



## Benedict's Qualitative Reagent

**R002**

### Intended use

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

### Composition\*\*

#### Ingredients

Copper sulphate	17.30 g
Sodium carbonate	100.0 g
Sodium citrate	173.0 g
Distilled water	1,000.0 ml

\*\*Formula adjusted, standardized to suit performance parameters

### Directions

1. Add 5 ml of Benedict's qualitative reagent in a test tube.
2. Add 8 drops (0.5 ml) of urine.
3. Boil over a flame (or in a boiling water bath) for 5-10 minutes.
4. Cool under tap water.
5. 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.
6. 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. 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.

### Type of specimen

Clinical samples: Urine

### Specimen Collection and Handling

For clinical samples follow appropriate techniques for handling specimens as per established guidelines. After use, contaminated materials must be sterilized by autoclaving before discarding.

### Warning and Precautions

In Vitro diagnostic Use only. Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/ face protection. Follow good microbiological lab practices while handling specimens and

culture. Standard precautions as per established guidelines should be followed while handling clinical specimens. Safety guidelines may be referred in individual safety data sheets

## Limitations

1. False positive reaction in the test can also be obtained if there are certain drugs present e.g. streptomycin, penicillin, p-aminosalicylic acid etc.
2. The chemicals present in the concentrated urine may reduce Benedict's reaction which includes urate, creatinine and ascorbic acid.
3. Benedict's Test does not tell us what type of molecules it is, meaning if it is fructose or glucose. It is also does not react with all sugars.

## Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature

## Quality Control

- **Appearance :** Blue coloured solution.
- **Clarity :** Clear to very slightly opalescent solution.
- **Test :** 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	0.5%	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 between 10-30°C in tightly closed container and away from bright light. Use before expiry date on label. On opening, product should be properly stored in dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use.

## Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with clinical sample must be decontaminated and disposed of in accordance with current laboratory techniques.

## Reference

1. Godkar B. P., 1996, Textbook of medical laboratory technology: 40(545-546)
2. Isenberg, H.D. Clinical Microbiology Procedures Handbook. 2nd Edition.
3. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.
4. Benedict, S.R. "A Reagent for the detection of Reducing Sugars", J.Biol. Chem.5(6):485-487.



Storage temperature



Do not use if package is damaged



In vitro diagnostic medical device



CE Marking



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