

An Overview of Vitamins and Minerals

Vitamin/Mineral	Sources	Indication	Efficacy	Claims
<i>Fat-soluble vitamins can be stored in the body and need not be consumed daily. While it is difficult to overdose on them through ordinary sources, consuming mega-doses of fat-soluble vitamins, especially A and D, can lead to a dangerous buildup in the body.</i>				
Retinol (vitamin A) Men: 3,000 IU Women: 2,700 IU	Liver, fortified milk (retinol form; see below for carotene sources)	Essential for eyes, skin and proper immune system functioning. Helps maintain hair, bones and teeth.	Deficiency: night blindness; reduced hair growth in children; loss of appetite; dry, rough skin; lowered resistance to infection; dry eyes Overdose: headaches; blurred vision; fatigue; diarrhea; irregular periods; joint and bone pain; dry, cracked skin; rashes; loss of hair; vomiting; liver damage	
Beta Carotene (pro vitamin A; see vitamin A)	Carrots, squash, broccoli, green, leafy vegetables	An antioxidant. Converted to vitamin A in the body (see vitamin A)		The antioxidant properties of this nutrient may be a factor in reducing risk for certain cancers.
Vitamin D Men: 100 IU Women: 100 IU	Egg yolk, milk; exposure to sun enables body to make its own vitamin D	Helps build and maintain teeth and bones; enhances calcium absorption	Deficiency: rickets in children; bone softening in adults; osteoporosis Overdose: calcium deposits in organs; fragile bones; renal and cardiovascular damage	
Vitamin E Men: 9–10 mg Women: 6 mg–7 mg	Corn or cottonseed oil; butter; brown rice; soybean oil; vegetable oils such as corn, cottonseed or soybean; nuts; wheat germ	An antioxidant. Helps form red blood cells, muscles and other tissues. Preserves fatty acids.	Deficiency: rare, seen primarily in premature or low birth weight babies or children who do not absorb fat properly. Causes nerve abnormalities. Overdose: unknown	The antioxidant properties of this nutrient may be a factor in reducing risk for certain cancers.
Vitamin K None established. Estimated at 0.03 mcg/kg	Green vegetables, liver; also made by intestinal bacteria	Necessary for normal blood clotting	Deficiency: defective blood coagulation Overdose: in infants, jaundice	
<i>Water-soluble vitamins are not stored in the body and should therefore be consumed daily.</i>				
Thiamine (vitamin B1) Men: 0.8–1.3 mg Women: 0.8 mg	Sunflower seeds; pork; whole and enriched grains; dried beans	Necessary for carbohydrate metabolism and muscle coordination; promotes proper nerve function	Deficiency: anxiety; hysteria; depression; muscle cramps; loss of appetite; in extreme cases, beriberi (mostly in alcoholics) Overdose: unknown, although excess of one B vitamin may cause deficiency of others	
Riboflavin (vitamin B2) Men: 1.3–1.6 mg Women: 1.1 mg	Liver, milk, spinach, enriched noodles, mushrooms	Needed for metabolism of all foods and the release of energy to cells. Essential to the functioning of vitamin B6 and niacin.	Deficiency: cracks and sores around the mouth and nose; visual problems Overdose: see vitamin B1	
Niacin (vitamin B3) Men: 16–23 mg Women: 14–16 mg Niacin is converted to niacinamide in the body.	Mushrooms, bran, tuna, chicken, beef, peanuts, enriched grains	Needed for many enzymes that convert food to energy. Helps maintain a healthy digestive tract and nervous system. In large doses, lowers cholesterol (on advice of a healthcare provider only).	Deficiency: pellagra (characterized by dermatitis, diarrhea and mouth sores) in extreme cases Overdose: hot flashes; ulcers; liver disorders; high blood sugar and uric acid; cardiac arrhythmias	
Pantothenic Acid (vitamin B5) Men: 2.5 mg Women: 2.5 mg	Abundant in animal tissues, whole grain cereals and legumes	Converts food to molecular forms. Needed to manufacture adrenal hormones and chemicals that regulate nerve function.	Deficiency: unclear in humans Overdose: see vitamin B1	
Pyridoxine (vitamin B6) Men: 1.8 mg Women: 1.5 mg	Animal protein foods, spinach, broccoli, bananas	Needed for protein metabolism and absorption, carbohydrate metabolism. Helps form red blood cells. Promotes nerve and brain function.	Deficiency: anemia; irritability; patches of itchy, scaling skin; convulsions Overdose: nerve damage	
Cyanocobalamin (vitamin B12) Men: 2 mcg Women: 2 mcg	Found almost exclusively in animal products	Builds genetic material. Helps form red blood cells.	Deficiency: pernicious anemia; nerve damage (deficiency rare except in strict vegetarians, older adults or people with malabsorption disorders) Overdose: see vitamin B1	
Biotin 60 mcg	Cheese, eggs, yolk, cauliflower, peanut butter	Needed for metabolism of glucose and formation of certain fatty acids. Essential for proper body chemistry.	Deficiency: seborrheic dermatitis in infants. Rare in adults, but can be induced by consuming large amounts of egg whites. Symptoms are anorexia, nausea, vomiting, dry scaly skin Overdose: see vitamin B1	
Folic Acid (Folacin) Men: 180–220 mg Women: 160–190 mg	Green, leafy vegetables, orange juice, organ meats, sprouts	Essential for the manufacture of genetic material protein metabolism and red blood cell formation.	Deficiency: impaired cell division; anemia; diarrhea; gastrointestinal upset Overdose: convulsions in epileptics; may mask pernicious anemia (see vitamin B12 deficiency)	Adequate amounts of this nutrient in the first stage of pregnancy may reduce the risk for neural tube birth defects.
Ascorbic Acid (Vitamin C) Men: 40 mg Women: 30 mg	Citrus fruits, strawberries, broccoli, green peppers	An antioxidant. Helps bind cells together and strengthens blood vessel walls. Helps maintain healthy gums. Aids in iron absorption.	Deficiency: muscle weakness, bleeding gums; easy bruising; scurvy in extreme cases Overdose: unknown	The antioxidant properties of this nutrient may be a factor in reducing the risk for certain cancers. May reduce effects of the common cold.

