Chapter 4: Chemical Composition of The Cell.

1. Primary

- linear sequence of amino acids.
- -types of bonds present : peptide bonds (between amino acids)

2. Secondary

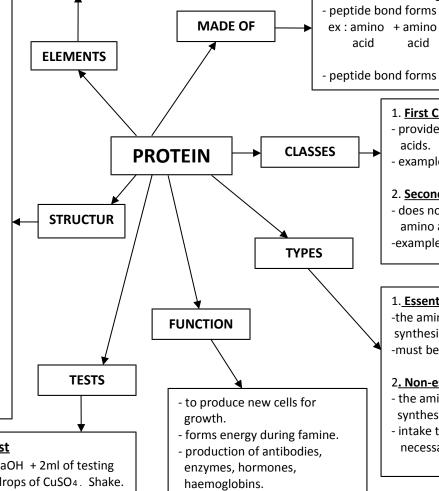
- peptide chain is folded and twisted forming α helix structure or β pleated sheets.
- types of bonds present : peptide bonds (between amino acids) and hydrogen bonds (the maintain the α and β structures.)
- -example: Keratin (hair protein) and Silk.

3. Tertiary

- α helix structure or β pleated sheets are folded in various ways to form a globular proteins.
- types of bonds present : peptide bonds (between amino acids), hydrogen bonds and disulphide bonds (to maintain globular structure.)
- -example: enzymes, hormones, antibodies.

4. Quaternary

- 2 or more tertiary structures are combined together.
- types of bonds present : peptide bonds (between amino acids), hydrogen bonds and disulphide bonds (to maintain quaternary structure).
- -example; haemoglobin, chlorophyll.



-forms connective tissues.

muscles, ligaments.

plasma membrane.

example cartilage, tendons,

-forms protein molecules in

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- amino acids.
- amino acids bind together to form polypeptide chain.

dipeptide + H2O

- peptide bond forms between 2 amino acids.
 - acid
- peptide bond forms from condensation process.

1. First Class

- provides all the essential amino acids.
- example: meat, fish, milk.

2. Second Class

- does not have all the essential amino acids.
- -example: plant proteins

1. Essential

- -the amino acids that cannot be synthesized by the body.
- -must be taken through food.

2. Non-essential

- the amino acids that can be synthesized by the body.
- intake through food is not necessary.

1. Millon's test.

- Add 2ml testing solution
- + 2ml Millon's reagent . Heat.
- (i) if brick red precipitate present, means protein is present.
- (ii) if brick red precipitate is not present, means protein is absent.

2. Biuret test

-Add 1ml of NaOH + 2ml of testing solution +2 drops of CuSO₄. Shake.

-C, H, O, N, P, S

- (i) if purple colour solution forms, means protein is present.
- (ii) if purple colour solution is not formed, means protein is absent.