Albumin. Bromocresol Green. Colorimetric Ref.: ALB-019
Quantitative Determination of albumin
Only for *in vitro* use in clinical laboratory
Store at 2-8ºC 2 x 125 mL R1

ALBUMIN

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PRINCIPLE OF THE METHOD
Albumin in the presence of bromcresol green at a slightly acid pH, produces a colour change of the indicator from yellow-green to green-blue. The intensity of the color formed is proportional to the albumin concentration in the sample[1,2,3,4].

CLINICAL SIGNIFICANCE
One of the most important serum proteins produced in the liver is albumin.
This molecule has an extraordinarily wide range of functions, including nutrition, maintenance of oncotic pressure and transport of Ca^{++}, bilirubin, free fatty acid, drugs and steroids.
Variation in albumin levels indicate liver diseases, malnutrition, skin lesions such as dermatitis and burns or dehydration[1,7,8].
Clinical diagnosis should not be made on a single test result; it should integrate clinical and other laboratory data.

REAGENTS
R Bromocresol Green pH 4,2, 50 mmol/L
Albumin Cal Albumin aqueous primary standard 5g/dL.

PREPARATION
Reagent and calibrator are ready to use.

STORAGE AND STABILITY
All the components of the kit are stable until the expiration date on the label when stored tightly closed at 2-8ºC, protected from light and contaminations prevented during their use.
Do not use reagents over the expiration date.
Albumin CAL: Once open is stable up to 1 month when stored tightly closed at 2-8ºC, protected from light and contaminations prevented during their use.
Signs of reagent deterioration:
- Presence of particles and turbidity.
- Blank absorbance (A) at 630 nm ≥ 0.40.

ADDITIONAL EQUIPMENT
- Spectrophotometer or colorimeter measuring at 630 nm.
- Matched cuvettes 1.0 cm light path.
- General laboratory equipment.

SAMPLES
Serum or plasma, free of hemolysis[1]: Stability 1 month at 2-8ºC or 1 week at 15-25ºC.

PROCEDURE
1. Assay conditions:
   Wavelength: ..... 630 nm (600-650)
   Cuvette: ..... 1 cm light path
   Temperature: 15-25ºC
2. Adjust the instrument to zero with distilled water.
3. Pipette into a cuvette:

	Blank	Standard	Sample
R (mL)	1,0	1,0	1,0
Calibrator(Note 1,2) (µL)	--	5	--
Sample (µL)	--	--	5

4. Mix and incubate for 10 min at room temperature (15-25ºC).
5. Read the absorbance (A) of the samples and Standard, against the Blank. The colour is stable 1 hour at room temperature.

CALCULATIONS
$$\frac{(A)\text{Sample}}{(A)\text{Standard}} \times 5 \text{ (Standard conc.)} = \text{g/dL Albumin in the sample}$$

Conversion factor: g/dL x 144.9 = µmol/L

QUALITY CONTROL
Control sera are recommended to monitor the performance of assay procedures. If control values are found outside the defined range, check the instrument, reagents and calibrator for problems.
Each laboratory should establish its own Quality Control scheme and corrective actions if controls do not meet the acceptable tolerances.

REFERENCE VALUES
3.5 to 5.0 g/dL[1].
These values are for orientation purpose; each laboratory should establish its own reference range.

PERFORMANCE CHARACTERISTICS
Measuring range: From *detection limit* of 0.04 g/dL to *linearity limit* of 6 g/dL.
If the results obtained were greater than linearity limit, dilute the sample 1/2 with NaCl 9 g/L and multiply the result by 2.

Precision:	Intra-assay (n=20)		Inter-assay (n=20)	
Mean (g/dL)	3.38	5.80	3.30	5.67
SD	0.02	0.03	0.26	0.04
CV (%)	0.52	0.49	0.78	0.69

Sensitivity: 1 g/dL = 0.126 A.
Accuracy: Results obtained using *BSM* reagents (y) didn't show systematic differences when compared with other commercial reagents (x).
The results obtained using 50 samples were the following:
Correlation coefficient (r): 0.99.
Regression equation: y= 0.98x + 0.09.
The results of the performance characteristics depend on the analyzer used.
Interferences: Bilirubin up to 110 mg/L, hemoglobin up to 1 g/L and lipemic sera up to 10 g/L no interfere[1,4].
A list of drugs and other interfering substances with albumin determination has been reported by Young et. al[5,6].

NOTES
1. Calibration with the aqueous Standard may cause a systematic error in automatic procedures. In these cases, it is recommended to use a serum Calibrator.
2. Use clean disposable pipette tips for its dispensation.
3. **BSM has instruction sheets for several automatic analyzers. Instructions for many of them are available on request.**

BIBLIOGRAPHY

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