Al-Mustaqbal University

First year chemistry practical Lectures

Presented by

Dr.Tuqa hazim abdallah

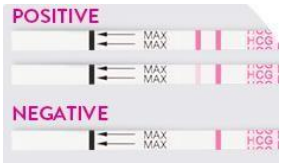
Carbohydrates Tests

Tests for identification of Carbohydrates:

1- **Molisch Test** specific for **carbohydrates.**
2- **Benedict's Test**: presence of **reducing sugars.**
3. **Barfoed's Test**: test used for detecting the presence of **monosaccharides.**
4- **Bial's Test**: used to detect **pentose** [5C] monosacharides.

1. **Qualitative analysis (What is in the sample?) :**
   It is used to identify the presence or absence of certain chemical compounds or elements in a sample, such as presence of gold in a rock.

- **Positive and negative test as pregnancy strip test.**



2. Quantitative analysis (How much is in the sample?) means to finding the exact quantity of the chemical compounds or elements in different solutions or mixtures such as glucose.

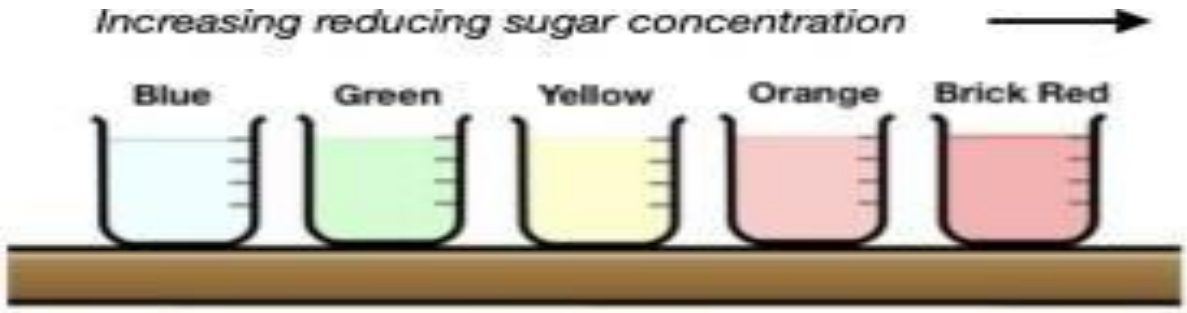


Fig 1. Colour Changes in Benedict's Test. The concentration of the reducing sugars in your sample dictates the extent of the precipitate formation and the colour change that you will observe.

Benedict's Test can give us an idea of how much reducing sugar is present in the sample. The greater the concentration of the reducing sugar, the greater the color change in the flow diagram

1. Benedict's test:

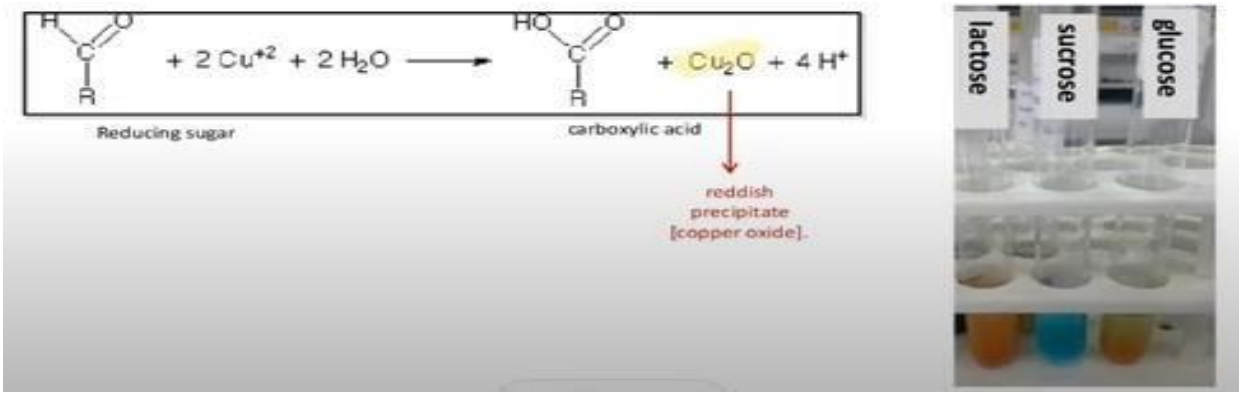
Objective:

Benedict's Test is a chemical analytical method used for the detection of reducing sugar in a solution. Benedict's Test is a qualitative test often used for the **differentiation of carbohydrates (saccharides/sugars) into reducing and non- reducing types all monosaccharides are reducing sugars; they all have a free reactive carbonyl group. Some disaccharides have exposed carbonyl groups and are also reducing sugars. Other disaccharides such as sucrose are non-reducing sugars and will not react with Benedict's solution**

Large polymers of glucose, such as starch, are not reducing sugars, since the concentration of hemiacetal groups is very low.

Principle:

Reducing sugars are oxidized in alkaline medium by the copper ion in solution to form a carboxylic acid and a reddish precipitate of copper (I) oxide.



Method :

when 0.5 ml solution containing reducing sugar is boiled with 5.0 ml Benedict's reagent (blue color) for 5 minutes, brick red or green or yellow colored precipitate appears. This indicates the presence of reducing sugar in the sample. This test is applied for the detection of reducing sugars in urine in case of diabetes and galactosemia .