Protein classification.

Imp!

- Based on function.
- Based on composition & solubility
- Based on shape.
- Based on Nutritional value.

Based on functional

✓ frequently asked uni question.

(1) catalytic proteins — eg: enzymes
(2) structural proteins — collagen, elastin.
(3) Contractile protein — eg: myosin, actin.
(4) transport proteins — eg: Hb, albumin
(5) Regulatory proteins — Hormones
(6) Genetic — Histones.
(7) Protective. — Ig, clotting factors
(8) storage — Ferritin, Hemosiderin.

Classification Based on : Composition & Solubility.

- Simple : Contains amino acids only.
  eg: albumin, globulin.

- Conjugated : ~~blood~~ Bonded to a nonprotein group (prosthetic group) such as sugar, nucleic acid or lipid.
  eg: glycoproteins, lipoproteins, nucleoproteins, phospho proteins, metalloproteins (Fe in Hb, Zn in carbonic anhydrase) chromoproteins (Hemoglobin).

- Derived : degradation products of native proteins.
  proteoses, peptones.

- ~~Simple~~ : contains amino acid. or

II. Based on shape.

- Fibrous : Elongated or needle shaped, Insoluble in water, (minimum solubility).

resist digestion.

Function as structure.

eg: collagen, Keratin, elastin.

- Globular : folded into ovate or spherical in shape.

function as enzymes, hormones or transport proteins.

easily soluble.

eg: Albumin, globulin.

IV. Based on Nutritional value.

2 groups.

(1) Complete proteins: (high biological value)

- First class proteins.
- contains all essential amino acids in required proportion.

eg: Casein of milk, egg.

(2) Incomplete proteins. (low biological value)

- lack one or more essential amino acids.
- Cannot promote growth in children.
- sustain body weight.
- proteins from pulses lack met.
  cereals lack - lysine.
- Combined diet for adequate growth.

Poor Proteins

(zero biological value).

- lack of many essential amino acids.
- will not sustain Original body weight

eg: zein from corn lacks lys and Trp.

Biologically Import peptides.

1. Glutathione (gamma-glutamyl cysteinyl glycine).

Tripeptide

- Important antioxidant
- Involved in RBC membrane integrity.
- Keeping enzymes in active state.

2. ~~Thyrotropin~~ releasing hormone (TRH)

→ tripeptide.

3. Oxytosin & Vasopressin (ADH).

- NaNopeptides
- secreted by posterior pituitary.

4. Angiotensin I.

- cause hypertension.

5. Gramicidin S. - an antibiotic.

Levels of Protein structure.

- primary: The no. and sequence of amino acid in the chain and disulfide link
- Secondary: Configurational relationship between residues such as hydrogen bonding eg: are α helix and β pleated sheet.
- Tertiary: Complete 3-D conformation
- Quaternary: association of two or more peptide chains to form protein.