

Minerals

The Tiny Nutrients with Big Ben Benefits

What Are Minerals?

Minerals are natural nutrients that are needed in small amounts to stay strong, energetic, and healthy. They come from major (Macro) minerals

- needed in larger amounts
- needed in very small amounts but still vital

Major (Macro) Minerals

Mineral	Key Functions / Benefits	Deficiency Effects	Natural Food Sources	RDA (per day)	Mode of Action
Calcium (Ca)	Builds strong bones and teeth; helps muscles	Weak bones, osteoporosis, cramps	Milk, curd, paneer, ragi, almonds, spinach	1600 – 1200 mg	Stored in bones and released into blood to maintain calcium balance; essential for nerve function
Phosphorus (P)	Works with calcium	Weakness, bone pain, rickets	Milk, fish, meat, eggs, nuts	700 mg	
Magnesium (Mg)	Muscle relaxation; nerve function; heart rhythm	Fatigue, cramps, irregular heartbeat	Nuts, seeds, banana, spinach, whole grains	340 mg (men), 310 mg (women)	Activates + 150 enzymes; controls function
Potassium (K)	Maintains heart rhythm, fluid balance	Weakness, cramps, irregular pulse	Banana, coconut water, beans, tomatoes	3500 mg	Control osmotic balance
Sodium (Na)	Maintains fluid balance; nerve	Low blood pressure, weakness	Table-salt, soups, pickles	1500 mg	Part of amino acids

Trace (Micro) Minerals

Mineral	Key Functions / Benefits	Deficiency Effects	Natural Food Sources	RDA (per day)	Mode of Action
Iron (Fe)	Makes hemoglobin for oxygen transport	Anemia, tiredness, hair fall	Liver, spinach, dates, beetroot	17 mg (men), 21 mg (women)	Forms red blood cells
Zinc (Zn)	Poor healing, wound healing	Poor healing, hair loss, low immunity	Nuts, seeds, whole grains, egg	12 mg (men), 10 mg (women)	Helps enzymes and immune system
Iodine (I)	Essential for thyroid hormone	Goiter, weight gain	Iodized salt, sea fish, dairy	150 µg	Forms thyroxine
Selenium (Se)	Helps protect DNA and nerve	Muscle weakness, thyroid issues	Brazil nuts, fish, egg, cereals	40 µg (men), 30 µg (women)	Part of antioxidant enzymes

Minerals – The Tiny Nutrients with Big Benefits

✿ What Are Minerals?

Minerals are **natural nutrients** your body needs in small amounts to stay strong, energetic, and healthy.

They come from **soil, water, and food**, and help in **growth, energy, and body balance**.

They are of two types:

- **Major (Macro) minerals** – needed in larger amounts.
- **Trace (Micro) minerals** – needed in very small amounts but are still vital.

⚙ How Do Minerals Work (Mode of Action)?

- Act as **building materials** for bones, teeth, blood, muscles, and nerves.
 - Help enzymes and hormones work properly.
 - Support **heart, brain, muscle, and immune system**.
 - Maintain **water balance and energy production** in the body.
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🍷 Major (Macro) Minerals

Mineral	Key Functions / Benefits	Deficiency Effects	Natural Food Sources	RDA (per day)	Mode of Action
Calcium (Ca)	Builds strong bones and teeth, helps muscles and nerves	Weak bones, osteoporosis, cramps	Milk, curd, paneer, ragi, almonds, spinach	1000–1200 mg	Stored in bones; released into blood to maintain muscle and nerve function
Phosphorus (P)	Works with calcium for bones, energy production	Weakness, bone pain	Milk, fish, meat, eggs, nuts	700 mg	Forms ATP (energy) and bone mineral
Magnesium (Mg)	Muscle relaxation, nerve function, heart rhythm	Fatigue, cramps, irregular heartbeat	Nuts, seeds, banana, spinach, whole grains	340 mg (men), 310 mg (women)	Activates >300 enzymes, controls muscle & nerve signals
Potassium (K)	Maintains heart rhythm, fluid balance	Weakness, cramps, irregular pulse	Banana, coconut water, beans, tomato	3500 mg	Maintains fluid and electrical balance in cells
Sodium (Na)	Fluid balance, nerve and muscle function	Low BP, weakness	Table salt, soups, pickles	1500 mg (limit: <2300 mg)	Controls osmotic balance
Chloride (Cl)	Fluid balance, digestion (HCl in stomach)	Rare; dehydration	Salt, seaweed, olives	2300 mg	Maintains acid-base and fluid balance
Sulfur (S)	Skin, hair, nails, detoxification	Brittle nails, dull hair	Garlic, onion, eggs, cabbage	— (No specific RDA; part of amino acids)	Present in amino acids methionine & cysteine

Trace (Micro) Minerals

Mineral	Key Functions / Benefits	Deficiency Effects	Natural Food Sources	RDA (per day)	Mode of Action
Iron (Fe)	Makes hemoglobin for oxygen transport	Anemia, tiredness, hair fall	Liver, spinach, dates, beetroot	17 mg (men), 21 mg (women)	Forms red blood cells
Zinc (Zn)	Immunity, wound healing, hair & skin	Poor healing, hair loss, low immunity	Nuts, seeds, whole grains, eggs	12 mg (men), 10 mg (women)	Helps enzymes and immune system
Iodine (I)	Thyroid hormones, metabolism	Goiter, tiredness, weight gain	Iodized salt, sea fish, dairy	150 µg	Forms thyroxine hormone
Selenium (Se)	Antioxidant, thyroid health	Muscle weakness, thyroid issues	Brazil nuts, fish, eggs	40 µg (men), 30 µg (women)	Part of antioxidant enzymes
Copper (Cu)	Iron absorption, bone & nerve health	Anemia, fatigue	Nuts, shellfish, organ meats	900 µg	Helps iron metabolism & collagen
Manganese (Mn)	Bone & cartilage formation	Weak bones, poor growth	Whole grains, leafy greens, tea	2–5 mg	Cofactor for enzymes
Chromium (Cr)	Regulates blood sugar with insulin	Glucose intolerance	Whole grains, broccoli, nuts	25 µg (women), 35 µg (men)	Improves insulin sensitivity
Fluoride (F)	Strong teeth and bones	Tooth decay	Tea, fluoridated water, fish	3–4 mg	Strengthens enamel and bone structure
Molybdenum (Mo)	Helps enzyme activity, detox	Rare deficiency	Legumes, grains, nuts	45 µg	Cofactor in enzyme systems

🕒 How Much & How to Take

✔ **Best Source:** Balanced diet — colorful fruits, vegetables, grains, dairy, nuts, and seeds.

✔ **Supplements:** Only under doctor's advice — especially for children, pregnant women, elderly, or chronic illness.

✔ **Tips for Better Absorption:**

- Take iron with Vitamin C (like lemon or orange juice).
 - Avoid tea/coffee immediately after iron intake.
 - Calcium absorbs better with food.
 - Stay hydrated — water helps minerals circulate.
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💡 Key Takeaways

- ✔ Minerals are essential for every cell, muscle, and bone.
- ✔ Eat a variety of natural foods — no pill replaces a balanced diet.
- ✔ Check your nutrition regularly — low or high levels can both harm.
- ✔ Talk to your doctor before starting any mineral supplement.