

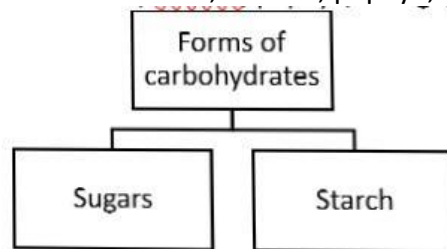
Science
Class VI
Chapter-2
Components of Food

Nutrients

These are the substances that an organism needs for growth, repair and maintenance of its body. The major nutrients in our food are named carbohydrates, proteins, fats, vitamins and minerals.

Carbohydrates

1. They are called **energy-giving foods**.
2. The major forms of carbohydrates in food are: sugar and starch.
3. Food rich in starch includes- wheat, rice, maize, potato, sweet potato, etc.
4. Food rich in sugar includes- banana, cheeku, papaya, mango, watermelon, etc.



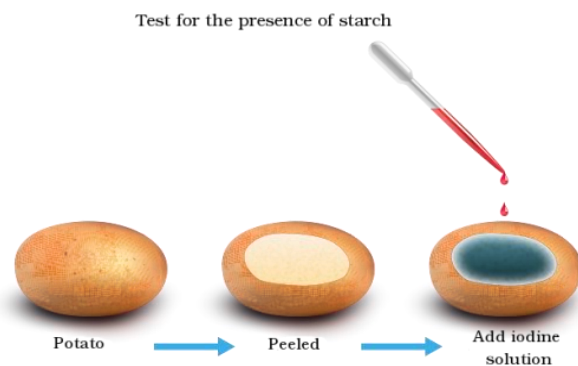
Activity 1- Test for the presence of starch in food items

Materials Required- potato, dilute iodine solution

Procedure-

1. Take a small piece of potato.
2. Put 2-3 drops of dilute iodine solution on it.
3. Observe the change in colour.

Observation- The piece of potato becomes **blue-black in colour** showing the presence of starch.



Fats

1. **Fats give much more energy** as compared to the same amount of carbohydrates.
2. Foods rich in fats are also called **energy giving foods**.
3. Fats are obtained from plants and animals.
4. Ghee, oil, butter, milk, meat, etc are common foods containing fats.



Test for Fats

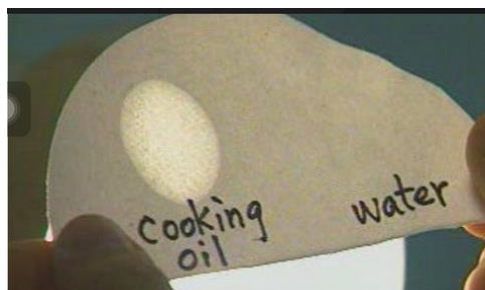
Materials Required- a drop of oil or butter, a piece of paper, a source of light like bulb

Procedure-

1. Take a small quantity of a food item.
2. Wrap it in a piece of paper and crush it. Take care that the paper does not tear.
3. Now, straighten the paper and observe it carefully.
4. Hold the paper against light.

Observation- An **oily patch** on paper shows that the food item contains fat. This patch appears **translucent** against light.

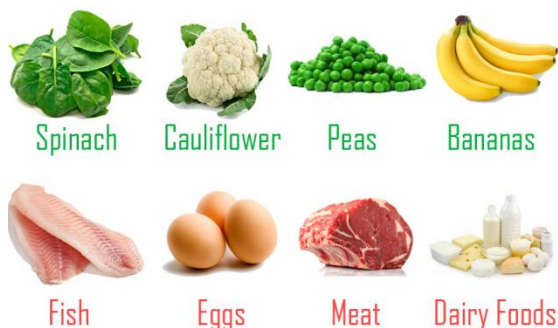
Test for Fats



Proteins

1. Foods rich in proteins are called **body-building foods**.

2. They are needed for the growth and repair of our body.
3. Proteins can be obtained from plant and animal sources.
4. The sources of plant proteins are- soya bean, almond, cashew nut, gram, wheat, etc.
5. The sources of animal proteins are- meat, fish, eggs, milk, etc.



