

NIOS lesson adaptation project

By EMBRACE Volunteers

(A community initiative of Harchan Foundation Trust)

Chapter 2

Food And Its Nutrients

(Printable Version)

- **Simplified Lesson**
- **Previous Year Questions with Answers**
- **Terminal Questions**

This project is aimed at supporting children with different needs. Information provided is adapted to the best of knowledge by the volunteers. For complete information please refer to the NIOS resources in <https://www.nios.ac.in/online-course-material/secondary-courses.aspx>.

LESSON 2

Food And Its Nutrients

Functions of food

- Food gives us energy
- Food helps in the growth and repair of tissues.
- Food gives strength to fight against diseases.
- Food helps the body to function normally.
- Food satisfies hunger.
- Social functions.
- Psychological functions.

Nutrition: The science which tells us about what happens to the food when it enters our body

Nutrients: Invisible compounds in the food which are necessary for keeping the body healthy

The Common nutrients in our food are:

Carbohydrates: Energy giving food.

Carbohydrate Food Sources: rice, sweets, potatoes

- One gram of carbohydrate gives four kcal.

Functions of Carbohydrate:

- Gives energy.
- Increases the bulk of our food.
- Helps to make the food tasty.

Proteins Food Sources:

- Animal sources - meat, egg, fish, milk, curd, cheese.
- Plant sources- all cereals, pulses, peas, nuts, soyabean.

Functions of proteins:

- Needed for making new cells in the body.
- Helps in repairing old and damaged cells.
- Helps in healing wounds.
- Needed for making blood, enzymes and hormones.

Fat: One gram of fat gives you nine kcal. Fats give more energy than carbohydrates.

Functions of Fat:

- Concentrated source of energy.
- Helps to keep our body warm.
- Helps in utilization of fat soluble vitamins like A, D, E, K.
- Provides protection to delicate organs like heart, liver.

- Makes the food tasty.

Minerals:

Functions of minerals:

- ✓ Growth of our body and strength of bones.
- ✓ Maintenance of water balance in the body.
- ✓ Contraction of muscles.
- ✓ Normal functioning of nerves and clotting of blood when needed.

(a) Calcium:

- Helps bones to grow and become strong.
- Makes teeth healthy and strong.
- Helps in clotting of blood, and in the movement of muscles.

Sources of calcium:

- ❖ Milk and its products like paneer, cheese, curd, buttermilk etc.
- ❖ Green leafy vegetables.

(b) Iron:

Functions of Iron: - Needed for the formation of hemoglobin in blood which helps in carrying oxygen to all the parts of the body.

Sources of Iron: Green leafy vegetables, whole cereals, and legumes, liver, heart, kidney and egg yolk, jaggery, dates and pomegranate.

(c) Iodine:

Functions of Iodine: needed for proper functioning of thyroid gland in our body.

Sources of Iodine:

- ❖ Sea foods like fish and sea weeds.
- ❖ Plants which grow in iodine rich soil.
- ❖ Salt fortified with iodine.

Vitamins: Required in very small quantities in our diet, but are essential for proper functioning of the body.

Water soluble vitamins: Which are soluble in water

Ex: B-complex, Vitamin C.

Fat soluble vitamins: A, D, E and K.

Vitamin A

Functions:

- For better vision,
- Makes our skin healthy.
- Necessary for normal growth and development,
- Provides resistance to infections

Sources of Vitamin A: Vegetables and fruits

Deficiency disorder:

- ✓ Night blindness.

Vitamin D:

Functions of Vitamin D: works with minerals -phosphorus and calcium to make teeth and bones strong.

Sources of Vitamin D:

- ✓ Oily fish, milk, cheese, butter, ghee etc.
- ✓ Our body can make vitamin D when the skin is exposed to sunlight.

Deficiency disease: Rickets

Vitamin E:

Prevents tissue breakdown.

Sources of Vitamin E: Whole pulses and cereals.

Vitamin K:

- Needed in the process of clotting.

Sources of Vitamin K: Green leafy vegetables.

Water soluble vitamins

Vitamin B complex:

- ✓ Helps the body to use energy.
- ✓ Keeps the digestive system healthy.

Sources of vitamin B complex: pulses, whole grains, cereals, wheat, rice etc.

Vitamin C:

- All the body cells need vitamin C it helps to hold cells together.
- It also keeps our teeth and gums healthy.

Sources of Vitamin C: Fruits, leafy vegetables, potatoes, sprouted grains, guava and amla.

Deficiency disease: scurvy.

Dietary fiber:

Also known as roughage.

Functions of roughage:

- ✓ Increases the bulk and softness of stool, thus making it easier to pass.
- ✓ Helps in the prevention of: constipation, cancer of large intestine, diabetes, obesity.

Water:

Not a nutrient but very important for our body.

Functions of water:

- Is a constituent of all body fluids.
- Helps to digest food.
- Helps to keep our body temperature constant.
- Helps to remove waste products from our body.

Deficiency diseases:

Caused due to shortage or absence of certain nutrients in our daily diet for a long period.

