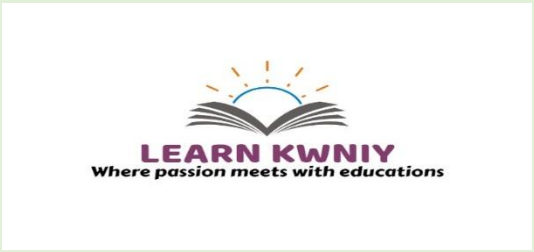

CHAPTER -1

COMPONENTS OF FOOD

SOURCES OF FOOD

DEFINITION OF FOOD

The component that we eat, which provides nutrition to the body, is called food.

E.g., Rice, fruits, vegetables, cheese, bread, milk, curd, etc.

DEFINITION OF INGREDIENT

Any materials that are required to produce a dish are called Ingredients.

Example: Atta (flour) and water are the two ingredients required to make a chapatti. To prepare vegetable curry, we need different kinds of vegetables, salt, spices, oil and so on.

WHY FOOD IS REQUIRED

Food is required for growth.

Food provide energy for doing work

Food is required for the repair and replacement of the damaged tissues.

Food provide resistance and protection against diseases from infections.

FOOD MATERIAL AND SOURCES

PLANTS

The food products that we get from plants are called as the plant products.

Eg fruits, vegetables, grains, pulses etc.

ANIMALS

The food products that we get from animals are called animal products.

Eg milk, eggs, meat products etc.

EDIBLE (EATABLE) PARTS

Roots

Some plants store food in their roots. We eat the roots of such plants as food.

For e.g., carrot, radish, beetroot, sweet potato, and turnip.

Stems

Some plants store food in their stems. We eat the stems of such plants as food.

For e.g., onion, potato, ginger, garlic and turmeric.

Leaves

We eat many leafy vegetables. The leafy vegetables are the leaves of the plants.

For e.g., spinach, cabbage and lettuce

Flowers

The flowers of some of the plants are eaten as food.

For e.g. banana. pumpkin plant

Fruits

There are some plants which store food in their fruits. So, we eat the fruits of such plants as food.

For example, apple, orange, peach, mango, pears, banana, plums, grapes, guava etc.

Seeds

Some of the plants store food in their seeds. So, we eat the seeds of these plants as food

For example, the food grains such as wheat, maize, rice, millet, Bengal gram (Chana), peas and pulses, are all seeds of their plant.

TWO OR MORE EDIBLE PART IN PLANT

Some plants have two (or more) edible parts which can be eaten as food. For example, the leaves of mustard plant are used as a leafy vegetable (sarson ka saag), and the seeds of mustard plant are used to extract mustard oil which is used as a cooking oil in the preparation of food.

Like, the fruits of banana plant are used as food, and the flowers of the banana plant are also used as food in the form of vegetable.

SPROUTING

The method of making sprouts from seeds is called 'sprouting'.

'Sprouting' is called ‘Ankuran' in Hindi. The seeds of moong, moth and chana are usually converted into sprouts in our homes to make snacks. Sprouts can be prepared from the seeds

ANIMAL PRODUCTS AS FOOD

An important animal product which is used as food is milk. Milk is also converted into other useful products such as curd, butter, ghee, cheese etc.

The other animal products which are used as food are eggs, chicken, mutton and fish.

Another animal product which is used as food is honey.

For example, the milk comes from cows (or buffaloes) which eat grass or grains as food.

Similarly, meat comes from goat which eats grass or grains as food.

WHAT DO ANIMALS EAT?

The animals eat only a few types of food. Some animals eat plant materials (grass, leaves or grains) as food, some eat the flesh of other animals, whereas some animals eat both, plant food as well as the flesh of other animals.

FOOD PRODUCERS

The plants do not eat food like animals do. The green plants make their own food by the photosynthesis. In this process, the green plants absorb water and nutrition from the soil, carbon dioxide gas from the air, and energy from sunlight and make food. Since plants can make their own food, they are called 'food producers'.

FOOD CONSUMERS

Animals are unable to make their own food by the process of photosynthesis (like the plants do). Animals depend on plants (or other animals) for food. The animals eat or consume plants and plant products, or other animals to get their food made by others, they are called 'food consumers' (or just 'consumers'). All the animals (including human beings) are food consumers.

ANIMAL OBTAINED THEIR FOOD FROM PLANT AND OTHER ANIMALS

HERBIVORES

Those animals which eat only plants (or plant products) are called herbivores. Some of the examples of herbivores are: Goat, Cow, Buffalo, Sheep, and Horse etc.

CARNIVORES

Those animals which eat only other animals as food are called carnivores. Some of the examples of carnivores are Lion, Tiger, Frog, Vulture etc.

