

## 2

# Components of Food

### Let us Learn about

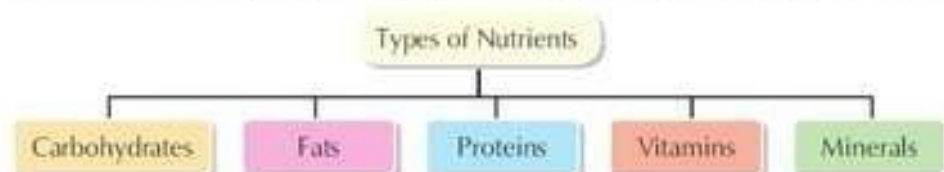
- Significance of nutrients
- Eat healthy, stay healthy
- Deficiency diseases



### Previous Connect

The food we eat has useful substances called nutrients. It is important for us to eat a balanced diet to grow well. If we do not eat a balanced diet, we can suffer from deficiency diseases.

We have learnt in the previous chapter that food is essential for the body as it keeps us healthy. Food also helps in the growth of our body. Food contains some useful substances that an organism needs to live and grow. These useful components are called nutrients. The food we eat contains five main nutrients as shown in the flow chart given below:



A food can contain one or more than one nutrient. For example, meat is a rich source of proteins but it also contains fats and vitamins. Our body needs some nutrients in large quantities and some in small quantities.

### SIGNIFICANCE OF NUTRIENTS

The quality of food is determined by the type of nutrients it contains. Let us discuss about these nutrients in detail.

**1. Carbohydrates:** They are the source of energy and thus, the food items containing carbohydrates are called **energy-giving foods**.

### FACT FILE

Cellulose is a form of carbohydrate that cannot be digested by humans. It occurs in the cell wall of plant cells.

They are present in our food in mainly two forms – starch and sugar. Potato, bread, rice are rich sources of starch. On the other hand, an example of sugar is glucose. Glucose is the simplest carbohydrate. It is easily utilised by the body to release energy. It is for this reason that glucose is given to patients who require energy urgently. Fruits, honey, table sugar are rich in glucose.



Potatoes



Bread



Rice



Honey

Sources of carbohydrates



### Activity 1

#### To test the presence of starch in a food sample

Take the food sample that needs to be tested and put it in a test tube. If it is a solid, crush it and add a little amount of water to it. Mix it well. (You can even perform this test by simply cutting a potato in two parts.) Add a few drops of iodine solution to it. If the sample turns blue-black, it contains starch.



Testing starch in Potato



### Activity 2

#### To test the presence of sugar in a food sample

Take the food sample. If the food sample is solid, crush it and add a little amount of water to it. Add a few drops of Benedict's solution to it. [Benedict's solution is blue in colour]. Heat it for a few minutes. After heating, if the food sample turns brick-red, the food sample is rich in sugar. If it has medium sugar content, it will turn yellow. In case it has low sugar content, it will turn green in colour.



Sources of fats

**2. Fats:** They also provide us energy. In fact, they give us twice the energy than carbohydrates give us. Food items containing fats are also called **energy-giving foods**.

Coconut oil, nuts, almonds, butter, cream are rich in fats. On the basis of the source from which fats are obtained, they are classified into two types –

- (i) Animal fats
- (ii) Plant fats





Milk products like butter and ghee are sources of animal fats. Vegetable oils are a source of plant fats.

Fats keep the body warm. Extra fats are stored in the body and if stored in excess, it causes obesity.



### Activity 3

**To test the presence of fats in a given food sample**

Take the food sample, Rub it on a piece of white paper. Allow the paper to dry. Observe the paper in light, the oily portion becomes translucent.



**3. Proteins:** They help in building new cells and repairing worn-out tissues. Thus, the food items containing proteins are called **body-building foods**. They also regulate body functions and protect the body from infections. On the basis of the source from which proteins are obtained, they are classified into two types—

(i) Animal proteins (ii) Plant proteins

Proteins which are obtained from animal products are called **animal proteins**. Meat, fish, egg and milk are some sources of animal proteins.

#### FACT FILE

Our hair is made up of a type of protein called keratin.



Fish



Meat



Milk



Eggs

#### Sources of animal proteins

Proteins which are obtained from plant products are called **plant proteins**. Pulses, soya beans, grams, cashews are sources of plant proteins.



