Topic: **FOOD, NUTRITION AND HEALTH**

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BASIC KNOWLEDGE OF IMPORTANT NUTRIENTS

Nutrients are the constituents in food that must be supplied to the body in suitable amounts. These include carbohydrates, fats, proteins, minerals and vitamins.

Carbohydrates

Carbohydrates are sugars or polymers of sugars such as starch, that can be hydrolysed to simple sugars by the action of digestive enzymes or by heating with dilute acids. Carbohydrates are classified as monosaccharides or simple sugars (glucose, fructose), disaccharides or double sugars (sucrose, lactose) and polysaccharides which include many molecules of simple sugars (starches, dextrin).

Functions

1. The body uses carbohydrate as a source of energy. One gm of carbohydrate provides 4 kilocalories.
2. They are the major source of energy for muscular work.
3. The main source of energy for the central nervous system is glucose.
4. The body mainly uses carbohydrate as the source of energy, thus sparing the tissue protein breakdown for energy purpose. This is called “protein sparing action of carbohydrates”.
5. In the liver, carbohydrates have special functions to perform. They include detoxifying action and a regulating influence on protein and fat metabolism.
6. The heart muscle mainly uses glucose as a source of energy.
7. Excess of calories is stored in the form of fat in the adipose tissue.

8. Consumption of indigestible polysaccharides or fibre prevents constipation and reduces the incidence of heart diseases, diabetes mellitus and colon cancer.

Table- 1, Sources of carbohydrates

FOODS	CARBOHYDRATE %
RICH SOURCES	
Sugar, jaggery,	85 - 99
Cereals and millets	63 - 79
Dried fruits	67 - 77
GOOD SOURCES	
Pulses	56 - 60
Milk powder , full fat	38 - 39
Milk powder, skimmed	54 - 55
Roots and tubers	22 - 39
FAIR SOURCES	
Fresh fruits	10 - 25
Milk	4
Nuts and oil seeds	10 - 25

Fats

The term lipid or fat is applied to a group of naturally occurring substances characterised by their insolubility in water. The lipids present in the diet of animal and human body includes triglycerides, phospholipids and cholesterol.

Functions

1. Fats are a concentrated source of energy. One gram of fat provides 9 calories.
2. Fat is essential for the absorption of fat-soluble vitamins like vitamin A, D, E and K.
3. Fats improve the palatability and gives a satiety value (i.e.) feeling of fullness in the stomach.
4. Fats are deposited in adipose tissue and thus serve as a reserve source of energy during starvation and illness.

5. They protect vital organs in the body by forming a lining on top.

6. They act as insulators against heat and cold.

7. They are the essential constituent of the membrane of every cell.

8. Phospholipids are present in the plasma in combination with proteins as lipoproteins which are involved in the transport of fat and cholesterol.

9. Phospholipids are present in large amounts in the nervous system and essential for its function.

10. Cholesterol serves as a precursor for the formation of bile acids.

Table- 2, Sources of fats

FOOD	FAT%
RICH SOURCES	
Pure oils and fats	100
Ghee and vanaspathi	100
Butter	80-81
GOOD SOURCES	
Nuts and oil seeds	40-60
Milk powder, fullfat	26
Eggs	14
Meat and fish	10-15
FAIR SOURCES	
Milk, cow's	4
Milk, buffalo	7
Pulses (whole)	3-5
Cereals and millets	2-3

Proteins

Dietary protein performs all three functions of nutrients. It is needed for growth, maintenance, and repair of body tissues. It regulates key processes within the body and only excess protein can be used as a source of energy.

Functions

1. Proteins are required for the growth and maintenance of tissues.
2. It is needed for the formation of essential body compounds.
3. It regulates water balance in the body.
4. It helps in the transport of nutrients.
5. It is required for the maintenance of appropriate pH.
6. It is also a source of energy. One gram of protein provides 4 calories.
7. It fights the body against diseases.
8. It helps in detoxifying action.

Table- 3, Sources of proteins

FOODS	PROTEIN%
RICH SOURCES	
Meat, fish and liver	18-20
Eggs	14
Milk powder, full fat	26
Cheese	18-20
Pulses, dry	18-24
Nuts and oilseeds	18-26
Soyabean	35-40
GOOD SOURCES	
Cereals and millets	6-12