OMNIVORES

Those animals which eat both plants and animals, are called omnivores. Some of the examples of omnivores are: Man, Dog, Cat, Crow, Hen, Pig, Sparrow, Bear, Mynah and Ant etc.

COMPONENTS OF FOOD

Substance which is essential for maintaining life and for growth is called a nutrient. Our food has five major nutrients Carbohydrates, Fats, Proteins, Vitamins and Minerals. In addition to these nutrients, water and roughage (dietary fibre) are also important parts of our food. Water and roughage do not have any food value, so they are not considered to be nutrients

Food has seven components. These are:

1. Carbohydrates
2. Fats
3. Protein
4. Vitamins
5. Minerals
6. Water
7. Roughage (or Dietary fibres)

Each component of food has its own function in the body

1. CARBOHYDRATES

- Carbohydrates provide energy to our body. They are energy giving foods.

- Some of the common sources of carbohydrates in our food are: Cereals (like Wheat, Rice, Maize, Pearl millet), Potatoes, Sweet potato, Sugar, Jaggery , and Honey. Fruits like banana, mango, melon and papaya also contain carbohydrates

2. FATS

- Like carbohydrates, fats also provide energy to our body.
- Butter, ghee, groundnut oil, mustard oil, sunflower oil and coconut oil are the common fats used by us in everyday life. Both, fats as well as carbohydrates provide energy, therefore, the foods containing fats and carbohydrates are called 'energy giving foods'.

3. PROTEINS

- Proteins give materials which repair the damaged body cells (as that during the healing of wounds). Thus, proteins are needed for the growth and repair of our body.
- The various foods which are rich in proteins are: Milk, Cheese, Pulses (Dal), Peas, Beans, Soyabean, Groundnut, Fish, Meat, Chicken and Eggs. All these are body building foods.

4. VITAMINS

- **Vitamins are necessary for good eyesight; healthy teeth, gums and bones; proper digestion ; normal growth; and good health.**
- **In fact, vitamins help in protecting our body against diseases**
- **Some of the important vitamins are : Vitamin A, Vitamin B1, Vitamin B2, Vitamin B, Vitamin B12, Vitamin C, Vitamin D, Vitamin E and Vitamin K. The vitamins B1, B2, B, and B12 taken together are known as Vitamin B-complex.**
- **Our body needs all these vitamins in small quantities to remain healthy.**

Vitamin A

- **Vitamin A protects the eyes, skin and hair.**
- **The various sources of vitamin A are the foods such as: Milk, Butter, Carrot, Fish liver oil, Eggs, Green vegetables, Mango and Papaya.**

Vitamin B

- **Vitamin B, is essential for growth, and proper functioning of the digestive system, heart, nerves and muscles.**
- **Vitamin B, is present in good amounts in the following foods: Milk, Eggs, Meat, Wholegrain cereals (like wheat grains and rice), Potatoes, Yeast and Green Vegetables.**

Vitamin C

- **Vitamin C is necessary for keeping teeth, gums and joints healthy.**
- **Vitamin C also increases the resistance of our body to infection and helps to fight diseases.**
- **Vitamin C is present in: Citrus fruits (such as Oranges, Lime and Lemon), Amla, (Indian gooseberries), Tomato, Guava, and Green vegetables. Actually, almost all the fresh fruits vegetables contain some vitamin C.**

Vitamin D

- **Vitamin D is necessary for the normal growth of bones and teeth.**
- **Vitamin D is present in foodstuffs such as: Milk, Fish, Egg, Butter and Fish liver oil. Some vitamin D is also made in our body when the skin is exposed to sunlight.**

5. MINERALS

- **Minerals are needed to build bones and teeth; formation of blood; coagulation of blood; and functioning of muscles, nerves and thyroid gland, etc.**
- **Minerals are needed by our body in small amounts. Some of the important minerals needed by our body are: Calcium, Phosphorus, Iron, Iodine, Sodium and Potassium.**

Calcium and Phosphorus

- **Calcium is needed for making bones and teeth. Calcium also helps in the proper functioning of heart and other muscles, as well as in the clotting of blood.**

- Some of the foods which are good sources of calcium are: Milk, Cheese, Eggs, Green leafy vegetables, and Fish. Wheat and rice contain very little of calcium.
- Like calcium, phosphorus is needed for the formation of bones and teeth.
- Some of the sources of phosphorus in our food are: Milk, Pearl millet (Bajra), Banana, Pulses (Dal), and Green leafy vegetables.
- Milk is one food item which contains both calcium and phosphorus minerals in good amounts.