Protein Energy Malnutrition (PEM)

When there is a lack of protein and energy in the diet for long time.

Occurs mainly in children below 5 years.

PEM is of two types:

(i) Kwashiorkor: protein intake is deficient but energy from carbohydrates is sufficient.

The child develops pot like belly.

(ii) Marasmus: when protein and energy both are insufficient.

There is growth failure.

Iron Deficiency anemia:

Found in women and children.

Major causes:

- Inadequate intake of dietary iron.
- Hookworm infestation.
- Excessive blood loss due to accidental injury.

There is not sufficient hemoglobin in blood therefore, the supply of oxygen to the cells is reduced.

Feel tired, restless and fatigued .

Vitamin B complex deficiency: Beri Beri

Symptoms: sore mouth, sore tongue, redness of the tongue and cuts at the edges of mouth.

Consumption of brown rice prevents this disease.

Iodine Deficiency Disorders (IDD):

Deficiency of iodine leads to number of disorders like- goitre, cretinism, mental retardation.

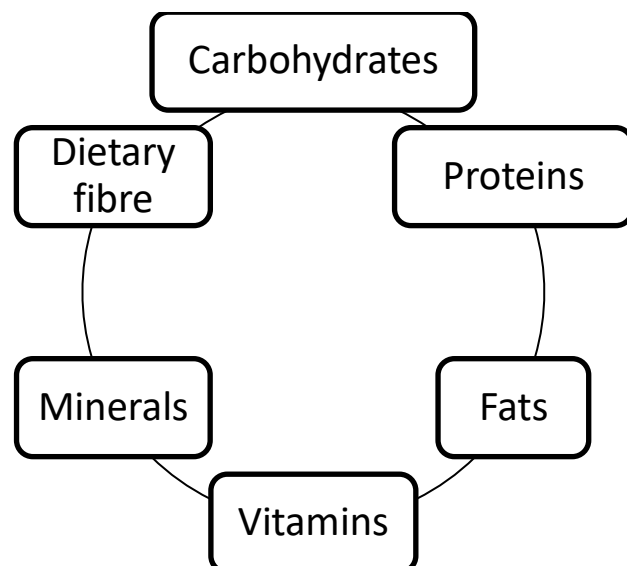
Goitre: swollen neck, seen among adolescents, young adults and children.

Cretinism: A severe deficiency of iodine during prenatal life causes this.

Solution: eat iodized salt.

Balanced diet: We should eat food which provides all the nutrients as there is no single food which provides all the nutrients.

Common nutrients of food.



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| Common nutrients in our food |
| 1. Carbohydrates-energy giving food |
| 2. Proteins- body building food |
| 3. Fats- gives more energy than carbohydrates |
| 4. Vitamins- fat soluble: A,D,E K. water soluble: Vitamin B and C |
| 5. Minerals: calcium, iron, iodine |
| 6. Dietary fibres |
| 7. Water- not a nutrient but very important for our body |

Deficiency diseases:

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| 1. Vitamin A deficiency- Night blindness |
| 2. Vitamin D deficiency- Rickets |
| 3. Vitamin C deficiency- Scurvy |
| 4. Vitamin B deficiency- Beri-Beri |
| 5. Protein Deficiency- PEM |
| 6. Iron deficiency anaemia |
| 7. Iodine deficiency disorders |

PREVIOUS YEARS QUESTIONS

One-mark questions:

- 1) The main function of protein in the body is:**
(a) To increase weight (b) To provide energy
(c) Growth and repair (d) To make the food tasty
- 2) Fiber in our diet plays an important role because**
(a) It gives us energy
(b) It helps in passing off the stool
(c) It is good source of protein protein
(d) It makes our teeth strong.
- 3) Eggs lack in:**
(a) Vitamin A (b) Protein
(c) Iron (d) Vitamin C
- 4) The vitamin that prevents rickets is:**
(a) Vitamin C (b) Vitamin D
(c) Vitamin B (d) Vitamin A
- 5) Cretinism is caused due to deficiency of:**
(a) Carbohydrates (b) Iron
(c) Iodine (d) Proteins
- 6) Gur/ jaggery is a very good source of:**
(a) Calcium (b) Iron
(c) Protein (d) Fat
- 7) One gram of protein gives us:**
(a) 9 kcal of energy (b) 16 kcal of energy
(c) 10 kcal of energy (d) 4 kcal of energy
- 8) Which vitamin works with phosphorous and calcium to make teeth and bones strong?**
(a) Vitamin A (b) Vitamin C
(c) Vitamin D (d) Vitamin B
- 9) Which nutrient provides maximum kilocalories?**
(a) Carbohydrates (b) Protein
(c) Fats (d) Vitamins

10) You should buy deep orange and red coloured fruits as they are rich in this vitamin:

- (a) Vitamin D (b) Vitamin C
(c) Vitamin B (d) Vitamin A

11) Which nutrient is rich in fortified salt?

- (a) Iron (b) Iodine
(c) Calcium (d) Iron and iodine

12) Which of the following is not a carbohydrate?