Pulses



Soya beans



Grams



Cashews

#### Sources of plant proteins



## Activity 4

### To test the presence of proteins in a food sample

Take the food sample in a test tube. Crush it and add some water to it. Shake it well. Add two drops of copper sulphate and then ten drops of sodium hydroxide or caustic soda to it. Shake the test tube well. If the colour of the solution changes to purple or violet, it confirms the presence of proteins in the food sample.



**4. Vitamins:** Vitamins protect our body from diseases. They also help to keep our bones, teeth, gums and eyes healthy. Food items containing vitamins are called **protective foods**.

Though vitamins are required by the body in very small quantities, they are very important for the proper functioning of the body. Vitamins are of different types—A, B, C, D, E and K.

- Vitamin A, D, E and K are **fat-soluble vitamins**.
- Vitamin B and C are **water-soluble vitamins**.

### Sources and functions of some vitamins

Vitamin	Sources	Functions
Vitamin A	Carrots, papaya, fish oil, mango	Keeps the eyes and skin healthy
Vitamin B	Whole cereals, eggs, meat, milk	For proper functioning of the nerves, muscles and digestive system
Vitamin C	Citrus fruits	For healthy teeth and gums
Vitamin D	Paneer, fish, liver oil, egg yolk, sunlight	To make bones and teeth strong
Vitamin E	Pear, eggs, nuts	To keep the skin healthy
Vitamin K	Spinach, cabbage, cauliflower	For clotting of blood



## Activity 5

### To test the presence of Vitamin C in a food sample

Make a paste of any food item containing starch. Boil it and add a few drops of iodine solution to the food sample. It will turn blue-black. To this add a few drops of lemon juice. The blue colour will disappear. This shows that the lemon juice contains Vitamin C. The lighter the colour becomes, more is the Vitamin C content in the food sample.



# GURU GOBIND SINGH PUBLIC SCHOOL

## BIOLOGY ASSIGNMENT

CLASS: 6

### Components of nutrients:

Study materials: Nutrients, Components of nutrients,  
Carbohydrates, Proteins, Vitamins

## ASSIGNMENT

(READ STUDY MATERIALS BEFORE DOING THE ASSIGNMENT)

1. Complete all the assignments given in online class.
2. Draw 5 carbohydrates and 5 proteins
3. **Give two examples of each:**
  - (a) Food rich in Vitamin C
  - (b) Food rich in animal protein
  - (c) Food rich in plant fat
  - (d) Food rich in Vitamin K
  - (e) Food rich in starch
4. **Multiple Choice Questions (MCQs) - (Do in the book)**
  - (a) Glucose is the simplest form of
    - (i) sugar    (ii) starch    (iii) protein    (iv) fat
  - (b) Sugar and starch are types of
    - (i) fats    (ii) proteins    (iii) carbohydrates    (iv) vitamins
  - (c) Which of the following has no nutritive value?
    - (i) Vitamins    (ii) Roughage    (iii) Proteins    (iv) Fats
  - (d) The nutrient that keeps the body warm is
    - (i) fats    (ii) proteins    (iii) vitamins    (iv) minerals
  - (e) Which of the following are called body-building foods?
    - (i) Food containing fats    (ii) Food containing vitamins
    - (iii) Food containing proteins    (iv) Food containing minerals
  - (f) Bones and teeth remain healthy with the consumption of
    - (i) iron    (ii) calcium    (iii) Sulphur    (iv) all of these
  - (g) Consumption of lesser quantity of food than required by the body is called
    - (i) undernutrition    (ii) malnutrition
    - (iii) poor nutrition    (iv) none of these

- (h) Rice, bread and chapatti belong to  
(i) protein group                      (ii) cereal group  
(iii) vegetable group                (iv) milk group

**5.Fill in the blanks: (Do in the book)**

- (a) Cereals are rich in\_\_\_\_\_.  
(b) Patients are given\_\_\_\_\_for instant energy.  
(c) Solution is used to test the presence of sugar in a food sample.  
(d) Vitamins A, D, E and K are called \_\_\_\_\_soluble vitamins.  
(e) Fish and eggs are examples of \_\_\_\_\_proteins.  
(f) Deficiency of fluorine causes\_\_\_\_\_.  
(g) Food items containing\_\_\_\_and\_\_\_\_\_are called protective food.

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