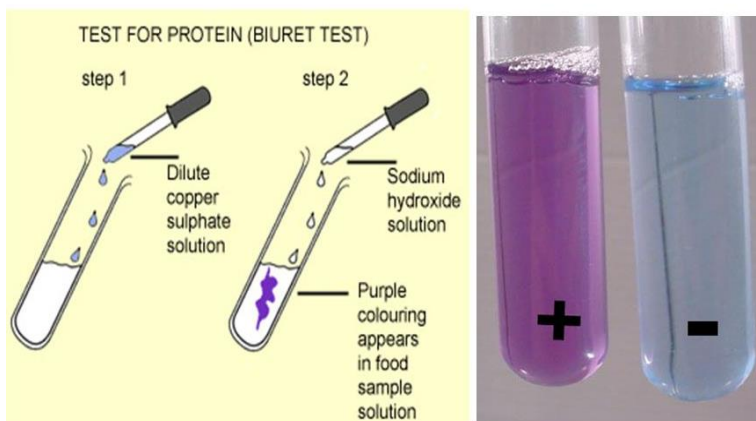
Activity 2- Test for Proteins

Materials Required- copper sulphate solution, caustic soda solution, test tube, dropper, gram flour or egg white raw

Procedure-

1. Take raw egg white or gram flour in a test tube.
2. Add two drops of copper sulphate solution and ten drops of caustic soda solution to the test tube containing gram flour or egg white. Shake it and wait for few minutes.
3. Observe the change in the colour of solution in the test tube.

Observation- A **violet colour** indicates the presence of proteins in the given food sample.



Vitamins

1. Our body needs all types of vitamins in small quantities.
2. Vitamins help in protecting our body against diseases.
3. Vitamins also help in keeping our eyes, bones, teeth and gums healthy.
4. Vitamins are of different kinds. Some of these are Vitamin A, Vitamin C, Vitamin D, Vitamin B-complex, Vitamin E and K.

Vitamins	Sources	Function	Symptoms	Deficiency Disease
Vitamin A	Green leafy vegetables, carrots, milk, papaya	Keeps hair, skin and eyes healthy	Poor vision, loss of vision in darkness(night), sometimes complete loss of vision	Loss of vision
Vitamin B ₁	Wheat, milk, fish, legumes, eggs, whole grains, sprouts	Aids in digestion, maintains nervous system	Weak muscles and very little energy to do work	Beriberi
Vitamin C	Citrus fruits like amla, tomatoes, oranges, etc	Strengthens the body to fight against diseases	Bleeding gums, wounds take longer time to heal	Scurvy
Vitamin D	Milk, egg, fish, prepared by our body itself in the presence of sunlight	Helps the body to use calcium and phosphorus for strengthening bones and teeth	Bones become soft and bent	Rickets
Vitamin E	Egg yolk, milk, nuts, seeds, butter	Has anti-ageing properties	-	-
Vitamin K	Green leafy vegetables, cauliflower, egg yolk, etc.	Helps in functioning of various proteins in the body	Clotting of blood	Excessive Bleeding

Minerals

Like Vitamins, Minerals are needed by our body in small amounts. Each one is essential for proper growth of body and to maintain good health.

Minerals	Source	Function	Deficiency	Symptoms
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Calcium	Milk, egg, spinach, garlic, meat	Formation of teeth, bones and keeps them strong	Bone and Tooth decay	Weak bones and tooth decay
Phosphorus	Milk, banana, cashew, carrot	Keeps bones and teeth strong and also helps in blood clotting	Bones and Tooth decay	Deformed bones and teeth
Iodine	Beetroot, grape, orange, mushroom, iodised salt	Controls functioning of thyroid glands	Goitre	Glands in neck appear swollen, mental disability in children
Iron	Meat, egg, spinach, beetroot	Formation of haemoglobin	Anaemia	Person looks pale and tired

Roughage

1. Dietary fibres are also known as roughage.
2. Roughage is mainly provided by plant products in our foods.
3. Whole grains and pulses, potatoes, fresh fruits and vegetables are main sources of roughage.
4. Roughage does not provide any nutrient to our body, but is an essential component of our food
5. **Functions of roughage-**
 - a. adds bulk to food
 - b. helps our body get rid of undigested food
 - c. helps in maintaining a healthy bowel movement
 - d. helps to digest food and absorbs nutrients from food

Water

1. Water is essential for our body.
2. Functions of water-
 - a. Water helps our body to absorb nutrients from food.
 - b. It also helps in throwing out some wastes from body as urine and sweat.
 - c. to keep our body clean, cool and healthy
 - d. keeps skin smooth

Balanced Diet

1. A diet which provides all the nutrients that our body needs in right quantities along with adequate amount of roughage and water is called a balanced diet.
2. A balanced diet depends on the age of the person and on the occupation of the person.
3. Balanced diet consists of-
 - a. **Energy giving foods-** Carbohydrates and fats

- b. **Body-building foods**- Proteins
- c. **Protective foods**- Vitamins and Minerals
- d. **Essential foods**- Water and Roughage

Retaining Nutritional Value of Food

Selecting the right food is not enough. It should also be cooked properly so that nutrients are not lost.

