

It is believed that if a person regularly takes sufficient food, then the need of nutrients to his body is fulfilled. But this is not correct. If you take only one type of food always then all the nutrients are not available to the body. Only if food has all the main ingredients like proteins, fatty products along with vitamins and minerals, then only it is called a balanced diet. Therefore, our food must be a mixed one which has all the nutrients of food.

Those foods which have nutrients named as carbohydrates, fats; proteins, vitamins and minerals in the required quantity in it are called **balanced food**. Let us see which foods we have to eat from which we can get all these nutrients.

15.1 Different type of food items

In our food one or two items are the main food items as rice, wheat, maize, bajra, jawar, millets etc. In some countries, potato, banana or sweet potatoes are the main food items. What are the main items of your food?

In all these food items, the main nutrient is carbohydrate. But you have read earlier that a balanced diet must have many things other than carbohydrates. So if a man eats stomach full of only rice, or wheat, potato, then he will become weak and he may have many diseases.

For the growth of our body and proper development of our mind, it is necessary that our food must have proteins. To say so proteins are present usually in all food items, but it is present in abundance in the following food items given below.

All types of pulses, soyabeans, groundnuts, peas, milk, curd, egg, fish and mutton. So it is necessary that our food must have any one of these items.

Butter, ghee and all type of oil have fats. We get energy from these. Other than these we get energy from jaggery, sugar and honey also.

Now you will read about one group of nutrients which keep us healthy and free from diseases. These are the vitamins and minerals. Given below are names of some items which have sufficient amount of vitamins and minerals

All green leafy vegetables (spinach, mint) drumsticks, papaya, goose berry (amla) mango, orange, lemon, guava, carrots, cucumber, pumpkin, tamarind, beetroot, jaggery, mutton, egg etc.

Come let us see what we get from which items.



TABLE 15.1

Carbohydrates	Fats	Proteins	Vitamins & Minerals
Rice, wheat, corn, maize, bajra, jawar, potato	Butter, Ghee, Oil	Pulses, Mutton, Fish, Egg, Soyabean	Carrot, Pumpkin, Papaya, gooseberry, green leafy vegetables, milk, egg, orange, tomato, mango, lemon

Carbohydrates, proteins and fats are to be taken in large quantities but vitamins and minerals are needed only in minute quantities. But if this minute quantity is not received then diseases may happen.

The proper names of vitamins are different but they are known as A, B, C, D etc. Given below are some names of vitamins, along with it the diseases caused due to the deficiency of these vitamins are given.

1. Vitamin A : This is present in milk, egg, yolk, liver, green vegetables, tomato and carrots. If there is a deficiency of this vitamin in the body then it may cause night blindness in which one cannot see at night.
2. Vitamin B : This is a group of vitamins which are present in grains, mutton, milk, curd, butter, egg. etc. Deficiency of this may cause anemia (shortage of blood) deformed vertebral column, beri-beri (weakened nervous system) etc. diseases in the body.

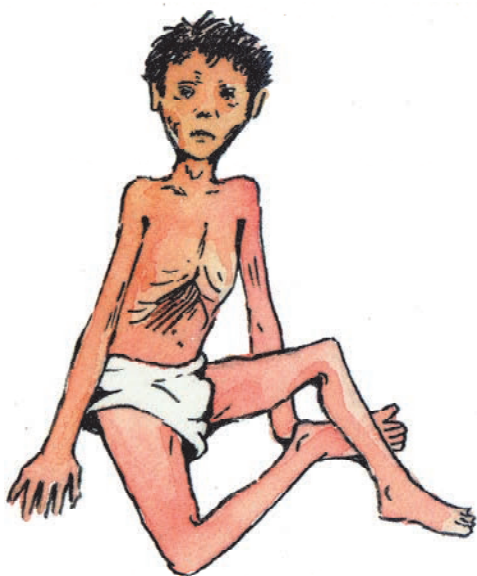


Fig 15.1 Rickets

3. Vitamin C : This is present in gooseberry, orange, lemon and such fruits. Its deficiency can cause a disease called scurvy.

