

D.B. College (Jaynagar) Lect. no:- 16  
B.Sc (II) How Carbohydrate

Guest

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- ◆ Monosaccharides which differ in configuration at a carbon atom other than the anomeric carbon are called epimers. They glucose and mannose which differ in configuration at C<sub>2</sub> are called C<sub>2</sub>-epimers while glucose and galactose which differ in configuration at C<sub>4</sub> are called C<sub>4</sub> epimers.
- ◆ All monosaccharides (aldoses and ketoses) and disaccharides except sucrose reduce Fehling's solution, Benedict's solution, Tollen's reagent and hence are called reducing sugars. Other (sucrose, starch, cellulose) which do not reduce these reagents are called non-reducing sugars.

◆ Although Starch and Cellulose both contain an aldehydic group at the end of the chain but still they do not reduce Tollen's reagent. (The reason being that due to high molecular weights of these polysaccharides their reducing properties are weakly marked and hence no detectable reducing properties are observed).

◆ The spontaneous change of specific rotation with time to an equilibrium value is called mutarotation. All reducing carbohydrate i.e. monosaccharides (glucose, fructose, mannose etc.) and disaccharides (maltose, lactose etc.) undergo mutarotation in aqueous solutions.

◆ Since glucose (grape sugar) is dextrorotatory it is also called dextrose. Similarly, fructose being laevorotatory is also called levulose.

- ◆  $\alpha$ -Amino acids are the building blocks of proteins or proteins are the Condensation Polymers of  $\alpha$ -amino acids.
- ◆ All the L-amino acids forming proteins have L- Configuration while all the naturally occurring Carbohydrates have D- Configuration.
- ◆ Keratin in skin, hair, nails and wool, Collagen in tendons, fibroin in silk and myosin in muscles are all fibrous proteins and have linear structures.
- ◆ Enzymes, hormones (insulin, thyroglobulin) anti bodies, haemoglobin, fibrinogen, albumin etc. are all globular proteins. These have folded structures. The folding of globular proteins occurs due to (i) disulphide bridges, (ii) intramolecular H - bonding (iii) Van der Waals' interactions and (iv) dipolar interactions.

- ◆ Insulin is a protein or peptide hormone.  
It consists of 51 amino acids arranged in two polypeptide chains containing 21 and 30  $\alpha$ -amino acid residues respectively. The two peptide chain are held together by two Cystine disulphide Cross-links.
- ◆ The disease Sickle Cell Anaemia is caused by defective haemoglobin which is obtained by replacement of just one amino acid (i.e., glutamic acid by Valine) in the sequence of the protein haemoglobin.
- ◆ Enzymes are biological catalysts. Chemically all enzymes are globular proteins.
- ◆ DNA Contains 2-deoxy D-( $\beta$ ) ribose as the pentose sugar while RNA Contains D-( $\beta$ ) ribose as the sugar.
- ◆ Both DNA and RNA Contain the same two purine bases, i.e. adenine and guanine. The pyrimidine bases are however, different whereas DNA Contains Cytosine and thymine, RNA Contains Cytosine and Uracil.
- ◆ Waxes are the esters of long chain fatty acids.