Total protein
Biuret Reagent

REF: 310 001  (2 x 100ml)  200 test
REF: 310 002  (4 x 100ml)  400 test
REF: 310 003  (8 x 100ml)  800 test
REF: 310 004  (4 x 500ml)  1000 test
REF: 310 005  (2 x 250ml)  500 test

Intended Use
Spectrum Diagnostics total protein reagent is intended for the in-vitro quantitative, diagnostic determination of total protein in human serum on both automated and manual systems.

Background
Plasma proteins are mainly synthesized in the liver and are involved in the maintenance of normal water distribution between tissues and blood, as well as acid-base balance. Due to some pathological conditions, both total protein level and the ratio of different fractions may change independently of one another. Hyperproteinemia may be detected during dehydration associated with diarrhea or vomiting. The total protein levels also increase in multiple myeloma. Hypoproteinemia may occur as a result of prolonged low protein diet and in some pathological conditions such as nephrotic syndrome, bleeding, sprue, and salt retention.

Method
Coloremetric method (Biuret reagent).

Assay Principle
In alkaline medium the copper reacts with the peptide bonds of proteins to form the characteristic pink to purple biuret complex. Sodium potassium tartrate prevents copper hydroxide precipitation, and potassium iodide prevents the autoreduction of copper.

Reagents
Standard Total protein (ST) 6.0 g/dL
Reagent (R) 1.0 ml
Copper sulfate 12.0 mmol/L
Sodium potassium tartrate 40.9 mmol/L
Potassium iodide 19.8 mmol/L

(C)-Corrosive contains caustic materials.

Calculation
Serum protein conc. (g/dL) = \frac{A_{\text{specimen}}}{A_{\text{standard}}} \times 6

Note: For turbid and icteric sera, prepare a serum blank by adding 20 µl serum to 1 ml saline into a labeled test tube. Read absorbance of serum blank at 540 nm vs water and subtract serum blank absorbance from test absorbance before calculating results.

Quality Control
Normal & abnormal commercial control serum of known concentrations should be analyzed with each run.

Performance Characteristics
Precision
Within run (Repeatability)

Run to run (Reproducibility)

For further information, refer to the Total Protein reagent material safety data sheet.

Precautions and Warnings
Do not ingest or inhale. In case of contact with eyes or skin; rinse immediately with plenty of water and seek medical advice in case of accident or if you feel unwell, seek medical advice immediately.

Reagent Preparation, Storage and Stability
Spectrum Total protein reagents are supplied ready-to-use and stable up to the expiry date labeled on the bottles. The reagents are stable at 15 – 25 °C. Only the standard is needed to be kept refrigerated at (2 - 8 °C).

Deterioration
Do not use The total protein regents if precipitate forms. Failure to recover control values within the assigned range may be an indication of reagent deterioration.
Methods Comparison

A comparison between Spectrum Diagnostics Total Protein reagent and a commercial reagent of the same methodology was performed on 20 human sera. A correlation of 0.978 was obtained.

Sensitivity

When run as recommended, the minimum detection limit of this assay is 1.0 g/dL.

Linearity

The reaction is linear up to total protein concentration of 12 g/dL. Specimens showing higher concentration should be diluted 1+1 using physiological saline and repeat the assay (result • 2).

Interfering Substances

Serum, plasma

Hemolysis
No interference up to hemoglobin level of 7.5 g/L.

Icterus
No significant interference up to a bilirubin level of 30 mg/dL.

Lipemia
No significant interference.

Drugs

Sera from patients receiving dextran may cause artificially high levels due to turbidity during color development. This positive bias can be minimized by centrifuging the reaction mixture before reading the absorbance.

Expected Values

| Adults | 6.6 – 8.7 g/dL |
| Children (< 1 year) | 6.0 – 8.0 g/dL |
| Children (< 1 year) | 4.8 – 7.6 g/dL |
| Newborns (< 4 weeks) | 4.6 – 6.8 g/dL |
| Prematures | 3.4 – 5.0 g/dL |

Spectrum Diagnostics does not interpret the results of a clinical laboratory procedure; interpretation of the results is considered the responsibility of qualified medical personnel. All indications of clinical significance are supported by literature references.

Analytical Range

1.0 – 12 g/dL.

Waste Disposal

This product is made to be used in professional laboratories. Please consult local regulations for a correct waste disposal. SS6: dispose of this material and its container at hazardous or special waste collection point. SS7: use appropriate container to avoid environmental contamination. SS1: avoid release in environment. Refer to special instructions/safety data sheets.

References


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