

UNIT-IX

MINERALS

Minerals: Types, Functions, Deficiency diseases, recommended dietary requirements

“Minerals in food are the elements present in food that are required by our body to develop and function properly.”

Types of Minerals in Food

Our body requires minerals in specific quantities. Some of them are required in large doses, while others may be required only in traces. Hence, based on the requirement of the body, minerals in food are classified into two types:

Macrominerals

- Macrominerals are those minerals which are required in relatively large doses. Therefore, they are also called **major minerals**.
- Macrominerals include sodium, calcium, chloride, magnesium, potassium, phosphorus, and sulfur. These minerals are vital for the proper functioning and metabolism of the body. Our body cannot produce these minerals; hence, they need to be obtained from a food source.
- The deficiency of these minerals results in severe ramifications for health. For example, calcium deficiency weakens the skeletal system, thereby increasing the risk of fractures. The deficiency of Iodine results in goitre and other hormonal disorders, and the deficiency of sodium results in hyponatremia.

Microminerals

- Also called **trace minerals**, these are minerals which are required in small amounts. Therefore, they are also called **minor minerals**. Trace minerals include iron, copper, iodine, zinc, manganese, fluoride, cobalt and selenium.

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- If these trace minerals are taken in excessive quantities, mineral toxicity is induced. For instance, acute selenium toxicity is observed if an individual overdoses on dietary supplements. It can cause nausea, nail discolouration or brittleness, hair loss, and diarrhoea.

Functions of Minerals in Food

The following are some of the common minerals in food and their functions in the body.

Calcium

- Helps blood clotting.
- Helps muscle contraction and nerve function.
- Essential for building strong and healthy bones.

Chloride

- Maintains proper blood volume, blood pressure, and pH of our body fluids.

Copper

- Formation of red blood cells.
- Helps with the functioning of the nervous system.

Iodine

- Promotes the normal functioning of the thyroid gland.
- Helps in the proper functioning of brain functions.
- Promotes normal growth and development of cells.

Iron

- Helps in transporting oxygen to all parts of the body.
- Produces and stores the energy for further metabolisms.

Magnesium

- Provides structure for healthy bones.
- Produces energy from the food molecules.
- Maintains proper functioning of muscle and nervous system.

Manganese

- Helps maintain water balance.
- Controls nerve impulse transmissions.

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Sodium

- Maintains cellular osmotic pressure.
- Helps in maintaining blood volume and blood pressure and fluid balance in the body.

Sulfur

- Involved in protein synthesis.
- Protects your cells from damage.
- Helps in promoting the loosening and shedding of Skin.

Phosphorus

- Helps the body store and use energy.
- Works with calcium in the formation of strong, healthy bones and teeth.

Potassium

- Controls nerve impulses and muscle contractions.
- Helps in maintaining fluid balance in the body.
- Maintains proper functioning of muscle and nervous system.

Zinc

- Aids in wound healing.
- Supports the immune system.
- Helps in the formation of strong bones.
- Controls the functioning of the sense organs in the nervous system.
- Important and essential process of cell division and reproduction.