1 Sources of Food

Contents of the Chapter

1.1 Introduction

Food is very necessary for our life. All the activities of our body need energy, which we get from food. Energy helps in the movement and growth of the body. Things which human beings can eat is called food, whether it is a plant product or an animal product. Different organisms need different kinds of food.

1.2 Importance of Food

Food is necessary for all living things–

- Food helps in the movement of the body.
- Food helps in the growth of the body.
- We get necessary vitamins, proteins and minerals from food.
- Vitamins help in fighting different types of diseases. They also stop infections.
- Minerals provide internal strength to the body.

1.3 Sources of Food for Human Beings

Human beings get their food from both plants and animals.

Plants – Green plants prepare their own food by the process of photosynthesis in the presence of sunlight, carbon dioxide present in the air , water and a green coloured pigment called chlorophyll.

Cereals

Since green plants prepare their own food so they are called producers.

Various parts of the plant are used as food like root, flower, fruit, stem, seed, etc.

Roots – Some roots are very tasty and healthy. Some main root crops are radish, carrot, turnip, beetroot. Beetroot is the most sweet root crop.

Carrot

Turnip

Roots

Interesting Fact

America is the largest producer of corn in the world. India occupies second position in corn production.

Activity

Draw the diagram of a mustard plant and explain its various parts in detail.

Flower – We get food from some flowers also. For example; cauliflower and broccoli are some flowers. Flower is the reproductive organ of the plant.

Cauliflower

Fruits – We also get food from fruits. Some fruits are dry while some fruits are fleshy.

Dry fruits – Almonds, walnut, cashewnut, etc.

Fleshy fruits – Grapes, litchi, papaya, etc.

Different kinds of fruits

Interesting Fact

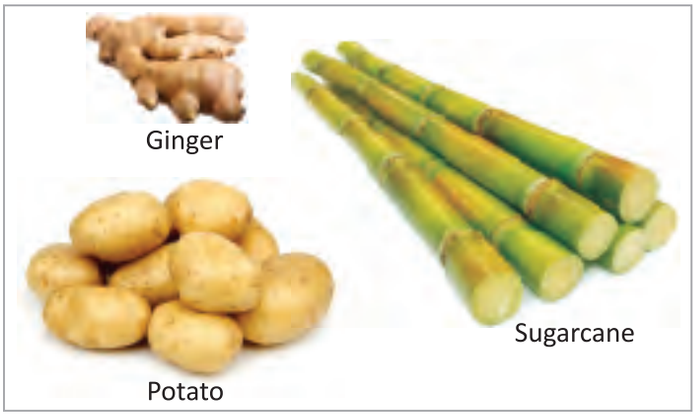
More than 7000 varieties of apples are known.

Stem – Stem of some plants are also used as food. Stem of some plants are underground. Stem of sugarcane in used to produce sugar.

Potato, ginger, turmeric, onion, etc are all stems. They are sometime confused with roots.

Interesting Fact

Onion and garlic are also called bulbs; upper layer of onion and garlic can be peeled off.



Potato is also called tuber and it is very rich in starch.

Leaves – We get food from the leaves of some plants. Main amongst them are fenugreek (methi), spinach, cabbage, etc.

Tea is the most favourite beverage in the world. Tea is obtained by drying tea leaves by a special method.

Interesting Fact

- When tea leaves are plucked, some small leaves fall down, they are called waste. When these small leaves are dried then nutrition level is more in these small leaves as compared to big leaves. Thus these small leaves are more strong.

Tea Plantation

Seeds – Seeds of some plants are also used as food. Some seeds like wheat, corn, rice, etc. are used as cereals ; moong, gram, arhar, etc. are used as pulses ; jeera (cumin), kali mirch (black pepper), ilaichi (cardamon) are used as spices; seeds of coffee plant are used as beverage and seeds of mustard, sunflower, etc. are used as edible oil.

Southern states of India, like Kerela, Tamil Nadu, Karnataka, etc. are good producers of spices. Spices are exported from our country in large quantity and they are an important source of earning foreign currency. In our country, various types of spices are grown like black pepper, cardamom, bay-leaf, cinnamon, etc.

