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## UNIT 2    FUNCTIONS OF FOOD

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We eat food daily. Have you ever questioned why we eat food and what it does to our body? In this Unit, the primary concern is to help you understand the functions of food.

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### 2.0    OBJECTIVES

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After studying this unit you will be able to :

- state the reasons for eating food;
- state the role of food in our body;
- describe the physiological role of food;
- describe the psychological significance of food; and
- explain the social aspects of food.

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### 2.1    INTRODUCTION

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You know the definitions of food, nutrient and nutrition. You would have realised that one of the important functions of food is to provide various nutrients for meeting the physiological requirement of body. However, food is much more than just a carrier of nutrients. It has several functions. This unit will focus on the various functions of food.

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### 2.2    FOOD AND ITS FUNCTIONS

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Food is one of our basic necessities. It may include rice, chapaties, dal, curries, curd, milk, fruit, etc. We may live without food perhaps for a few days but if we do not get it for long, our working capacity goes down and we

feel weak. You must have noticed this while fasting, especially when you fast for a long time. This indicates that food is important for maintaining our general health and it helps us in performing various activities.

In this unit, you will thus become familiar with the various functions of food. When you have studied it, you will be able to understand:

- the physiological function of food which includes release of energy for performing various activities;
- how food helps in our body growth/development; and
- how food helps in regulating our body processes and protects our body from infectious diseases and injuries. You will also become familiar with the psychological and social aspects of food. Thus we can say that food performs the following three major functions:
  - i) Physiological function.
  - ii) Psychological function.
  - iii) Social function.

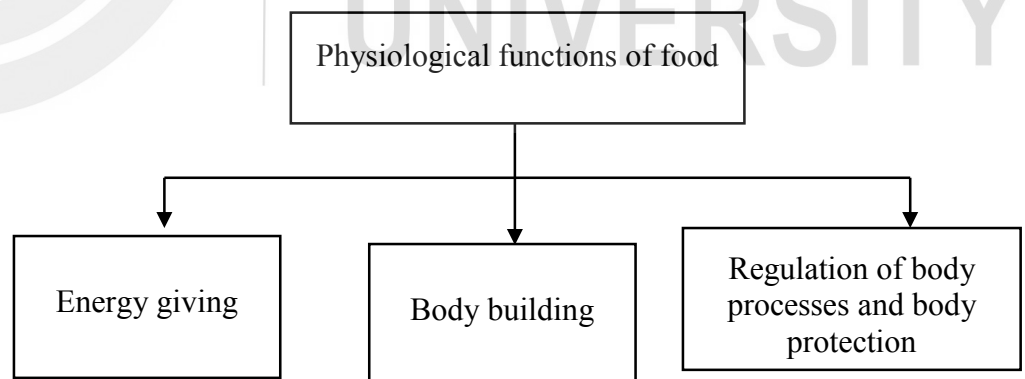
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## **2.3 PHYSIOLOGICAL FUNCTIONS**

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We know that our food provides us various nutrients such as carbohydrates, fats, proteins, vitamins and minerals. All these nutrients along with water present in the food help in the normal functioning of our body processes. Either deficiency or excess of one or more of these can very often result in the malfunctioning of our body.

Now we shall see how the food and the nutrients present in it help in carrying out the physiological functions. These can be grouped into three categories.



### **2.3.1 Energy Giving**

Food is utilised in our body to give us energy. Our body requires energy for performing physical activities like sitting, standing, walking, running, climbing up and down. We also spend energy for activities like cooking, stitching, gardening, etc. You must have experienced that you feel hungry after heavy work.

This indicates that during physical activity, energy is used up by our body. Apart from these, energy is also required for some of the involuntary on going processes in our body, such as blood circulation, respiration, digestion and absorption of nutrients, excretion of waste products and the maintenance of our body temperature.

All these processes are of utmost importance in our lives.

**FOOD GIVES US ENERGY FOR MAINTENANCE OF LIFE AND TO DO WORK**

Our food contains carbohydrates, fats and proteins which provide us energy to do work. Of these, we usually meet most of our energy needs from carbohydrates and fats. However, when these two Nutrients are present in inadequate amounts and cannot meet our body demands, then proteins are also metabolised to give us energy. Just as we measure the weight in grams and length in centimetres, energy value of food is measured in Kcal. You would like to know what a Kcal is. Isn't it?.

The amount of heat required to raise the temperature of one litre of water by one degree centigrade is commonly known as Kcal.

If you take the same weight of each of the carbohydrates, fats and proteins, fats give us twice the amount of energy as compared to carbohydrates and proteins.

In other words we can say that:

1 gm. of Carbohydrate gives us approximately	4 Kcal
1 gm. of Fat gives us approximately	9 Kcal
1 gm. of Protein gives us approximately	4 Kcal

**Check Your Progress Exercise 1**

- 1) Describe briefly the energy giving function of food.

