**Minerals**

Minerals are inorganic substances required by the body in very small amounts. They perform a variety of functions in the body that include:

* Maintaining water and acid-base balance
* Assisting in blood clotting
* Nerve transmission
* Oxygen transport
* Absorption of nutrients

**Minerals are categorized into two groups depending on the quantities required by the body:**

1. **Macro-minerals include:** Calcium, Phosphorus, Sulfur, Sodium, Potassium, Chloride, and Magnesium. The body requires 100mg or more of these minerals.

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| **Mineral** | **DRI (male/female 19-70) :** | **UI** |
| **Macro-minerals** | **(Daily Recommended Intake)** | **(Upper Intake)** |
| **Calcium** | 19-50 yr: 1000mg/d 51-70 yr:1200mg | 2500mg/d |
| **Phosphorus** | 19-50 yr: 700mg/d 51-70 yr: 700mg | 4000mg/d |
| **Magnesium** | Female:19-70 yr:320 mg/d Male:19-70 420 mg/d |  |
| **Sodium** | 1500mg/d | 2300mg/d |
| **Potassium** | 4700mg/d |  |
| **Chloride** | 2300mg/d | 3600mg/d |
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| **Micro-minerals** |  |  |
| **Iodine** | 150ug/d |  |
| **Iron** | 8mg/d - 18mg/d (females age 19-50) | 45mg/d |
| **Zinc** | 8mg/d females, 11mg/d males | 40mg/d |
| **Selenium** | 55ug/d | 400ug/d |
| **Fluoride** | 3mg/d females 4mg/d males | 10mg/d |
| **Chromium** | Female: 19-50 yr 25ug/d 51-70 yr 20ug/dMale:19-50ug/d 35 51-70 yr 30ug/d |  |
| **Copper** | 700ug/d | 10,000 ug/d |

1. **Micro-minerals include**: Iron, Copper, Zinc, Flourine, Iodine, Chromium, Selenium, and Manganese. The body requires these in extremely small amounts hence the name “micro” mineral.

\*all recommendations are for both males and females ages 19-70 unless otherwise specified

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| **Mineral** | **Functions** | Sources |
| **Calcium** | Major mineral of bones and teeth. Aids in normal muscle contraction and relaxation, nerve functioning, regulation of blood clotting, blood pressure and immune defences | Milk and milk products, oysters, small fish, leafy greens, broccoli, legumes. |
| **Phosphorus** | Mineralization of bones and teeth; important in cells’ genetic material, cell membranes, energy transfers and buffering systems | Foods from animal sources, some legumes |
| **Magnesium** | A factor in bone mineralization, the building of protein, enzyme action, muscular function, nerve impulses, immune function and maintenance of teeth | Nuts, legumes, whole grains, dark green vegetables, sea foods, chocolate, cocoa.  |
| **Sodium** | Needed in the body to regulate fluids and blood pressure, and to keep muscles and nerves functioning smoothly |  |
| **Potassium** | Maintains normal fluid and electrolyte balance; facilitates chemical reactions; assists in nerve function and muscle contractions | Baked potato, salmon, melon, avocado, banana, lima beans, orange juice |
| **Choloride** | Part of Hydrochloric acid found in the stomach, necessary for proper digestion. Helps maintain normal fluid and electrolyte balance.  | Salt, soy sauce; processed foods |
| **Sulfate** | Helps stabilize protein shapes in the body by forming sulfur bridges | All foods containing protein |
| **Micro-minerals** |  |  |
| **Iodine** | Essential component of the thyroid hormones that are involved in the regulation of various enzymes and metabolic processes | Iodized salt; seafood; bread; plants |
| **Iron** | Part of hemoglobin molecule which carries oxygen in the blood; part of protein in muscles, which makes oxygen available for muscle contraction; necessary for use of energy | Red meats, fish, poultry, shellfish, eggs, legumes, green leafy vegetables, dried fruits.  |
| **Zinc** | Associated with hormones; needed to make enzymes; involved in making genetic components; immune cell activation; wound healing; taste perception | Protein containing foods: meat, fish, poultry, shellfish, grains, yogurt |
| **Selenium** | Assists a group of enzymes that defend against oxygen | Seafoods, organ meats, other meats, whole grains, and vegetables |
| **Fluoride** | Helps form bones and teeth; confers decay resistance on teeth | Fluorinated water; tea; seafood |
| **Chromium** | Associated with insulin; needed for energy release from glucose | Meat, unrefined grains, vegetable oils |
| **Copper** | Helps form hemoglobin; part of several enzymes | Organ meats, seafood, nuts, seeds, whole grains, drinking water |

(Sizer, Whitney, 2006)