Activity

Draw a chart showing different types of roots, stems and leaves and write about the food we get from them.

1.4 Animals and Animal Products

We get different kinds of food products from animals.

Milk – Milk is obtained from cow, buffalo and goat. Milk of cow and goat is very rich in proteins and calcium, which strengthen the bones and muscles of the body.

Many products are prepared from milk like cheese, butter, whey, curd, ghee, cream, etc.

Interesting Fact

Milk is considered as complete diet.

Eggs – We get eggs from hen and duck. Yellow part of egg is called yolk which has fats and fatty acids and white part of egg is called albumin which is rich in protein. Shell of egg is made up of calcium carbonate.

Egg

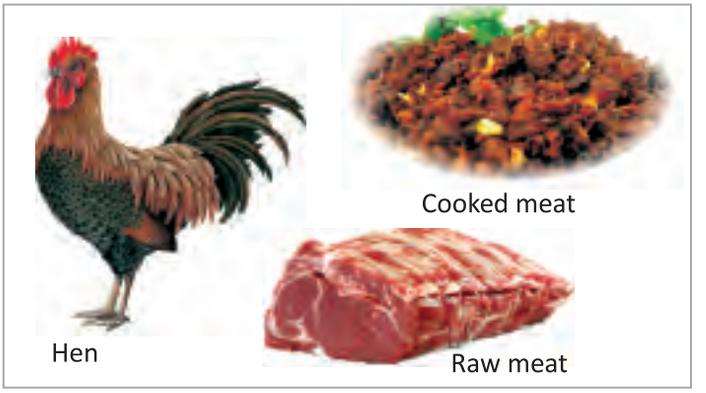
Honey – Honey is prepared by honeybees by collecting nectar from the flowers. Honey is the combination of water, sugar, minerals and enzymes. It is easily digestible and disease resistant. Honey is a good source of nutrients. It is used to prepare many medicines. Apiculture provides earning to many people.

Bee hive

Meat – Meat is very rich in proteins. Meat obtained from goat, pig, cock, etc. has high amount of protein. Fish is also rich in proteins.

Poultry farming – Birds like hen, duck and pigeon are reared in poultry farms. These birds are reared for their eggs and meat. Eggs and meat of these birds have high nutrient value.

Basically, cock (male bird) and hen (female bird) are different in appearance.



Sources of protein from animals

Poultry farming includes the following points.

1. Laying eggs – The process of laying eggs in hens begins at the age of six months. One hen can lay about 260 eggs in twelve months.

2. Examination of eggs – Examination of eggs is done in the following ways :

(i) Keep the egg in hot water, if it settles down at the bottom then it is of good quality and if it floats then its quality is not good.

(ii) If the egg is kept in the source of light, the inner matter shifts to one side and it can be seen as transparent.

Pisciculture – From ancient times, fish is used as a protein diet, especially by the people living in coastal areas. In India, fish are found in seas, rivers, ponds, etc. Rearing of fish is called pisciculture.

Main fishes – In India, two types of fish are found :

1. Sea fish 2. Freshwater fish

1. Sea fish – Sea fish are Eel, Hilsa, etc.

2. Freshwater fish – Freshwater fish are Rohu, Magoor, Sindhi, Singhada, etc.

Fishing of sea fish is done by special boats, machines and traps used for catching fish.

fish are preserved by drying in the sun, by salting or by keeping them in air tight boxes.

1.5 Sources of Food for Other Organisms

Plants prepare their own food but other organisms cannot prepare their own food. They have to depend on plants or other organisms, for their food. On this basis, organisms are divided in the following categories :

Herbivores – Animals which eat only plants and plant products are called herbivores. For example, cow, sheep, rabbit, goat, elephant, horse, deer, etc. These animals are kept under the category of grazing animals.

Carnivores – Animals which eat flesh of other animals are called carnivores. For example, lion, tiger, wolf, etc. Teeth of these animals are pointed and sharp which are adapted to tear flesh. Muscles of carnivores are stronger than herbivores.