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**Check Your Progress Exercise 2**

- 1) Calculate the energy value of the following food-stuffs in Kcal
- a) 25 gm of carbohydrates ( )
  - b) One tea spoon of sugar containing five grams of carbohydrates ( )

- c) 10 gm of protein food ( )
- d) One large spoon of oil containing 14 gm of fat ( )
- e) One glass of milk containing 12 gm of carbohydrate, 10 gm of fat and 11 gm of protein ( )

### **2.3.2 Body Building (Growth and Development)**

You have seen a child growing up. He gains both in weight and height. This can only be possible if he eats the right type and right amount of food. This particular function of food is known as the body building function of food.

In our body, not only are new cells and tissues being formed every moment but also the old ones are continuously disintegrating. Food helps in the repair of worn out tissues and in the formation of new tissues, resulting in body growth. Although all the nutrients help in this function, the major ones are PROTEINS, MINERALS AND WATER.

Water is one of the chief components of each body cell and it forms about 65% of our total body weight. This indicates how important water is in building our body. Similarly proteins are also present in each and every cell of our body. For minerals, a very good example is that of bones. However, small amounts of all the other nutrients are also present in each cell.

So we can say that:

**PROPER TYPE AND AMOUNT OF FOOD, IF TAKEN, CAN ASSURE US OF BODY GROWTH AND DEVELOPMENT.**

#### **Check Your Progress Exercise 3**

- 1) Explain in 7 or 8 lines the body-building function of food.

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### **2.3.3 Regulation of Body Processes and Body Protection**

In our body various processes are on going and food helps in regulating these. Food also helps in protecting our body from various infections and diseases.

- i) The major nutrients involved in body regulation are: Proteins, Vitamins, Minerals and Water.

A number of reactions and processes go on with the help of enzymes such as Pepsin, Rennin, Trypsin. Now, would you like to know what enzymes are?

Well, enzymes help in facilitating various reactions in our body. Their role is more like a catalyst and they participate in various processes like respiration, digestion, absorption and metabolism of food.

All the enzymes are proteins. Thus we can say that these proteins help in regulating various processes in our body. Similarly, vitamins especially the vitamins of the B-group and minerals also help in regulating our body processes.

Water is the most important constituent of our body. It not only forms 65% of our body weight but also regulates all the body processes. From the body, waste material is sent out in the form of perspiration, urine and faeces which is all possible due to water.

These are only a few examples to indicate how food helps in regulating our body processes. You can think of some other similar examples.

#### Check Your Progress Exercise 4

- 1) Explain briefly how food helps in regulating our body processes.

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In our body particular proteins are present which fight against diseases. We can say that these proteins known as antibodies (gamma-globulins) act as soldiers and fight back the enemies i.e. the disease organisms and thus we are saved from a number of diseases and infections.

Similarly, the vitamins keep our body and skin healthy and protects us from diseases. Think of cracks in an unhealthy skin which may occur due to the deficiency of some of the vitamins. Through such cracks disease organisms can enter the body and make us sick.

You must have at some time or the other cut your finger. Have you noticed that the blood which starts coming out stops after some time? Why does that happen? This is because the blood clots after some time and thus prevents further flow and loss of blood. This can happen in the presence of calcium and vitamin K. Therefore, we can say that calcium and vitamin K participate in protecting our body.

You know that water is there in our body, surrounding all our delicate organs like heart, brain, etc. This water around these organs protects them from any jerks and external shocks. In the same way we have fat just below the outer layer of the body i.e. skin which protects us from any damage when we happen to fall.

Thus we can say that:

**FOOD PROVIDES US VARIOUS NUTRIENTS TO REGULATE  
OUR BODY PROCESSES AND TO PROTECT US FROM DISEASES**

**Check Your Progress Exercise 5**

- 1) How does food help in protecting our body from infections, diseases and external injuries? Describe briefly.

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- 2) Discuss the three categories of physiological functions of food.

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**2.4 PSYCHOLOGICAL FUNCTION**

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Food not only provides various nutrients but it also satisfies our hunger needs and gives us psychological satisfaction. You must have experienced that the food that you like gives you added pleasure. For instance, if you like rice, pakoras or halwas and you get them in your meal, you experience joy in eating these. Similarly the food cooked by the person you love adds to your joy of eating.

Very often food may be used as a reward for achievement. A child on his good performance may be given sweets, ice-cream, etc. Similarly, withdrawal of food may be used as a punishment in some cases. This is known as the psychological aspect of food and we can say that food gives us a sense of psychological satisfaction.

**Check Your Progress Exercise 6**

- 1) Explain the psychological function of food.

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## 2.5 SOCIAL FUNCTION

Apart from the functions mentioned above i.e. the physiological and psychological functions of food, it is also very important from the social point of view. You have already learnt about socio-cultural factors affecting food selection in Figure 1.1.

