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Topic: Protein (contd.)
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Protein: Structure, Classification and Properties (continued):

Classification of Proteins:

Proteins are classified based upon:

- (1) Their solubility and
- (2) Their structural complexity.

A. Classification Based upon Solubility:

On the basis of their solubility in water, proteins are classified into:

1. Fibrous proteins:

These are insoluble in water. They include the structural proteins. They have supportive function (e.g., collagen) and/or protective function (e.g., hair keratin and fibrin).

2. Globular proteins:

They are soluble in water. They include the functional proteins, e.g., enzymes, hemoglobin, etc.

B. Classification Based upon Structural Complexity:

On the basis of their structural complexity they are further divided into:

- (1) Simple
- (2) Conjugated and
- (3) Derived proteins.

1. Simple proteins:

Proteins which are made up of amino acids only are known as simple proteins.

They are further sub-divided into:

(a) Albumins:

They are water soluble, heat coagulable and are precipitated on full saturation with ammonium sulphate, e.g., serum albumin, lactalbumin and ovalbumin.

(b) Globulins:

They are insoluble in water, but soluble in dilute salt solutions. They are heat coagulable and precipitate on half-saturation with ammonium sulphate, e.g., serum globulin and ovo-globulin.

(c) Glutelins:

They are insoluble in water and neutral solvents. Soluble in dilute acids and alkalies. They are coagulated by heat, e.g., glutelin of wheat.

(d) Prolamines:

Water insoluble but soluble in 70% alcohol, e.g., gliadin of wheat, proteins of corn, barley, etc.

(e) Histories:

Water soluble, basic in nature due to the presence of arginine and lysine, found in nucleus. They help in DNA packaging in the cell. They form the protein moiety of nucleoprotein.

(f) Protamine's:

Water soluble, basic in nature, not-heat coagulable. Found in sperm cells, hence component of sperm nucleoprotein.

(g) Globin's:

They are water soluble, non-heat coagulable. e.g., globin of haemoglobin.

(h) Albuminoids or scleroproteins:

Insoluble in all neutral solvents, dilute acids or alkalies, e.g., keratin of hair and proteins of bone and cartilage.