

Topic: FOOD NUTRIENTS

Class: J S 2

Meaning of food nutrients

Nutrients are the chemical substances contained in food that promotes growth, supplies energy and regulates all body processes.

Types of food nutrients, their functions, sources and deficiency diseases

- 1. Protein:** Proteins are the main body building food substances necessary for building new cells and repairing worn out tissues. Proteins are composed of smaller units called **amino acids**.

Functions of protein

- i. They promote growth.
- ii. They can serve as source of energy in the absence of carbohydrates and fats.
- iii. They are responsible for transfer of hereditary characteristics from parents to offspring.
- iv. Hormones and anti-bodies are protein in nature.
- v. They repair worn-out tissues.

Sources of protein

Animal source: meat, cheese, egg, fish, chicken etc

Plant source: legumes, cereals, nuts etc

Deficiency

Kwashiorkor and marasmus

- 2. Carbohydrates:** Carbohydrates are usually produced by plants through a process known as photosynthesis. It is one of the major macro-nutrients required by the body.

Functions of carbohydrates

- i. They act as an energy source in the body.
- ii. Carbohydrates spare protein. In the presence of carbohydrates, protein will not be used to produce energy.
- iii. They add bulk to faeces thereby acting as mild laxative.
- iv. They give flavor and variety to the diet.
- v. Carbohydrates assist the complete oxidation of fats and oils in the b

Sources of carbohydrates

Cereals like; maize, rice, oats, millet, banana, plantain tubers such as yams, cassava, cocoyam, potatoes etc

Deficiency

A deficiency of carbohydrates in the body will lead to a situation whereby the protein in the muscles will be used for the production of energy and thereby result in wasted muscles. Excessive consumption can cause dental problems and also lead to obesity.

- 3. Fats and oils:** fats and oils are another group of the macro-nutrients required by the body.

Functions of fats and oils

- I. Serve as source of heat and energy. They are the most concentrated source of energy.
- II. They spare protein because their availability reduces the need to burn protein for energy.
- III. Promote healthy hair and skin.
- IV. They assist in the maintenance of constant body temperature.
- V. Provide satiety and hence delay the onset of hunger because they are not easily digested.
- VI. They assist to cushion the delicate organs in the body.

Sources

Lard, butter, margarine, fatty fish, nuts and vegetables

Deficiency

Rough skin and excessive consumption can lead to overweight or obesity.

- 4. Vitamins:** vitamins unlike proteins, carbohydrates and fats are not required in a large quantity by the body. Vitamins are classified into two groups;

- i. **Water soluble vitamins:** they are those that can dissolve in water (eg) B-complex (B1, B2, B6, B12, B15), folic acid, niacin, biotin, pantothenic acid and vitamin C.
- ii. **Fat soluble vitamins:** vitamin A, D, E, and K.

Functions of vitamins

- i. Protects the body from diseases.
- ii. Help the body use food for energy, growth and repair.
- iii. Important for vitality.
- iv. It gives bright vision.
- v. It helps in blood coagulation.

Sources of vitamins

Fruits, vegetables, egg-yolk, milk, meat, cod-liver oil, palm oil, carrots etc

Deficiency

- i. **Body** will easily be affected by diseases.
- ii. Poor vision.
- iii. Weakness and loss of appetite.
- iv. Haemorrhage.

5. **Mineral elements:** mineral elements are inorganic nutrients. They are also required in little quantity compared to carbohydrates, fats, and oils and protein.

Functions of mineral elements

- i. They assist in regulating body processes.
- ii. For growth and maintenance of strong bone and teeth.
- iii. Regulates abnormal clotting of blood.
- iv. Maintenance of acid –base balance of the body.

Sources of mineral elements

Milk, eggs, green leafy vegetables, meat, liver, beans, seafood, legumes etc

Deficiency

Weak bone: rickets in infants and osteomalacia in the adult, tiredness, headache, irritability and muscle spasm, poor quality of teeth.

6. **Water:** water is very important for the existence of plants and animals.

Functions of water

- i. Helps digestion.
- ii. Important for body tissue and fluids such as saliva, blood, urine, sweat etc
- iii. Regulates body temperature.
- iv. Quenches thirst.
- v. Helps in absorption of nutrients in the body.
- vi. Keeps the lining membrane of organs moist eg. bone joints, eyes (ie) it acts as a lubricant.

Sources of water

Fruits, the water we drink, vegetables, beverages, beer etc

HOME WORK

1. Explain the function of the following nutrients **phyloquinone, retinol and tocopherols respectively.**
2. State two functions of vitamin D.
3. State any 3 sources of calcium.
4. Explain what happens to the body when it starts making use of available protein as a source of energy.