

EXPLANATION CONTENT

Class-VI

Subject-Science

Chapter-2

(Components of food)

Period 1- Food is a basic requirement for all living organisms. It provides energy for carrying out normal physiological activities. We eat different types of vegetables, fruits, cereals and pulses. We all eat food to obtain energy for our daily activities. There are different components of food and each of these components is required for our body to perform different cellular activities.

What Do Various Nutrients Do for Our Body?

- **Carbohydrates** :Carbohydrates main function is providing energy to the body. These are found in our food in the form of sugar and starch i.e. simple and complex carbohydrates. Example It is found in bread, potatoes etc.
- **Simple Carbohydrates:** These are also referred to as simple sugars and found in natural sources of food i.e. milk, fruits and vegetables. These carbohydrates add certain sweetness to the food. They raise the level of blood glucose quickly but are easier to break down.
- **Complex Carbohydrates:** They are relatively less sweet than simple carbohydrates and also raise blood glucose level rather slowly. Cellulose is present in plant cell wall. It is a complex carbohydrate. Humans cannot digest cellulose.

Fats

- Fats are high energy nutrients. They are needed in a moderate amount by the body. Fats are the reserved food material of our body. Fats are also responsible for providing energy to our body. In fact, they provide more energy than carbohydrates. The body uses fat as a fuel source. Fats are essential for the absorption of vitamins A, D, E and K in the body. Butter, cheese, oil are all examples of fat-rich foods.

Proteins

- Proteins are the body building nutrients. They are needed to build every single part and organ of the body. They help in the growth and repair of our body. Proteins performs the very essential function of helping our body grow and repair itself. These are found in food items such as milk, pulses, eggs, meat etc. Foods containing proteins are called 'body-building' foods.

Vitamins

- Vitamins are the essential nutrients that help us in maintaining normal body functions and also fight off infections. They help in protecting our bodies from various kinds of diseases. They also help in keeping our eyes, gums, bones and teeth in good shape.
- Fruits and vegetables are the major sources of vitamins.
- A, B complex, C, D, E and K are the vitamins we get from different foods.

Minerals

- Minerals are important substances that help your body's form and function on many different levels.
- Minerals are essential for various metabolic functions including growth and organ functioning.

Important minerals required for our body are sodium, potassium, calcium, zinc, iron, phosphorus, magnesium etc. Examples of mineral rich foods include leafy vegetables, fish, beans

- Our food contains mainly five major kinds of nutrients namely vitamins, minerals, carbohydrates, proteins and fats. Additionally, food also contains **water and dietary fibres/roughage** which are also required by our bodies.

Dietary Fibres/Roughage: While dietary fibres do not provide any such nutrition to our bodies but nevertheless are an important component of food. They help in easy absorption of food, helps in movement of bowel and prevents constipation. They help our body

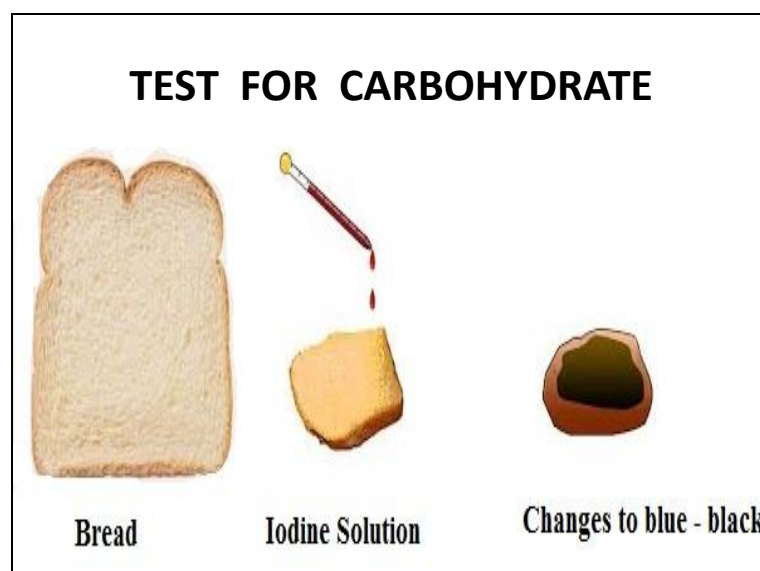
get rid of undigested food. Cereals, fruits and vegetables are some of the roughage rich foods.

Water: Water performs the essential function of absorbing nutrients from our food. It also helps in releasing waste from our body in form of sweat and urine.

- **Period 2-** Teacher explains: We can test whether a particular food item contains carbohydrates by pouring 2 to 3 drops of dilute iodine solution on it. If the iodine changes its colour to blue-black, then we can ascertain that the food item contains carbohydrates.

Test for Starch (form of carbohydrate)

1. Take small quantity of the food items to be tested.
2. Put 2-3 drops of iodine solution on it.
3. Observe the colour of the food item.
4. Blue-black colour indicates the presence of starch in the tested food item.



