

## Basics of nutrition

Food is essential in the continuation of life, Its elements are important and essential in maintaining the life of the organism and are called "**Basic nutrients**" these include water, carbohydrates, lipids, proteins, vitamins, and minerals, and these together all provide the body with the energy necessary for growth and various metabolic processes.

**Water** is an essential component of the cell, 70-75% of the cell is made up of water. It contains dissolves chemicals and suspended particles. Water helps in transport of substances from one part of the cell to another.

**Minerals** include Potassium, Sodium, Magnesium, Phosphate, Sulfate Bicarbonate, Chloride and Calcium. Necessary for cellular control mechanisms.

## Carbohydrates

Carbohydrates are an important element in nutrition because they are easy to digest compared to other elements such as fats and proteins. There are three main components of carbohydrates: carbon, oxygen and hydrogen.

## Classification of Carbohydrates

### A. Monosaccharides

- 1- It contains in its molecules one sugar unit.
- 2- These sugar contain 3-9 carbon atoms.
- 3- Simplest form that cannot be hydrolyzed further into smaller units.
- 4- Crystalline, soluble in water, and sweet in taste.

For example: "Glucose", "Fructose" and " Galactose"

## B. Oligosaccharides

- 1- Contain 2-10 units of monosaccharides joined by glycosidic bonds.
- 2- They can be hydrolysed by enzymes or acids to monosaccharides.
- 3- Powdery or crystalline, soluble in water and sweet in taste.

For example: "**Sucrose**": consists of "Glucose- Fructose"

"**Maltose**": consists of "Glucose- Glucose"

"**Lactose**": consist of "Glucose- Galactose"

## C. Polysaccharides

- 1- Contain many monosaccharides joined by glycosidic bonds.
- 2- They can be hydrolysed by enzymes or acids.
- 3- Insoluble in water, tasteless.
- 4- High molecular weight (polymers), some of them either linear or branched.

### Polysaccharides classified in to:

- 1- **Homopolysaccharides:** It produces one type of monosaccharide when hydrolyzed. For example: **Starch, Glycogen and Chitin.**
- 2- **Heteropolysaccharides:** It produces more than one type of monosaccharide when hydrolyzed. For example: **Hyaluronic acid, Heparin.**