- (a) Oil (b) Sugar
(c) Rice (d) Potato

13) Curd is a very good source of:

- (a) Iron (b) Calcium
(c) Carbohydrate (d) Iodine

14) Children who suffer from rickets should include foods rich in which vitamin?

- (a) Vitamin A (b) Vitamin C
(c) Vitamin B (d) Vitamin D

15) The nutrient needed for muscle building and repairing of worn out cells and tissues is:

- (a) Carbohydrate (b) Fat
(c) Fiber (d) Protein

16) Anemia is very common in Indian women due to deficiency of:

- (a) Iodine (b) Iron
(c) Protein (d) Calcium

17) One gram carbohydrate gives how many kilo calories?

- (a) 4 k calories (b) 5 k calories
(c) 7 k calorie (d) 9 k calories

18) Yellow fruits like papaya and mango are rich source of:

- (a) Vitamin A (b) Vitamin B
(c) Vitamin C (d) Vitamin D

19) Which vitamin is required for good vision?

- (a) Vitamin A (b) Vitamin C

(c) Vitamin E (d) Vitamin B

20) Soya bean and soya products are a good sources of:

- (a) Vitamin C (b) Iodine
(c) Carbohydrates (d) Protein

21) Minerals that help in blood clotting:

- (a) Calcium (b) Phosphorous
(c) Manganese (d) Nickel

Two- mark questions:

1) State any two functions of Vitamin C in our body. Mention its sources.

Ans: Holding cells together

Keeps our teeth and gums healthy.

Sources: Amla, fresh fruits, sprouted grains.

2) State four functions of protein in our body.

Ans: Makes new cells in the body

Helps in repair of old and damaged cells.

Helps in healing wounds.

Needed for making enzymes and hormones.

3) Which nutrient is called bodybuilding food? Give two examples of good food sources of that nutrient.

Ans: Protein.

Sources: meat, egg, fish, pulses, milk.

4) Why is it important to include foods rich in fibre in our food? Give two reasons.

Ans: It increases the bulk and softens the stool.

Prevents constipation.

Prevents cancer of the large intestine.

5) Mention any two functions of Vitamin D.

Ans: Makes the teeth and bones strong.

Protects our body from diseases.

6) Give any two functions and any two good sources of Vitamin A.

Ans: Better vision.

Makes our skin healthy.

Provides resistance to infections.

7) Give four reasons to include water in the meals.

Ans: Constituent of all body fluids.

Helps to digest food.

Helps to keep our body temperature constant.

Helps to remove waste products from our body.

Three- Mark Questions:

1) List any three main causes for iron deficiency anemia among people.

Ans: Inadequate intake of dietary iron.

Poor absorption of iron.

Excessive blood loss due to accidental injury.

2) What is Protein Energy Malnutrition (PEM)? Differentiate between kwashiorkor and Marasmus.

Ans: PEM is a deficiency disease.

Occurs when there is lack of proteins and energy in the diet for a long time.

Kwashiorkor: Protein intake is deficient but energy from carbohydrates are sufficient.

Marasmus: Protein and energy both are insufficient for a long time.

3) Write any four functions of Vitamin A. Mention its two good sources.

Ans: Needed for better vision.

Makes our skin healthy.

Necessary for normal growth and development.

Provides resistance to the infection.

Sources: Vegetables and fruits, egg yolk, green leafy vegetables.

4) What are nutrients? Name the common nutrients present in food.

Ans: Nutrients are the invisible compounds in the food which are necessary for keeping the body healthy.

The common nutrients in our food:

Carbohydrates

Proteins

Fats

Vitamins

Minerals

Fibre and water.

5) Define nutrition. List any five functions of food.

Ans: Nutrition is the science which tells us about what happens to the food when it enters our body.

Five functions of food:

Gives us energy.

Gives strength to fight against diseases.

Food helps the body to function normally.

Satisfies hunger

Social function

Psychological function.

Four-Mark Questions:

1) Which is the main vitamin you get from the following: Also write one function of each vitamin.

(i) Amla: Vitamin C – Helps to hold the cells together.

(ii) Mango: Vitamin A and C

(iii) Sunlight: Vitamin D- makes teeth and bones strong

(iv) Brown rice or Dalia: Protein- body building.

2) Write any four functions of proteins. Name two cheap sources of proteins and the two diseases caused by its deficiency.

Ans: Makes new cells in the body

Helps in repair of old and damaged cells.

Helps in healing wounds.

Needed for making enzymes and hormones.

Sources of protein:

Animal sources: meat, egg, fish, poultry, milk, curd, cheese

Plant sources: cereals, pulses, peas, soyabean.

Deficiency diseases:

Kwashiorkor and Marasmus.

3) Give four reasons for giving protein rich food to infants. How much is their daily requirement? Name three good sources of proteins.

Ans: Makes new cells in the body

Helps in repair of old and damaged cells.

Helps in healing wounds.

Needed for making enzymes and hormones.

They require 1 gm of protein for every kilogram of bodyweight per day.

Sources of protein:

Animal sources: meat, egg, fish, poultry, milk, curd, cheese

Plant sources: cereals, pulses, peas, soyabean.