Food creates an atmosphere where the social relations can be developed and it helps in bringing the people from different classes, communities and religions closer. You must have often seen that each of our social gatherings and functions are followed by some type of food. At a birthday party, engagement party or a marriage party, food helps in sharing the joy and happiness of each other.

You must have often invited your friends or relatives for dinner or tea, etc. Here food helps in expressing your hospitality towards them i.e. how much you care for them. In the same way exchange of sweets at festivals like Deepawali, Eid, Christmas is one of the ways of sharing your joy with other people.

These are some of the examples to express the social aspects of food. You can now list some more of such examples showing the importance of food in building social relations.

### Check Your Progress Exercise 7

1) State the social aspect of food. Give three examples to show how food helps in building social contacts. State whether true or false:

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### Check Your Progress Exercise 8

1) State whether true or false:

- a) We eat food to get energy for performing the day to day activities. ( )
- b) Food provides us proteins which help us in our body growth and development. ( )
- c) Food contains iron, which helps in coagulation of blood. ( )
- d) Food gives us psychological satisfaction. ( )
- e) Fats do not protect our body from injuries. ( )

2) Fill in the blanks:

- a) ..... forms 65% of our body.
- b) Proteins help in building our .....
- c) Our bones are made up of ..... and phosphorus.

- d) Vitamins help in ..... our body processes.
- e) When the carbohydrates and fats in our diet are lower than the amounts required by our body, the .....present in our food are utilised to give us energy.

**Check Your Progress Exercise 9**

- 1) Explain with example/how the following nutrients help in regulating our body processes and in body protection.
  - a) Water .....
  - .....
  - b) Proteins .....
  - .....
  - c) Minerals .....
  - .....
  - d) Vitamins .....

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**2.6 LET US SUM UP**

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Food is very important for us. It not only satisfies our apparent need of hunger but also provides us all the nutrients to maintain our life and help in the growth of our body. It also gives us protection against different diseases and infections and gives us psychological satisfaction. Besides, food helps us in making our social contacts and strengthening relationships.

We can thus say that food is of utmost importance for all of us.

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**2.7 GLOSSARY**

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- Enzymes** : The organic catalysts which regulate our body processes.
- Involuntary processes** : A system which cannot be controlled or regulated by human beings as per their wish.

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**2.8 ANSWERS TO CHECK YOUR PROGRESS EXERCISES**

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**Check Your Progress Exercise 1**

- 1) Our body requires energy for performing physical activities like sitting, standing and walking. We also spend energy while carrying out work like cooking, stitching, gardening, etc. Apart from these, our body requires energy for the involuntary processes such as blood circulation, respiration, digestion of food, etc.

Our food contains carbohydrates, fats and proteins which are metabolised to give us energy. Thus we can say that food gives us energy for performing the above functions.



### Check Your Progress Exercise 2

- 1) a) 100 Kcal
- b) 20 Kcal
- c) 40 Kcal
- d) 126 Kcal
- e) 182 Kcal

### Check Your Progress Exercise 3

- 1) Food helps our body to grow. In our body, not only the new cells and tissues are being added every moment but also the old ones are continuously being broken down and repaired. This results in body growth. Although, all the nutrients present in our food help in this function, the major role is played by proteins, minerals and water. This is known as the body building function of food.

### Check Your Progress Exercise 4

- 1) Proteins, vitamins, minerals, water and the other nutrients help in regulating various reactions going on in our body. Since we derive these nutrients from food, we can say that food helps in regulating our body processes.

### Check Your Progress Exercise 5

- 1) Various nutrients like proteins, vitamins, minerals, fat and water, help in protecting our body from infections, diseases and external injuries. The antibodies (special type of proteins) present in our body act as soldiers and fight back the disease producing organisms and thus we are saved from a number of diseases and infections. Similarly, the other nutrients play their role in protection of body. Since we get these nutrients through food, we can say that food helps in protecting our body.
- 2) Physiological function of food can be grouped into three categories. Energy giving, Body building and Regulation of body processes.

### Check Your Progress Exercise 6

- 1) Food satisfies our hunger and gives us a sense of psychological satisfaction. This is known as the psychological function of food.

### Check Your Progress Exercise 7

- 1) Food creates an atmosphere where social relations can be developed and helps in bringing them close. Food has a special significance in various cultures and festivals in the society. Food is an integral part of birthdays, weddings and langars and a reason for people to come together.

### Check Your Progress Exercise 8

- 1) a) True
- b) True

**Food Groups,  
Nutrients and  
Their Functions**

- c) False
  - d) True
  - e) False
- 2) a) water
- b) body cells and tissues
  - c) calcium
  - d) regulating,
  - e) proteins

**Check Your Progress Exercise 9**

- 1) Water - Regulates body temperature, surrounds all delicate organs and protects the body from shocks.
- Proteins - As enzymes, proteins, regulate the body processes but as antibodies they protect against diseases.
- Minerals and Vitamins - Calcium and Vitamin K help in clotting blood.



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