# ALBUMIN
## BCG METHOD

| Cat no. | size |
|---|---|
| 111001 | 2*100 |
| 111002 | 1*250 |
| 111003 | 4*100 |

### Intended use
Quantitative determination of Albumin in human serum and plasma.

**DIAGNOSTIC CHARACTERISTICS**
Albumin is the most abundant protein in human plasma.
It has three main functions:
1- It contributes towards maintaining the colloid oncotic pressure of plasma.
2 - It acts as non-specific transport vehicle for many nonpolar compounds.
3 -It is a source of endogenous amino acids
.Hyperalbuminemia: is of little diagnostic significance except in dehydration.

Hypoalbuminemia: is found as a result of several factors as:

1. reduced synthesis caused by liver diseases.

2. Reduced absorption of amino acids due to malabsorption syndromes or malnutrition.

3. Abnormal losses caused by renal disease (nephrotic syndrome, diabetes mellitus,chronic glomerulonephritis, systemic lupus erythematosus).

4. Gastrointestinal tract disease (ulcerative colitis, Crohn's disease) or skin damage (exfoliative dermatitis, extensive burns); congenital absence of albumin or an albuminemia .

**PRINCIPLE OF THE METHOD**
Albumin in the sample reacts with bromocresol green in acid medium forming a coloured complex that can be measured by spectrophotometry.

Albumin + BCG dye $\xrightarrow{\text{pH 4.3}}$ Albumin-BCG Complex

COMPOSITION

| **REAGENT(R)** | |
|---|---|
| Citrate buffer | 30 mmol/L |
| BCG dye | 0.25 mmol/L |
| **STANDARD(S)** | 4 g/dL |

**STORAGE…**
Store at 2-8°C.
Reagent and Standard are stable until the expiry date shown on the label when stored tightly closed and if contaminations are prevented during their use.
**REAGENT PREPARATION**
Reagent and Standard are provided ready to use.
**ADDITIONAL EQUIPMENT**
− Thermostatic water bath at 37°C
− Analyzer, spectrophotometer able to read at 578nm.
**SPECIMEN**
Serum, heparin or EDTA plasma.

**PROCEDURE**
1. Bring the Reagent to room temperature.
2. Pipette into labeled test tubes:

| | Blank | Standard | Sample |
|---|---|---|---|
| **REAGENT (R)** | 1.0 mL | 1.0 mL | 1.0 mL |
| **STANDARD (S)** | --- | 10 µL | --- |
| **SAMPLE** | --- | --- | 10 µL |

3. Mix thoroughly and incubate the tubes for 5 minutes at room temperature (16-25°C).
4. Measure the absorbance (A) of Standard and Sample at 578 nm against Blank. The color is stable for at least 30 minutes.

**CALCULATIONS**
The Albumin concentration in the sample is calculated using the following general formula:

$$\frac{A\ Sample}{A\ Standard} \times 4.0 = g/dL\ Albumin$$
$$\frac{A\ Sample}{A\ Standard} \times 144.9 = mmol/L\ Albumin$$

**REFERENCE VALUES**

| | |
|---|---|
| Newborn, 2 to 4 days | 2.8-4.4 g/dL |
| 4 days to 14 years | 3.8-5.4 g/dL |
| Adult | 3.5-5.0 g/dL |
| > 60 years | 3.4-4.8 g/dL |

**QUALITY CONTROL**
It is recommended to use the Genesis Control Serum level I And II to verify the performance of the measurement procedure.
Each laboratory should establish its own internal Quality Control.
**METROLOGICAL CHARACTERISTICS**
− Detection limit: 0.11 g/dL.
− Linearity limit: 7.0 g/dL.
− Repeatability (within run):

| Mean Concentration | cv | n |
|---|---|---|
| 2.57 g/dL | 1.8 % | 20 |
| 3.98 g/dL | 1.5 % | 20 |

− Reproducibility (run to run):

| Mean Concentration | cv | n |
|---|---|---|
| 2.57 g/dL | 2.8 % | 25 |
| 3.98 g/dL | 2.0 % | 25 |

**INTERFERENCES**
Bilirubin (>10 mg/dL), lipemia (triglycerides >7.5 g/L) and hemoglobin (>2.5 g/L) may affect the results.
Other drugs and substances may interfere.

**BIBLIOGRAPHY**
Doumas BT, Watson WA and Biggs HG. Albumin standards and the measurement of serum albumin with bromocresol green. Clin Chim Acta 1971: 31: 87-96.

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