

Basics of Nutrition

Basic nutrients :The elements are important and essential in maintaining the life of the organism .

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 , 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.**