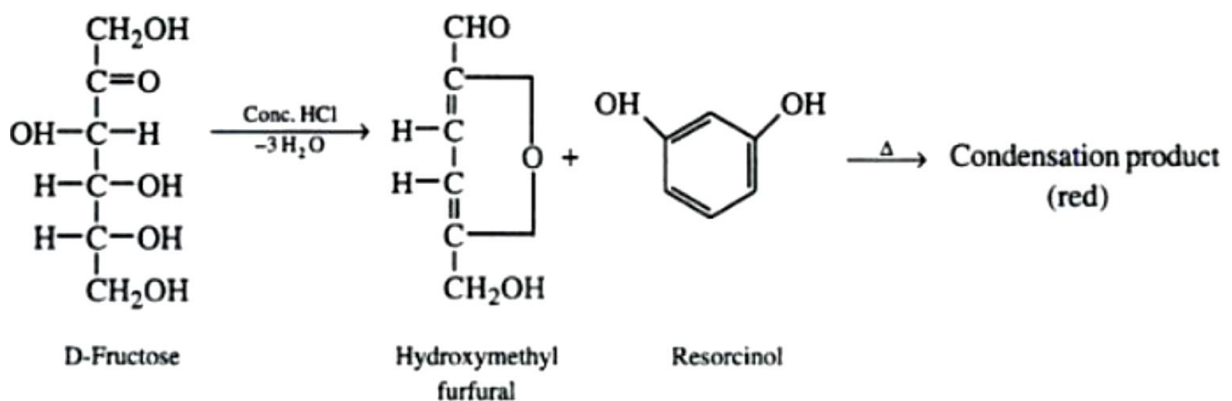


3- Seliwanoff's Test:

Used to distinguish between aldoses (like glucose) and ketoses (like fructose).
Which contain from (Resorcinol, HCl conc.).

Principle:

Seliwanoff's Test uses 6 M HCl as dehydrating agent and resorcinol as condensation reagent. The test reagent dehydrates ketohexoses to form 5-hydroxymethylfurfural. 5-hydroxymethylfurfural further condenses with resorcinol present in the test reagent to produce a cherry red product within two minutes.



Method :

- Put 1 ml of a sample solution in a test tube.
- Add 0.5 ml of Seliwanoff's reagent .
- Heat the tubes gently in hot water bath for two minutes.



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Equipment's:

- ❖ Test tube.
- ❖ Water Bath.
- ❖ Pipette.
- ❖ Beaker.

Results:

Cherry red product...

