



Benedict's Qualitative Reagent

R002

Benedict's reagent is used to test for the presence of reducing sugars.

Composition**

Ingredients

Copper sulphate	17.300 gm
Sodium carbonate	100.000 gm
Sodium citrate	173.000 gm
Distilled water	1000.000 ml

**Formula adjusted, standardized to suit performance parameters

Directions

For detection of sugar in Urine:

Add 5 ml of Benedict's qualitative reagent in a test tube. Add 8 drops (0.5 ml) of urine. Boil over a flame (or in a boiling water bath) for 5-10 minutes. Cool under tap water. The contents of the tube becomes turbid due to a precipitate, which may range from green to brick red in colour, depending on the amount of sugar present in the urine. If no sugar is present, the solution will remain clear or show a faint turbidity.

Principle And Interpretation

Benedict's reagent is used to test for the presence of glucose in urine. Once a reducing sugar is detected in urine, further tests have to be undergone in order to ascertain which sugar is present. The copper sulphate in Benedict's solution reacts with reducing sugars and the cupric ions to cuprous ions, these are precipitated as red copper oxide, which is insoluble in water (1). Alkaline medium is provided to the reaction by sodium carbonate present in the reagent. The original colour of Benedict's reagent is blue. It changes to green, yellow, orange or red, according to the concentration of glucose present in urine.

Quality Control

Appearance

Blue coloured solution.

Clarity

Clear to very slightly opalescent solution.

Test

Procedure: Add 5 ml of Benedict's qualitative reagent in a test tube. Add 8 drops (0.5 ml) of urine. Boil over a flame for 3 min. Cool. The contents of tube become turbid due to precipitate which may range from green to brick red in colour depending on the amount of sugar present in the urine. If no sugar is present, the solution will remain clear or show a faint turbidity.

Result

Colour of Mixture	Approximate amount of glucose	Conclusion (Sugar)
Blue	Nil	Absent
Green	0.5%	Present, trace
Greenish brown	1.0%	Present, + to ++
Yellow	1.5%	Present, +++
Brick red	2.0% or more	Present, ++++

Storage and Shelf Life

Store at 10-30°C in tightly closed container. Use before expiry period on the label.

Reference

1. Benedict, S.R. "A Reagent for the detection of Reducing Sugars", J. Biol. Chem. 5(6):485-487.

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