Lion eating flesh

Omnivores – Animals which eat both plants and animals are called omnivores. For example, cat, dog, bear, etc.

Interesting Fact

Human beings come under the category of omnivores.

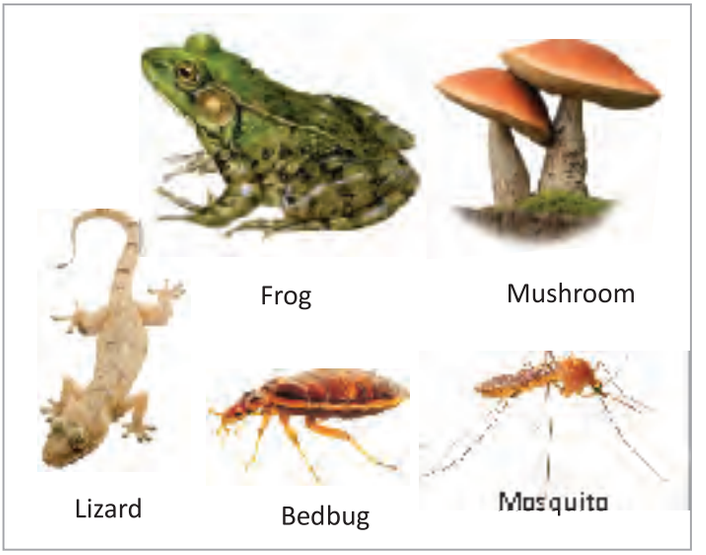
Scavengers – Animals which feed on dead animals are called scavengers. Scavengers help in cleaning the environment by eating dead animals. For example, crow, vulture, jackal, etc.

Vulture eating flesh

Insectivores – Animals which eat only insects are called insectivores. For example lizard, frog, etc.

Parasites – Animals that depend on other living organisms for their food are called parasites. For example, mosquito, bedbug, leech, etc.

Decomposers – Some organisms eat dead plants and animals. They are called decomposers. For example, mushroom, bacteria, etc. In the absence of decomposers, earth will be full of dead organisms.



1.6 Daily Needs of Energy for the Body and Basal Metabolic Rate

The food we eat daily helps in building up of different tissues. These tissues join all the muscles of the body with each other. They protect the body from infections and provide energy to the body. They also control the metabolic rate of our body. Amount of energy we need depends upon the age, sex, weight and our occupation.

Energy is needed by the body even when we are sleeping, to perform several functions like respiration, digestion and maintaining body temperature. This is calculated on the basis of Basal Metabolic Rate (BMR).

For calculating BMR, multiply your weight by 1 calorie/Kg/hr and then by 24 hours.

For eg – Suppose your weight is 60 kg, then your BMR will be–

1 calorie × 60 kg × 24 hrs = 1440 calorie

Daily Energy Needs			
Age Group		Weight of the body (Kg)	Necessary energy (Calorie)
Boy	0-1 years	7.3	800 calorie
Girls	4-7 years	20.5	1800 calorie
Boys	15-18 years	61	3000 calorie
Girls	15-18 years	56.1	2300 calorie
Adult man	18-35 years	65	3000 calorie
(Normal	35-65 years	65	2900 calorie
working)	65-75 years	63	2350 calorie
	Above 75 yrs	63	2100 calorie
Adult	18-55 years	55	2000 calorie
woman	Pregnant	56	2400 calorie
(Normal	Feeding baby	55	2700 calorie
working)	55-75 years	53	2050 calorie
	Above 75 yrs	53	1900 calorie

1.7 Maintaining Quality of Food

Quality of food can be maintained by following ways :

Storage – Eatables should be stored at minimum temperature. If the food is stored at high temperature, then it will be spoiled soon and its nutrient value will decrease. To avoid wastage of eatables, they must be stored in refrigerators and cold storage.

Wheat, rice, pulses can be stored for a long time by keeping them in air tight containers. Place where these food items are stored must not be humid.

