

REDUCING SUBSTANCES IN STOOL CLINITEST

I. Principle and Clinical Significance:

Carbohydrate malabsorption or intolerance is primarily detected by serum chemistry tests. However, an increased concentration of carbohydrate in stool can be detected by performing a copper reduction test. Copper sulfate in a Clinitest tablet reacts with reducing substances in stool, converting cupric sulfate to cuprous oxide. The resultant color, which varies with the amount of reducing substances present, ranges from blue (no carbohydrate detected) through green to orange (increased carbohydrate detected).

II. Materials:

- A. Glass test tube
- B. Pipette
- C. Dropper
- D. Clinitest tablets: **Caution! Causes severe burns, avoid contact with skin, eyes and clothes.**

III. Specimen:

Fresh stool, thimble size quantity

Stability: 1 week frozen, 24 h refrigerated, 30 min room temperature.

IV. Procedure:

- A. Add 1 part of stool to 2 parts of distilled water, and mix thoroughly on a vortex mixer.
- B. Transfer 15 drops of this suspension to a clean glass test tube.
- C. Add a Clinitest tablet. **Warning - tube will become very hot.** Watch while complete boiling takes place. Do not shake the test tube during boiling, or for the following 15 seconds after boiling has stopped.
- D. At the end of this 15 second waiting period, shake test tube gently to mix the contents.
- E. Assess the color change, and compare it with the chart.

V. Interpretation:

- A. Normal: Presence of 0.25 g/dL (trace) reducing substance or less.
- B. Intermediate: 0.25 g/dL (trace) to 0.5 g/dL (1+).
- C. Abnormal: >0.5 (1+) g/dL is indicative of carbohydrate intolerance.

VI. Reporting:

Report as negative through 4+. Grading is determined by the color chart.

Note that Sucrose is not a reducing sugar and will not react in this test. However, large amounts of glucose and fructose are found in the stool with sucrose intolerance, presumably due to the hydrolysis of sucrose by intestinal bacteria. Therefore, the test will be positive.

VII. Quality Control:

Each new lot of Clinitest tablets must be quality controlled using a positive and negative control. Record results on the QC log.

Positive Control:

1. Add 5 drops of abnormal control to a test tube. (From Urinalysis)
2. Add 10 drops of distilled water to the test tube.
3. Add one Clinitest tablet and allow reaction to take place for 15 seconds.
4. Compare color of solution with color chart.
5. Acceptable range is between Trace and 3+.

Negative Control:

1. Add 15 drops of distilled water to a test tube.
2. Add one Clinitest tablet and allow reaction to take place for 15 seconds.
3. Compare color of solution with color chart.
4. Acceptable range is "Negative"

VIII. References:

Todd, Sanford, Davidsohn: Clinical Diagnosis and Management, 17th Ed., 1984, pg. 572.

Strasinger, Susan King: Urinalysis and Body Fluids, FA Davis Co. 1994, pg. 203.

Document Control

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