Test for Fats

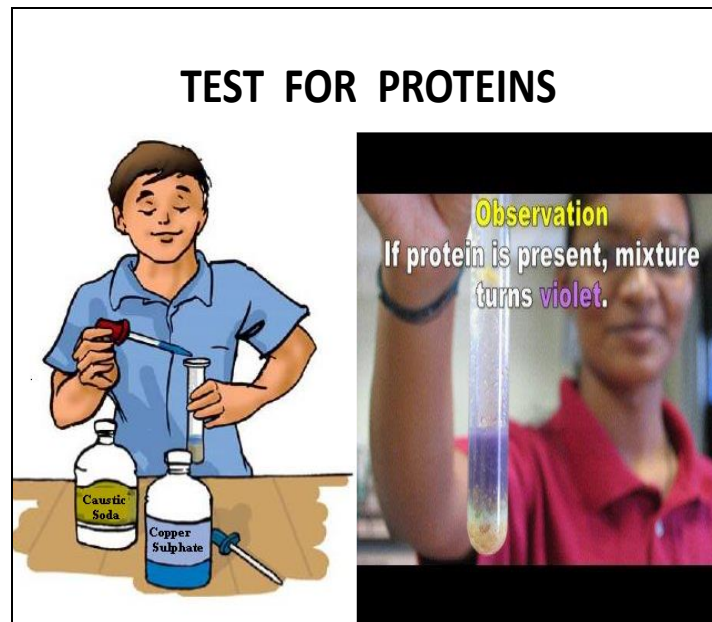
- 1 Take a small quantity of the food item to be tested.

- 2 Wrap the food item in a piece of paper and crush it.
- 3 Straighten the paper.
- 4 Dry the paper by keeping it in sunlight for a while.
- 5 Observe the paper.
- 6 An oily patch on the paper indicates the presence of fats in the tested food item.



Test for Proteins

1. Take a small quantity of the food items to be tested.
2. Grind/mash/paste/powder the food item.
3. Put the food item into a test tube.
4. Add 10 drops of water and shake the test tube.
5. Using a dropper add two drops of **copper sulphate** solution to the test tube.
6. Add 10 drops of **caustic soda** solution and shake the test tube.
7. Observe the colour of the mixture.
8. **Violet colour** indicates the presence of proteins in the tested food item.



Period 3- Balanced Diet

A balanced diet is one that contains a variety of food items providing different types of nutrients in adequate amounts necessary for maintaining good health. The diet should contain a good amount of dietary fibre and water as well.

A balanced diet includes a combination of protein-rich pulses, sprouted seeds etc. with combinations of various flours and cereals for carbohydrates and fats along with fruits and vegetables which provide the necessary vitamins and minerals.

- In addition to making sure that the right amount of food is eaten, it should also be ensured that food is properly cooked so that it does not end up losing its nutrients.
- Repeated washing of fruits, pulses, rice and vegetables can result in the loss of essential vitamins and minerals.
- Throwing away excess water which is used for cooking vegetables can result in the loss of considerable amounts of important proteins and minerals present in them.
- It's a well-known fact that vitamin C gets destroyed in the heat while cooking.

Obesity: Obesity is a medical condition that results from excess intake of fat-rich foods. The excess fat gets accumulated to such an extent that it starts negatively affecting one's health, well-being and the ability to carry out certain activities.

Period 4- Deficiency diseases

Deficiency: Sometimes simply getting adequate amounts of food might not be enough if the food does not contain the required nutrients in the right amounts. Prolonged usage of such nutrient-less food may result in a condition known as **Deficiency**.

Deficiency Diseases: Diseases that occur from the lack of an element in the diet, usually a particular vitamin or mineral are known as deficiency diseases.

- A diet lacking proteins may result in skin diseases, stunted growth, diarrhoea, swelling of face and discolouration of hair.
- A diet deficient in both carbohydrates and protein may hinder the growth completely and the person becomes so frail and lean that he or she might not even be able to move.
- Deficiency of certain vitamins and minerals can cause diseases like scurvy, goitre, anaemia etc.

Hence one must always make sure to include all nutrients in their food and drink a good amount of water to maintain a healthy body that is free from diseases.

Vitamin/ Mineral	Deficiency disease/disorder	Symptoms
Vitamin A	Loss of vision	Poor vision, loss of vision in darkness (night), sometimes complete loss of vision
Vitamin B1	Beriberi	Weak muscles and very little energy to work
Vitamin C	Scurvy	Bleeding gums, wounds take longer time to heal
Vitamin D	Rickets	Bones become soft and bent
Calcium	Bone and tooth decay	Weak bones, tooth decay
Iodine	Goiter	Glands in the neck appear swollen, mental disability in children
Iron	Anaemia	Weakness

<https://www.youtube.com/watch?v=Z0vi5iTBc2I>

Hyperlink for Group song. Song will be sung by students to recollect the concept of deficiency diseases.