Topic: Protein; Properties

B.Sc. Botany Hons. III

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Properties of Proteins

❖ Denaturation:

- ✓ Partial or complete unfolding of the native (natural) conformation of the polypeptide chain is known as denaturation.
- ✓ This is caused by heat, acids, alkalies, alcohol, acetone, urea, beta-mercaptoethanol.

❖ Coagulation:

- ✓ When proteins are denatured by heat, they form insoluble aggregates known as coagulum.
- ✓ All the proteins are not heat coagulable, only a few like the albumins, globulins are heat coagulable.

❖ Isoelectric pH (pH^1):

- ✓ The pH at which a protein has equal number of positive and negative charges is known as isoelectric pH.
- ✓ When subjected to an electric field the proteins do not move either towards anode or cathode, hence this property is used to isolate proteins.
- ✓ The proteins become least soluble at pH^I and get precipitated.
- ✓ The pH^I of casein is 4.5 and at this pH the casein in milk curdles producing the curd.

❖ Molecular Weights of Proteins:

- ✓ The average molecular weight of an amino acid is taken to be 110.
- ✓ The total number of amino acids in a protein multiplied by 110 gives the approximate molecular weight of that protein.

- ✓ Different proteins have different amino acid composition and hence their molecular weights differ.
- ✓ The molecular weights of proteins range from 5000 to 10^9 Daltons. Experimentally the molecular weight can be determined by methods like gel filtration, PAGE, ultra centrifugation or viscosity measurements.