



Functions of Protein in the Human Body:-

Protein is an important component of every cell in the body

1- Repair and Maintenance: Body uses protein to build and repair tissues.

- Protein is an important building block of bones, muscles, skin, and blood.
- Protein is an important component of every cell in the body providing structure and strength to cells and tissues. They are part of the outer membrane of all cells in the human body
- Hair and nails are mostly made of protein. **Keratin** which is the protein structure of hair and nail

2- Energy: They provide energy for the body.

3- Hormones: Protein is involved in the creation of some hormones. These chemical substances (hormones) produced in the body that help controls and regulates the activity of cells or organs. Hormones are essential for every activity of life, including the processes of digestion, metabolism, growth, reproduction, and mood control. Many hormones are secreted by special glands or organs.

An example of hormone is insulin produced by specialized cells in the pancreas. Insulin regulates glucose level in the blood. Inadequate amount of hormone insulin in the human body can cause diabetes: one of the major human diseases today.

4- Enzymes are proteins that increase the rate of chemical reactions in the body.

5- Immune system: Protein forms antibodies (gamma globulin) that help prevent infection and disease.

6- Transportation and Storage of Molecules: Protein is a major element in transportation of molecules. , Protein is also sometimes used to **store** certain molecules. Ferritin is an example of a protein that combines with iron for storage in the liver.

7- Proteins Function in Movement



Muscles are able to contract and produce movement because of motor proteins. Motor proteins found in muscle include the myosin, kinesin, and dynein. These proteins coordinate to each other to produce mechanical forces that will result in muscle contraction.

blood protein

A typical blood profile will provide four different measurements total protein, albumin, globulins and fibrinogen, all blood proteins are synthesized in liver except the gamma globulins.

Albumin (66 kDa), single polypeptide chain having 585 a. a with 17 disulfide bonds, is the most abundant protein (60%) in the blood plasma. (3.5-5.0 g/dl)

Half-life: 17-20 days

Synthesis of albumin: – Liver produced about 12 g albumins per day which represent 50% of total hepatic protein production.

– For this reason, measurement of serum albumin concentration is used to assays **liver function test**

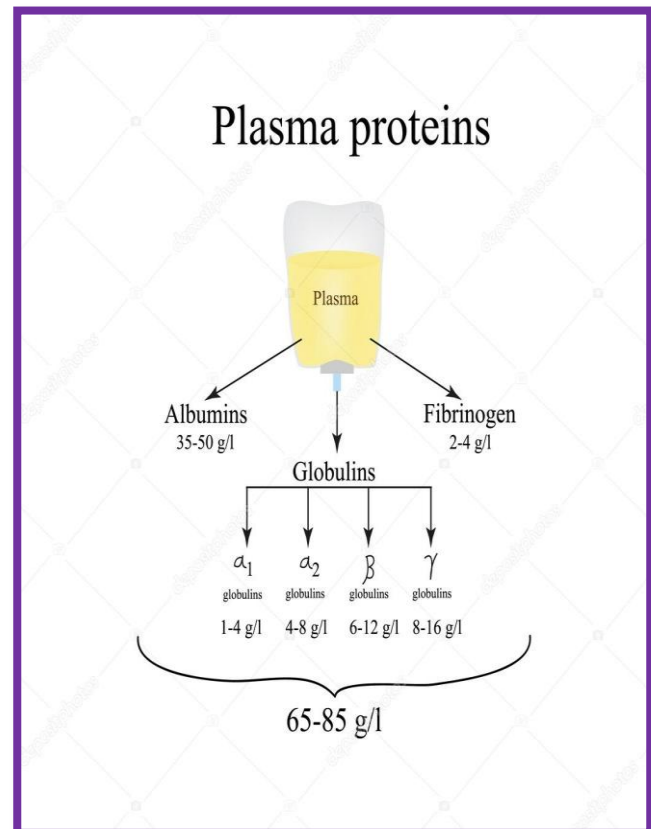
Globulins are globular proteins that have higher molecular weights than albumins .

Globulins, albumins, and fibrinogen are the major blood proteins. The globulin group of proteins consists of fractions. are four major groups : gamma , beta , alpha 2 , alpha 1

Gamma (antibodies) is produced by immune system while most of the other proteins are made in the liver.

Each fractions consists of a number of different protein with different functions. transport ions, hormones, lipids and assisting in immune function.

Fibrinogen is a glycoprotein that present in the blood. During tissue and vascular injury it is converted enzymatically by thrombin to fibrin is essential for blood clotting. The normal concentration of **Fibrinogen** in human blood is about 2-4 g/l



Total protein abnormalities

the total protein represents the sum of albumin, globulins and fibrinogen _it is important to know which protein fraction high or low than normal value Total protein measurements can reflect nutritional status, kidney disease, liver disease, and many other conditions. If total protein is abnormal, further tests must be performed to identify which protein fraction is abnormal, so that a specific diagnosis can be made.

Quantitative methods for measuring plasma proteins

Spectrophotometer



biochemistry auto analyzer