4. Vitamin D : This vitamin is present in milk, curd, butter, butter milk etc. Vitamin D is also produced in the body in presence of sunlight. Our bones need calcium and vitamin D. Vitamin D help calcium to reach the bones. Therefore if there is a deficiency of calcium or vitamin D the bones of the body becomes weak and becomes curved. This is called rickets (fig. 15.1). Along with these , there are vitamin "E" and Vitamin "K" which are also necessary for the body.

Our body needs many types of minerals. Iodine, iron, phosphorus and calcium are the most important ones. In our country, in many places food lacks iodine in it. Therefore iodine is added to the salt we buy from the market. Deficiency of iodine can lead to the disease called goitre.

If sufficient iron is not there in our food then sufficient amount of blood is not made. This disease is called anaemia. When anaemia occurs, the diseased person's skin becomes pale and looks white, tongue becomes shiny and smooth, the inner part of eyes, nails and gums become colourless (Fig 15.2). The diseased becomes weak and gets very tired on doing even little labour.



Fig 15.2 Anaemia

Green leafy vegetables, jaggery, tamarind, beetroot, bajra, mutton, egg and fish have a large amount of iron in them.

If we eat these we can be safe from anaemia and to some extent can be its treatment.

15.2 Water

You must have experienced that if you do not take water for a long time, then you feel very thirsty. We feel very uneasy. We need water for all the functions of our body. A healthy man must drink at least 2 to 3 litres of water per day. One glass can have about 200 mL of water. Calculate how many glasses of water must a healthy man drink per day.

Is it necessary to purify water before it is used for drinking? Water which appears clean may still have disease causing microorganisms and dissolved impurities. So it is essential to purify water before drinking. Water which is suitable for drinking is called potable water.

Municipal bodies treat the water before supplying it to households. Come, let us see how we can make water safe for drinking.

- Candle type filter, which filters and removes impurities are used in our household. This is the most popular physical method.

- Many households use boiling as a method for obtaining safe drinking water. Boiling kills the bacteria present in the water.

- Chlorination is a commonly used chemical method for purifying water. It is done by adding chlorine tablet or bleaching powder to the water. We must be cautious that we do not use more chlorine tablets than specified.

When we eat fruits, fresh vegetables, green vegetables etc. a part of them is excreted from our intestine without being digested. This part is called roughage. Roughage is very important for our body, because it helps in keeping our digestive organs clean so that the digestive process goes on smoothly. Raw cucumber, carrots, turnips, beetroots have much roughage in them.

If a person does not get sufficient food to eat or gets food without all the required nutrients then the person's body will become weak. When body does not receive the required nutrients in the required quantity, then it is called malnutrition. Children get malnourished quite easily.

Children who are malnourished become weak. Due to this weakness they get infected by diseases easily and when they become ill they get malnourished even more. Which means a trend of malnutrition and illness starts. To help such children their malnutrition is to be treated.

Balanced and full diet is the only treatment to malnutrition. If a malnourished child given the diet given here, then it is possible to recover soon. Mix equal amount of groundnut, wheat and bengal gram and powder it into flour. Fry this flour in oil, add jaggery and feed the malnourished child daily. He will recover fast. It can be given even after he has recovered.

15.3 Testing Food Items

Given below are some methods by which you can yourself know, which food items contain which nutrients (carbohydrates, proteins, fats). But for this some preparation is needed. So, come first of all we will prepare some of the chemicals needed for the test.

Iodine Solution

When someone gets hurt we apply tincture iodine. This medicine is available at the chemists or the hospital easily. Take a small clean bottle or a test tube and add 10 drops of tincture iodine. Add water till it becomes a light yellow solution. Keep a clean dropper to use to pour drops of the solution.

Solution of Blue Vitriol

Take about 2 g of blue vitriol in a small clean bottle or test tube and add 100 ml of water. Stir it till the blue vitriol is completely dissolved. For this solution also keep aside one separate dropper.

Solution of Caustic Soda

Take 10 gm of caustic soda in a bigger bottle and add 100 ml of water and mix well. Keep a separate dropper for this solution also.

Now, collect the food items given in table No. 15.2. Take small quantity of each item in a large plate and place them separately such that they do not mix with each other. You can take oil instead of ghee. Milk and ghee can not be put on the plate. So take them in a small bottle or test tube. Now start the experiment or test.