- a. Always wash fruits and vegetables before peeling or cutting them as this may result in loss of vitamins.
- b. Never remove the peels of fruits and vegetables as the skin contains important nutrients.
- c. Avoid repeated washing of pulses, rice, etc as it may wash away water soluble vitamins and minerals.
- d. Heating or cooking destroys Vitamin C, so include them as salads.
- e. Throwing away water in which seeds like kidney beans are cooked or soaked is a bad practice.
- f. Water should be minimally used for cooking so that we do not need to throw it away after cooking.

Deficiency Diseases

A disease which arises due to lack of nutrients in our diet over a long period of time is called deficiency disease.

Deficiency Disease		Symptoms
Kwashiorkor Due to lack of proteins in diet	The diagram illustrates two types of malnutrition. Figure A, Kwashiorkor, shows a child with a large, distended abdomen, swollen ankles, and scaly skin. Figure B, Marasmus, shows a severely emaciated child with wrinkled skin and visible muscle wasting.	Stunted growth, swelling on face, discolouration of hair, skin diseases and diarrhoea
Marasmus Due to lack of carbohydrates and proteins in diet		Growth stops completely, person becomes very thin and weak.

EXTENDED LEARNING

1. The condition of accumulation of excess fat in the body due to overconsumption is called **OBESITY**.
2. OBESITY can result in a number of diseases like heart diseases, back pain, etc.
3. Avoid chocolates, sweets, fried foods.
4. Exercise to keep the body fit.

NCERT SOLUTIONS

Q1. Name the major nutrients in our food.

Ans. The major nutrients in our food are carbohydrates, proteins, fats, vitamins and minerals. In addition, food also contains dietary fibres and water.

Q2. Name the following:

(a) The nutrients which mainly give energy to our body.

(b) The nutrients that are needed for the growth and maintenance of our body.

(c) A vitamin required for maintaining good eyesight.

(d) A mineral that is required for keeping our bones healthy.

Ans: Name the following:

(a) Carbohydrates and fats. **(b)** Proteins and minerals **(c)** Vitamin A **(d)** Calcium

Q3. Name the two foods each rich in

(a) Fats **(b)** Starch **(c)** Dietary fibre **(d)** Protein

Ans: **(a)** Butter, Groundnut. **(b)** Rice, Potato. **(c)** Whole grains, Fresh fruits. **(d)** Pulses, Fish.

Q4. Tick (✓) the statements that are correct.

(a) By eating rice alone, we can fulfill nutritional requirement of our body.

(b) Deficiency diseases can be prevented by eating a variety of food items.

(c) Balanced diet for the body should contain a variety of food items.

(d) Meat alone is not sufficient to provide all nutrients to the body.

Ans:

(a) By eating rice alone, we can fulfill nutritional requirement of our body. ✗

(b) Deficiency diseases can be prevented by eating a variety of food items. ✓

(c) Balanced diet for the body should contain a variety of food items. ✓

(d) Meat alone is not sufficient to provide all nutrients to the body. ✓

Q5. Fill in the blanks.

(a) _____ is caused by deficiency of vitamin D.

(b) Deficiency of _____ causes a disease known as beri-beri.

(c) Deficiency of vitamin C causes disease known as _____.

(d) Night blindness is caused due to deficiency of _____ in our food.

Ans: **(a)** Rickets is caused by deficiency of vitamin D.

(b) Deficiency of **vitamin B1** causes a disease known as beri-beri.

(c) Deficiency of vitamin C causes disease known as **scurvy**.

(d) Night blindness is caused due to deficiency of **vitamin A** in our food.

Assignment

Q1. Players take glucose during a game. Give reason.

Q2. Urja knew that fat gives more energy than carbohydrates. So, she started eating samosas, puris, chips, pakodas, pizzas and malai, the fat-rich food. Was she right? What will happen if we eat too much fat-rich food?

Q3. One day Sona's mother gave her fruits to eat. She peeled the skin of fruits and cut them and then washed them. Was she right or wrong? Explain.

Q4. Who will need more carbohydrates in the diet- an athlete or an office worker? Why?

Q5. What are deficiency diseases? Name the diseases caused by deficiency of carbohydrates and fats.

Q6. Although roughage does not have any nutrient value, even they are considered as an important constituent of food. Why?

Q7. The neck of a person appears swollen. Name the deficiency disease he/she could be suffering from. What is the cause of this disease?

Q8. Water is not a nutrient, yet it is extremely important for our survival. Explain giving reasons.

Q9. How will you test presence of proteins in milk?

Q10. While using iodine in the laboratory, some drops of iodine fell on Paheli's socks and some fell on teacher's sari. The drops of iodine on the sari turned blue-black while the colour did not change on the socks. What can be the possible reason?