Management – Quality of food depends upon the way it is prepared and served. If food is not prepared and served neatly, than it can give rise to many diseases like typhoid, diarrhea, etc.

Cleaning the place where food is cooked and eaten – Place where food is cooked and where it is eaten must be properly cleaned so as to keep it away from bacteria and virus. Utensils in which food is cooked must be properly, washed by soap and hot water. Place where we eat food must be free from dust and flies.

Method of cooking food – Method of cooking for different food items is different. For example, pulses and rice are cooked at the temperature of 40°C.

Before cooking rice and pulses, they must not be washed for a long time because it will decrease the percentage of vitamins present in them. Similarly, if we wash vegetables for a long time, then vitamin B and C will be destroyed. Vegetables must be cooked at the temperature of 30°C to 40°C.

On the other hand, meat and eggs must be cooked at the temperature of 50°C to 70°C.

Highlights

- Food provides energy and growth to the body.
- Main sources of food are plants and animals.
- Turnip, radish and carrot are roots.
- Tea is a favourite beverage which is obtained from tea leaves.
- Herbivores chew and digest their food.
- Carnivores have pointed teeth and paws which are adopted to tear flesh.
- Omnivores have the characteristics of both herbivores and carnivores.
- Need of energy depends upon age, sex, weight of the body and our occupation. It is measured through BMR.

Exercise

A. Tick ☑ the correct option :

1. Herbivores depend upon :
   - (a) plants ☐
   - (b) animals ☐
   - (c) Both (a) and (b) ☐
   - (d) None of these ☐
2. Carnivores have :
   - (a) soft skin ☐
   - (b) sharp pointed teeth ☐
   - (c) long hairs ☐
   - (d) None of these ☐
3. Vulture comes in which category?
   - (a) Herbivores ☐
   - (b) Carnivores ☐
   - (c) Omnivores ☐
   - (d) Scavengers ☐
4. Potato is which part of the plant?
   - (a) Root ☐
   - (b) Stem ☐
   - (c) Flower ☐
   - (d) Seed ☐
5. Which of the following is the largest producer of corn?
   - (a) Uttar Pradesh ☐
   - (b) Kerela ☐
   - (c) America ☐
   - (d) All of these ☐
6. Which disease can take place in the absence of proper management?
   - (a) Fever ☐
   - (b) Dysentery ☐
   - (c) Heart disease ☐
   - (d) Gastroenteritis ☐
7. At what temperature meat is cooked?
   - (a) 10°C ☐
   - (b) 20°C - 30°C ☐
   - (c) 50°C - 70°C ☐
   - (d) All of these ☐

B. Fill in the blanks :

1. We get necessary _____ from food.
2. Main characteristic of scavengers is _____.
3. Example of leaf is _____.
4. We eat _____ of turnip.
5. _____ is obtained from the seeds of mustard plant.
6. Plants are called _____.
7. Basal Metabolic Rate (BMR) is calculated on the basis of _____.

C. Very short answer questions :

1. What is the main characteristic of herbivores?
2. Write one example of scavengers.
3. How much temperature is required to cook meat and egg?
4. Write some names of fleshy fruits.
5. Which is the largest producer of corn in the world?

6. How much temperature is required to cook rice and pulses?
7. What will happen if vegetables are over washed?

D. Short answer questions :

1. Why do living things need food?
2. How do plants prepare their food?
3. What are herbivores? Explain with example.
4. Differentiate between decomposers and omnivores.
5. How nutrient value of food is decreased?
6. What are scavengers? Give example.
7. How do parasites obtain their food?

E. Long answer questions :

1. How is Basal Metabolic Rate calculated?
2. Explain the necessary elements required to maintain the quality of food.
3. Differentiate between scavengers and insectivores? Give example of each of them.
4. Why do we need food? Give five reasons.
5. Write short note on stems.
6. Write short note on animal products – egg and honey.
7. How are seeds used as food product in different forms?

Project Work

- On a chart paper, show the various parts of the plant which are used as food.