Activity 1

Materials Required : Food item of table 15.2 and piece of paper, test tubes, water, 2 percent solution of blue vitriol, 10 percent solution of caustic soda, iodine solution. With these you can test each item to know if it has any nutrient or not. If the nutrient is present then put a (✓) mark against it in table 15.2 and if absent put a (×) mark against it.

Fat Test

Take a small quantity of the item to be tested on a piece of paper and lightly rub it on the paper. If the paper becomes slippery and semitransparent then that item contain fats. If you rub kerosene oil, diesel or wax then also the paper becomes transparent, but they are not food items. The don't have fats in them.

Protein Test

Take about 10 drops of the item to be tested in a test tube. If the item is solid, powder a portion of it and take it in the test tube and add 10 drops of water on it.

Add 2 drops of 2% blue vitriol solution and 10 drops of 10 percent caustic soda solution and mix well. If it shows violet colour then the presence of protein is indicated.

Carbohydrate Test

In our food there are two types of carbohydrates. One is sugar or sucrose which we take. As sugar there is a sweet item called glucose. This is also a type of sugar. The other type of carbohydrate, which is known as starch is present in rice, wheat, potato etc.

Its test is very simple, so we will test starch type of carbohydrate.

Drop about two to four drops of dilute iodine solution on the food item to be tested. If the colour changes to dark blue or black then that item contains starch or carbohydrate.

**TABLE 15.2**

S. No.	Name of food-items	Presence of Fat Yes / No	Presence of Protein Yes / No	Presence of Starch Yes / No
1.	Boiled rice			
2.	Rice			
3.	Wheat			
4.	Potato piece			
5.	Ground nut			
6.	Full gram/ Tuvar			
7.	Cotyledons of Tuvar (Tuvar Dal)			
8.	Oil or ghee			
9.	Milk			
10.	Piece of some vegetable			
11.	Piece of some fruit			



Now write the answers to the following questions in your copy

1. Is carbohydrate, protein and fat present in all food items?
2. Is it correct to say that each food item can have more than one nutrients in it?

Now, you must have know that usually every food items have more than one nutrients present in it. In the staple foods along with carbohydrates, fat and vitamins are also present. There is fat, protein, vitamins and minerals in eggs. But this is not correct for all food items. Sugar has only carbohydrate and oil or ghee has only fat in it.

15.4 Why is balanced diet necessary ?

It is necessary to take balanced diet to keep our body healthy. Taking balanced diet provides our body the following benefits.

1. Many functions takes place inside our body, for which we need energy. This we can get from the balanced diet.
2. Food helps to develop new parts. The bodies of children, who are continuously growing, if they do not get a balanced diet their bodies will not develop properly.
3. There is the process of wear and tear continuously going on in our body for the replacement of these wear and tear, balanced diet is necessary.
4. Vitamins and minerals are a part of balanced diet. These protect us from many diseases.

Things to remember-

1. Avoid taking too much of sweets, too spicy or too oily fried foods. Also avoid taking too much of tea or coffee because these many damage our digestive system.
2. It is not necessary that costly food items have more nutrients in them. Green leafy vegetables, carrots, pumpkin and such yellow coloured vegetables have more nutrients compared to cauliflower, cabbage and capsicums. In the same way gooseberry (amla), guava and such fruits are rich in vitamins.
3. Before eating and cooking meals, one should clean one's hands properly so that germs in our hands may not enter our body through our food.
4. Children, pregnant women and lactating mothers need more amount of balanced diet.

15.5 STOPPING WASTE OF FOOD ITEMS

In our country many food items go to waste because either people waste them or they become unsuitable to eat because of weevils, rats, fungus etc. There are many micro organisms present in the air which can infect and destroy the food. It is necessary that we protect our food items from these.

15.5.1 – Food Preservation

Keeping the food items properly and safe is called food preservation some methods of food preservation are as given below:

Pickling

You must have seen how pickles are made in your house. You also know that pickle remain as such for many days. The oil and salt put in the pickle protect them from fungus. But sometimes pickle are spoiled due to fungus. That is when the quantity of oil and salt is not sufficient then fungus and other micro organisms enter it and spoil it.

Drying

Another type of food preservation is drying ie drying of food materials. You must have seen green vegetables, onions, chilies etc. are dried and kept. Drying means removing water content from that food. When water is removed, the food does not spoil and can be kept for quite a long time.

