CARBOHYDRATES

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What is carbohydrates

- Carbohydrates are the chief source of energy. They are the poly hydroxy aldehydes or ketones or compounds which give rise to aldehydes or ketones on hydrolysis.

CLASSIFICATION

- MONOSACCHARIDES

  Cn(H2On) based on functional groups they can be aldoses like glyceraldehyde glucose and ketoses like dihydroxy acetone,fructose etc

DISACCHARIDES

- They are made up of two monosaccharide units connected by glycoside bond
- Example maltose (Glucose+ Glucose)
- Lactose (Glucose + Galactose)
- Sucrose (Glucose + Fructose)

OLIGOSACCHARIDES

- They consists of 3 to 10 monosacharide units connected by glycosidic bonds
- Example Maltotriose

POLYSACCHARIDES

- They contain more than 10 molecules of monosaccharides with a general formula
- (C6 H10 O5)n

DIGESTION AND ABSORPTION OF CARBOHYDRATES

- Digestion- Amylases
- Salivary amylase(Ptylin) and Pancreatic amylase acts on complex polysaccharides and convert to dextrins
- Partially digested dextrins along with oligosaccharides and disaccharides reaches the intestine the pancreatic amylase will act on them.

ABSORPTION

- Carbohydrates are absorbed as mono saccharides,especially as glucose from the intestinal lumen through the mucosal epithelial cells.
- Active transport -Help of Protein
- Facilitated transport- Glucose Transporters

DISORDERS OF DIGESTION AND ABSORPTION OF CARBOHYDRATES

- Lactose Intolerance- Occurs due to the deficiency of the enzyme Lactase.As a result the lactose cannot be digested.
- Ex; For Infants leading to vomiting and diarrhea
- Sucrose deficiency- when the enzyme sucrase is deficient, sucrose cannot be digested to glucose and fructose leads to hypoglycemia.

METABOLISM OF CARBOHYDRATES

- After the absorption the monosaccharides like glucose are carried to the liver and converted into Glucose-6 –Phosphate.
- Glucose stored in muscle and liver in the form of Glycogen by Glycogenesis – Glycogenolysis- Glucose
- During Starvation Carbohydrates derived from Gluconeogenesis and blood glucose level maintained.