**VITAMINS**

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| **Vitamin Name** | **Major Functions** | **Food Sources** |
| **A** Retinol, retinal, retinoic acid, (Beta carotene) | Vision, immunity, reproduction and growth  | Fortified milk, eggs, liver, dark green leafy and yellow/orange vegetables |
| **D** | Bone growth and maintenance, absorption of calcium | Sunlight, fortified milk, fatty fish, eggs, liver |
| **E** | Antioxidant, protects cell membranes | Vegetable and seed/nut oils, seeds and nuts, wheat germ and whole grains |
| **K** | Blood clotting, bone health | Green leafy vegetables  |
| **B1**Thiamin | Release of energy from carbohydrates, proteins, and fats via thiamin-containing enzymes; normal nervous system function  | Whole grain breads and cereals, bread and cereals made from processed grains or flour (fortified); dried beans, pork  |
| **B2**Riboflavin | Release of energy from carbohydrates, proteins, and fats via riboflavin-containing enzymes; normal skin development  | Milk; leafy green vegetables, whole grain breads and cereals  |
| **B3**Niacin | Release of energy from carbohydrates, proteins, and fats via niacin-containing enzymes | Meat, fish, poultry, and eggs; milk; nuts; whole grain breads and cereals; bread and cereals made from processed grains or flour (fortified)  |
| **B5**Pantothenic Acid | Release of energy from protein, fat, and carbohydrate via acetyl CoA  | Widely distributed in food  |
| **B6**Pyridoxine, pyridoxal, pyridoxamine | Release of energy stored in muscle glycogen; role in gluconeogenic process; red blood formation  | Whole grain breads and cereals; dried beans; leafy green vegetables; bananas; meat, fish, and poultry  |
| **B7**Biotin  | Release of energy from protein, fat, and carbohydrate | Widely distributed in food  |
| **B9**Folate, folic acid, folacin | Synthesis of new cells; red blood cell formation  | Leafy green vegetables; whole grains breads and cereals; dried beans; bread and cereals made from processed grains or flour (fortified); orange juice  |
| **B12**Cobalamin  | Synthesis of new cells; nervous system; red blood cell formation; activation of folate | Animal foods only; specially formulated yeast or other fortified foods  |
| **C**Ascorbic acid  | Antioxidant, collagen synthesis, immune function; aids absorption of iron  | Oranges, grapefruit, and other citrus fruits; strawberries, cabbage, broccoli, peppers, tomatoes  |

**MINERALS**

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| **Mineral Name** | **Major Function** | **Food Sources** |
| **Boron** | Needed for normal calcium metabolism | Green leafy vegetables; some fruits  |
| **Calcium**  | Mineralization of bones and teeth, muscle contraction, nerve conduction, secretion of hormones and enzymes  | Milk and milk products; green leafy vegetables; fish with bones such as salmon or sardines; calcium-fortified products such as soymilk or orange juice  |
| **Chloride** | Helps to maintain fluid balance; component of hydrochloric acid found in the stomach  | Table salt; fish; meat; milk; eggs  |
| **Chromium**  | Helps insulin move glucose (sugar) from blood into cells; involved in carbohydrate, protein, and fat metabolism | Whole grain breads and cereals; mushrooms; beer  |
| **Cobalt** | Part of B12 | Animal products |
| **Copper** | Part of copper-containing enzymes; role in normal hemoglobin synthesis | Seafood; nuts; seeds; whole grains; dried beans; some green leafy vegetables  |
| **Fluoride** | Component of bones and teeth; strengthens bone crystal and resists tooth decay when take in proper but not excessive amounts | Fluoridated water; fluoridated vitamins  |
| **Iodine** | A component of thyroid hormone – helps regulate growth, development, metabolism | Iodized salt; saltwater fish; mushrooms; eggs  |
| **Iron** | Component of hemoglobin, which is necessary for oxygen and carbon dioxide transport; component of enzymes necessary for cellular use of oxygen; immune system functions | Clams, oysters, liver, meat, fish, poultry; dried beans and legumes; green leafy vegetables, dried fruit, iron-fortified grains |
| **Magnesium** | Mineralization of bones and teeth, helps enzymes function, muscle contraction, nerve transmission  | Green leafy vegetables; nuts and seeds; dried beans and legumes  |
| **Manganese** | Role in bone formation; necessary for proper carbohydrate, protein, and fat metabolism | Nuts; dried beans; whole grains; some vegetables  |
| **Molybdenum** | Component of three enzymes | Legumes; whole grains; nuts |
| **Nickel** | May be a component of some enzymes and may enhance iron absorption, but few studies have been conducted on humans | Legumes; whole grains; nuts |
| **Phosphorus** | Component of bone, component of phospholipids (cell membranes), helps to maintain normal pH, part of ATP, involved in cellular metabolism | Widely found in foods, especially animal foods  |
| **Potassium** | Maintains normal fluid and electrolyte balance, assists nerve impulse transmission and muscle contraction | Vegetables, especially green leafy vegetables; dried beans and peas; orange juice; bananas; melons; potatoes; milk and yogurt; nuts |
| **Selenium** | Antioxidant, works with vitamin E  | Found in plants, amount varies depending on the selenium content of the soil in which they grow |
| **Sodium** | Extracellular cation; helps to maintain fluid balance  | Table salt; addition of sodium to processed foods |
| **Sulfur** | Needed for the synthesis of sulfur-containing compounds, which are essential for the synthesis of many compounds in the body | Protein-containing foods and water; the majority of sulfur is provided by the breakdown of body protein and the reuse of sulfur found in the sulfur-containing amino acids |
| **Zinc**  | Component of hundred of enzymes; needed for proper cellular function and proper immune system function  | Animal foods (meat and milk); whole grains  |