Use of Salt

Some food items are cut into pieces, salted and dried. This keeps the food unspoiled for long and can be used even after a long time.

Making Jams/ Murabbas

Fruits are generally preserved by this method. Presence of large amount of sugar stops fungi and this preserves the food.

Freezing the food items

A very easy method of preserving food for a long time is freezing. It is because of this that we keep our food in the refrigerator (fridge). The food products remain more safe or fresh if the temperature is less (more freezing).

Protection against Insects

Many food items as green vegetables grains etc. are destroyed by insects. To protect these food items many methods are used. You may be knowing that ripe crops in the field are sprayed with insecticides. Usually these drugs are DDT or BHC.

Find out which drugs are used by the farmers of your area.

The drugs used to kill insects are called insecticides. All the insecticides are poisonous chemicals and are harmful to human beings.

Now a days people are trying to avoid using dangerous chemical insecticides and are trying to use age old traditional methods like spraying of juices prepared from tobacco or neem leaves.

Protection against rats

You will be surprised to know that about one fifth of the total production of grains in our country is eaten away by rats. So it is necessary that food items should be kept in such a way that rats may not reach them.

Protection against Contamination

If we don't keep our food properly covered then houseflies, cockroach etc. may sit on them.

These insects have many micro organisms on their legs which can infect human being and cause many diseases, that means food gets contaminated. In the same way when dogs, cats and such tamed animals lick the food items, it may get micro organisms into the food and the food gets contaminated.

Preventing Wastage of Food

Many people take much more than needed in their plates and then throw away the leftovers. In the same way cooking more than needed and having no proper way of preserving it also means wastage of food.



WE HAVE LEARNT

- Food which have carbohydrates, protein, fats, vitamins and minerals in sufficient quantity is called a balanced diet.
- Carbohydrates and fats provide energy, protein is necessary for the growth of the body and for the development of our brain.
- Vitamins and minerals keeps us healthy and safeguard us from diseases. Fibres, keep our digestive system clean.
- Water is necessary for the functions of our body.
- Children, pregnant women and lactating mothers need balanced diet more than others.
- Keeping the food items safe and protecting them is called food preservation.
- Method of food preservation are, Pickling, Drying, Use of salt, Sugaring (Murabba) and Freezing.
- It is necessary to protect food items from insects, rats and stop contamination of food and wastage of food.



QUESTIONS FOR PRACTICE

1. When you bring some fried food items as sev, bhajiya or samosa wrapped in a paper, you find the paper has become transparent. Why does it happen?
2. What will happen if a person does not get a balanced diet ?
3. Which food items have vitamin A, B & C in them? And what are the diseases caused due to their deficiency?
4. Correct the wrong statements and write it in your own words?
 - a) Fibres are harmful for humans because it hinders the digestive process.
 - b) Costly food items are more nutritious than others.
 - c) Children, pregnant women and lactating mothers doesnot need balanced diet much.
 - d) Potatoes have much proteins in them.
 - e) Each food item has only one nutrient in them
 - f) A balanced diet must have only one nutrient in them.

- g) Our body needs vitamins and minerals in large quantities and carbohydrates, proteins and fat only in small quantities.
5. Green vegetables, onions and chillies are preserved by drying. Make a list of other food items which are preserved by drying.
6. Make a list of food items which are preserved in salt in your and your neighbour's houses.
7. Which insecticide is used on grains and vegetables safeguard against insects in your area? In the same way what is added to the grain in your house to preserve it.
8. It is observed that many people do not take balanced diet. What could be the possible reasons for it? What will you advise them to do ?
9. Clean, clear water is always safe for drinking. Write your comments.
10. What are the various methods adopted to make water potable?



TRY TO DO THIS

1. Collect labels from jam, jelly and pickle bottles and list the name of the ingredients present in each of them. Also try to find which preservative is used.
2. Try to make your own filters. Take a plastic bottle and cut it into two halves at the centre. Use the upper half as a funnel by putting it upside down into the lower half. Make layers in it with paper napkin or a fine cloth followed by cotton, sand and then gravel. Now pour dirty water through this filter and observe the filtered water. Discuss with your friend and teacher on the following questions-
 1. Why is it necessary to purify water?
 2. What will happen if we drink contaminated water?
 3. What are the methods used in households to purify water?
 4. What steps can be taken to create awareness about potable water?