Iodine

- Iodine is essential for the proper functioning of the thyroid gland which controls the growth of the body.
- The various sources of iodine in our food are : Sea-food (like Sea-fish), Fruits, Vegetables and Iodised salt (The common salt which contains adequate amount of iodine salts

Iron

- Iron is needed to make hemoglobin present in red blood cells (which carries oxygen from the lungs to the body parts). Thus, iron is an important constituent of hemoglobin in the blood.
- Some of the sources of iron in our food are: Spinach (Palak, Saag), Other green leafy vegetables, Apples, Eggs, Liver, Cereals (like Bajra), Pulses and Groundnuts.

6. WATER

Water is needed by our body:

(i) To transport digested food to the body cells

(ii) To transport important chemicals such as hormones around the body

(iii) To get rid of waste products from the body

(iv) To control and regulate the temperature of body. Water controls and regulates the temperature of our body by the process of sweating and evaporation.

7. ROUGHAGE (DIETARY FIBRE)

- Roughage is the fibrous matter in food which cannot be digested.
- Roughage is also called dietary fibre.
- Like water, roughage does not provide any nutrients to our body.
- Roughage is needed for the normal working of the digestive system.
- Some of the good sources of roughage (or dietary fibre) in our food are: Fruits, Vegetables and Whole meal flour products (such as whole meal chapatti and whole meal bread).

BALANCED DIET

The diet which contains adequate amounts of all the nutrients such as carbohydrates, fats, proteins, vitamins and minerals (sufficient for the normal growth and development of the body), is called a balanced diet.

A balanced diet also contains sufficient amount of water and roughage. Some food items are rich in carbohydrates, some are rich in

fats, while others may contain more of proteins, vitamins and minerals. No single food item can provide us all the essential nutrients in adequate amounts.

DEFICIENCY DISEASES

Disease arises from the deficiency of nutrients (or lack of nutrients) in our food (or diet), it is called a deficiency disease.

PROTEIN DEFICIENCY DISEASE

The deficiency of proteins in the diet of small children causes a disease known as kwashiorkor.

Kwashiorkor disease occurs in children of 1 to 5 years of age. Kwashiorkor develops when a mother stops feeding her child with breast milk due to the birth of another baby too soon.

PROTEIN AND CARBOHYDRATE DEFICIENCY DISEASE

The deficiency of proteins as well as carbohydrates in the diet of very small children causes a disease known as marasmus.

VITAMIN DEFICIENCY DISEASES

1. Deficiency of Vitamin A

The deficiency of vitamin A weakens our vision (or eyesight) in dim light.

2. Deficiency of Vitamin B

The deficiency of vitamin B, in food causes a disease known as Beriberi.

3. Deficiency of Vitamin C

The deficiency of vitamin C causes a disease known as scurvy.

Symptoms of vitamin C deficiency are: and teeth in the disease called bleeding from the gums, loosening of teeth, and wounds do not heal easily.

4. Deficiency of Vitamin D

The deficiency of vitamin D in the diet of small children causes a disease known as rickets. A child suffering from rickets has bow legs (bent legs) and a pigeon-type chest

MINERAL DEFICIENCY DISEASES

1. Deficiency of Calcium

The deficiency of calcium in the diet of children causes a disease called rickets. The main symptoms of rickets are: bow legs (bent

legs), and pigeon-type chest. The deficiency of calcium also leads to poor growth of teeth in children.

2. Deficiency of Iodine

The deficiency of iodine mineral in the diet can cause two diseases: cretinism and goitre.

The deficiency of iodine in the diet of children causes a disease known as. The main symptoms of iodine deficiency Glands in the neck appears swollen, mental disability in children

3. Deficiency of Iron

The deficiency of iron in the diet leads to a disease called anemia. The main symptoms of iron deficiency (or anemia disease) are: The person looks pale, feels very weak, tires easily, and loses weight. His nails also turn white.

Test for Food Nutrients

1. TEST FOR CARBOHYDRATES IN FOOD

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

2. Add 2 or 3 drops of dilute iodine solution to the food with a dropper.

3. If a blue-black colour is produced, then starch is present in the given food.

2. Test for the Presence of Fat in Food

1. Rub a small quantity of the given food in the centre of a brown paper.

2. Hold this paper in front of a source of light and look through it.

3. If the food has left a bright greasy patch on paper, then fat is present in the food.

3. TEST FOR PROTEINS IN FOOD

1. Take 2 mL of the given food-stuff solution (or suspension) in a test-tube.

2. Add a little of dilute sodium hydroxide solution till the mixture clears.

3. Then add 2 or 3 drops of copper sulphate solution and shake the test-tube.

4. If a violet colour appears in the solution, then protein is present in the given food-stuff.