ALBUMIN

Colorimetric method

ENDPOINT

PRINCIPLE

The method is based on the specific binding of bromocresol green (BCG), an anionic dye, and the protein at acid pH with the resulting shift in the absorption wavelength of the complex. The intensity of the color formed is proportional to the concentration of albumin in the sample.

\[ \text{BCG} + \text{Albumin} \rightarrow \text{BCG-albumin complex} \]

pH 4.3

REAGENT COMPOSITION

<table>
<thead>
<tr>
<th>R1</th>
<th>Bromocresol reagent. Succinate buffer 75 mmol/L, pH 4.2. BCG 0.12 mmol/L, tansientase 2 g/L (w/v).</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAL</td>
<td>Albumin standard. Bovine serum albumin 5 g/dL (50 g/L). Secondary standard traceable to SRM 927b.</td>
</tr>
</tbody>
</table>

STORAGE AND STABILITY

- Store at 2-8°C.
- The Reagents are stable until the expiry date stated on the label.

REAGENT PREPARATION

The Reagent and Standard are ready-to-use.

SAMPLES

Serum or EDTA plasma.
Albumin in serum and plasma is stable for 2 weeks at 2-8°C, and for up to 4 months at -20°C.

INTERFERENCES

- Heparin interferes with this dye binding method.
- Specimens containing dextran should be avoided.
- Lipemic samples (triglycerides > 10 g/L), require a blank correction. Use the same volume of sample with isotonic saline in the place of the reagent.
- Hyperbilirubinemia or hemolysis does not affect the assay since the absorption maximum of the complex absorbs at a wavelength distinct from those at which bilirubin and hemoglobin interfere.

MATERIALS REQUIRED

- Photometer or colorimeter capable of measuring absorbance at 630 ± 20 nm.
- Pipettes to measure reagent and samples.
- Timer. This is not necessary if the assay is performed in an automated instrument.

PROCEDURE

1. Bring reagents and samples to room temperature.
2. Pipette into labelled tubes:

<table>
<thead>
<tr>
<th>TUBES</th>
<th>Blank</th>
<th>Sample</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reagent</td>
<td>2.0 mL</td>
<td>2.0 mL</td>
<td>2.0 mL</td>
</tr>
<tr>
<td>Sample</td>
<td>-</td>
<td>10 μL</td>
<td>-</td>
</tr>
<tr>
<td>Standard</td>
<td>-</td>
<td>-</td>
<td>10 μL</td>
</tr>
</tbody>
</table>

3. Mix and let the tubes stand 10 minutes at room temperature.
4. Read the absorbance (A) of the samples and the standard at 630 nm against the reagent blank.

The color is stable for 30 minutes protected from light.

CALCULATIONS

\[ A_{\text{Sample}} \times C_{\text{Standard}} = \text{g/dL albumin} \]

Samples with concentrations higher than 7 g/dL should be diluted 1:2 with saline and assayed again. Multiply the results by 2.

If results are to be expressed as SI units apply:
\[ \text{g/dL} \times 10 = \text{g/L} \]

REFERENCE VALUES

<table>
<thead>
<tr>
<th>Serum, plasma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults</td>
</tr>
</tbody>
</table>

The range of values for hospitalized individuals varies between 1.4 and 4.8 g/dL.

It is recommended that each laboratory establishes its own reference range.