Albumin - BCG
(Acetate Buffer)

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

Background
Albumin is the major serum protein in normal individuals. It maintains the plasma colloidal osmotic pressure, binds and solubilizes many compounds such as calcium and bilirubin. Elevated serum albumin levels are usually the result of dehydration. Hyperalbuminemia is of little diagnostic significance. Hypoalbuminemia is very common in many diseases including malabsorption, liver diseases, kidney diseases, severe burns, infections, cancer and some genetic abnormalities. In severe hypoalbuminemia (less than 2.5 g/dL), the low plasma oncotic pressure allows water to move out of the blood capillaries into the tissues causing edema.

Method
Modified bromocresol green colorimetric method.

Assay Principle
Measurement of albumin is based on its binding to the indicator dye bromocresol green (BCG) in pH 4.1 to form a blue-green colored complex. The intensity of the blue-green color is directly proportional to the concentration of albumin in the sample. It is determined by monitoring the increase in absorbance at 623 nm, or 578 nm.

Specimen Collection and Preservation
The only acceptable anticoagulants are heparin and EDTA. Use preferably fresh serum. Serum should be separated immediately from the clot. The biological half-life of albumin in blood is 3 weeks. Stability: 1 day at 15 – 25 °C; 4 weeks at 4 – 8 °C; 6 months at -20 °C

System Parameters
Wavelength 623 nm (or 578 nm)
Optical path 1 cm
Assay type End-point
Direction Increase
Sample : Reagent Ratio 1 : 100
e.g.: Reagent volume 1 ml
Sample volume 10 µl
Temperature 20 – 25 °C
Incubation time 5 minutes at 20–25°C
Zero adjustment Reagent Blank
Sensitivity 1 g/dL
Linearity 7 g/dL

Calculation
Albumin concentration (g/dL) = \( \frac{A_{\text{specimen}}}{A_{\text{standard}}} \times 4 \)

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

Performance Characteristics
Precision
Within run (Repeatability)

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<tr>
<td>n</td>
<td>20</td>
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<tr>
<td>Mean (g/dL)</td>
<td>3.28</td>
<td>4.78</td>
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<tr>
<td>SD</td>
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<td>0.14</td>
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<tr>
<td>CV%</td>
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Run to run (Reproducibility)

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Deterioration
Do not use the Spectrum albumin reagents 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 Albumin reagent and a commercial reagent of the same methodology was performed on 20 human sera. A correlation of 0.97 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 an albumin concentration of 7.0 g/dL; specimens showing higher concentration should be diluted 1+1 with physiological saline and repeat the assay (result × 2).

Interfering Substances

Serum, plasma

Haemolysis

A haemoglobin level of 800 mg/dL results in 13 % positive bias.

Icterus

No significant interference up to a bilirubin level of 40 mg/dL.

Lipemia

No significant interference up to an intralipid level of 1000 mg/dL.

Expected Values

Adults

18 – 60 y  3.5 – 5.5 g/dL  (35 – 50 g/L)
>60 y  3.4 – 4.8 g/dL  (34 – 48 g/L)

Children

14-18 y  3.2-4.5 g/dL  (32-45 g/L)
4d-14 y  3.8-5.4 g/dL  (38-54 g/L)

Newborns

0-4 day  2.8-4.4 g/dL  (28-44 g/L)

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 – 7.0 g/dL.

Waste Disposal

This product is made to be used in professional laboratories. Please consult local regulations for a correct waste disposal.
S55: dispose of this material and its container at hazardous or special waste collection point.
S57: use appropriate container to avoid environmental contamination.
S61: avoid release in environment. refer to special instructions/safety data sheets.

References


ORDERING INFORMATION

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