An Overview of Vitamins and Minerals *(continued)*

Vitamin/Mineral	Sources	Indication	Efficacy	Claims
<i>Minerals can be found in organic products and are essential for body functions.</i>				
Calcium Men: 800–1,000 mg Women: 700–800 mg	Milk, yogurt, cheese, sardines, broccoli, turnip greens	Helps build strong bones and teeth. Promotes muscle and nerve function. Helps blood clotting. Helps activate enzymes needed to convert food to energy.	Deficiency: rickets in children; osteomalacia and osteoporosis in adults Overdose: constipation, kidney stones, calcium deposits in body tissues. Hinders absorption of iron and other minerals.	
Phosphorus Men: 1,000 mg Women: 850 mg (3–6 g)	Chicken breast, milk, lentils, egg yolks, nuts, cheese	With calcium, builds bones and teeth. Needed for metabolism, body chemistry, nerve and muscle function.	Deficiency: (rare) weakness, bone pain, anorexia Overdose: hinders body's absorption of calcium	
Magnesium Men: 230–250 mg Women: 200–210 mg	Spinach, beef, greens, broccoli, tofu, popcorn, cashews, wheat bran	Activates enzymes needed to release energy in body. Needed by cells for genetic material and bone growth.	Deficiency: nausea, irritability, muscle weakness, twitching, cramps, cardiac arrhythmias Overdose: nausea, vomiting, low blood pressure, nervous system disorders Warning: overdose can be fatal to people with kidney disease	
Potassium Men: 40–80 mmol Women: 40–80 mmol (3–6 g)	Peanuts, bananas, orange juice, green beans, mushrooms, oranges, broccoli, sunflower seeds	Helps maintain regular fluid balance. Needed for nerve and muscle function.	Deficiency: nausea, anorexia, muscle weakness, irritability (occurs most often in people with prolonged diarrhea) Overdose: Rare	
Iron (Elemental) Men: 8–10 mg Women: 8–13 mg	Liver, lean meats, kidney beans, enriched bread, raisins Note: Oxalic acid in spinach hinders iron absorption.	Essential for making hemoglobin	Deficiency: skin pallor; weakness; fatigue; headaches; shortness of breath (all signs of iron deficiency anemia) Overdose: toxic buildup in liver and, in rare instances, the heart	
Zinc Men: 12 mg Women: 9 mg	Oysters, shrimp, crab, beef, turkey, whole grains, peanuts, beans	Necessary element in more than 100 enzymes that are essential to digestion and metabolism	Deficiency: slow healing of wounds; loss of taste; retarded growth and delayed sexual development in children Overdose: nausea, vomiting, diarrhea, abdominal pain, gastric bleeding	
Selenium 0.05–0.2 mg	Adequate amounts are found in seafood, kidney, liver and other meats. Grains and other seeds contain varying amounts depending on soil content.	An antioxidant. Interacts with vitamin E to prevent breakdown of fats and body chemicals.	Deficiency: unknown in humans Overdose: fingernail changes, hair loss	
Copper 2–3 mg	The richest sources of copper in the diet are liver and other organ meats, seafood, nuts and seeds.	Component of several enzymes, including those needed to make skin, hair and other pigments. Stimulates iron absorption. Needed to make red blood cells, connective tissue and nerve fibers.	Deficiency: rare in adults; infants may develop anemia marked by abnormal development of bones, nerve tissue and lungs. Overdose: liver disease, vomiting, diarrhea	
Manganese 2–5 mg	Tea, whole grains and cereal products are the richest dietary sources. Adequate amounts are found in fruits and vegetables.	Needed for normal tendon and bone structure. Component of some enzymes important in metabolism.	Deficiency: unknown in humans Overdose: generally results from inhalation of manganese-containing dust or fumes, not dietary ingestion	
Molybdenum 0.15–0.3 mg	The concentration in food varies depending on the environment in which the food was grown. Milk, beans, breads and cereals contribute the highest amounts.	Component of enzymes needed in metabolism. Helps regulate iron storage.	Deficiency: unknown in humans Overdose: gout-like joint pain	