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Determination of Serum Albumin

Albumin is the predominant protein in the serum and it has many functions:

1. *Regulatory functions*: regulates the osmotic pressure of plasma, and the distribution of water between blood plasma and the tissue.
2. *Transport function*: transport many physiologic substances such as drugs, antibiotics, various ions (Ca^{2+}, Mg^{2+}), amino acids, fatty acids, billirubin, uric acid and hormones.
3. *Catalytic function*: plasma enzymes are proteins.
4. *Structural function*: albumin also serves as a precursor for tissue proteins such as collagen and α-keratin.

Clinical significance of Albumin and Globulin:

T. Protein	Albumin	Globulin	Usual disorder
High	High	High	Dehydration
High	Normal	High	Multiple Myeloma
Normal	Low	High	Hepatic damage, Certain chronic infection
Low	Low	Normal	Renal diseases, inadequate diet, intestinal malabsorbtion, nephrotic syndrome
Low	Low	Low	3rd degree burns

The normal value of Albumin: 2.5-5.6 g/dl

Procedure

About 10 µl of serum is pipetted out in a clean and dry test tube. Then, [1]ml of reagent [a kit supplied by company] is added to the serum. The solution is mixed well and let the tubes stand 10 minute at room temperature. Set the photometer to 0 absorbance with working solution and Read absorbance of the sample and standard at wave length 630 nm.

	Standard	Sample	Blank
Working solution	2 ml	2 ml	2 ml
Sample	-	10µl	-
Standard	10µl	-	-

Calculation

$$\text{S. Albumin conc.} = \frac{\text{O. D sample}}{\text{O. D standard}} \times \text{standard concentration}$$