

VITAMINS, MINERALS AND THEIR ROLE

VITAMINS

Vitamins = organic, meaning carbon-containing, and can be broken down by heat, air, or acid

Vitamin A: *fat-soluble*; needed for healthy skin (epithelial cells), eyesight, immune function

Top sources: sweet potatoes, butternut squash, carrots, pumpkin, cantaloupe, pink and red grapefruit, spinach and kale

Vitamin B: water-soluble, help convert calories to usable ATP for energy and B6 helps with protein metabolism, RBC formation, DNA repair; **B12 only found in animal sources or fortified products**

B1=Thiamin; B2=riboflavin; B3=Niacin; B5=Pantothenic acid; B6; B7=Biotin; B9=Folic acid; B12

Top sources: mushrooms, legumes, oats, beans, green leafy vegetables; B12-clams, oysters, sardines, salmon

Vitamin C: *water soluble*; helps skin health, supports collagen formation, enhances WBC (immune system), promote bone health, help absorption of iron

Top sources: red/yellow bell peppers, kiwi, oranges, broccoli, papaya, strawberries, onion

Vitamin D: *fat soluble*; maintains healthy bones, eyes, teeth and skin; helps with calcium absorption

Top sources: oysters, button mushrooms, sardines, fortified milk, *sunshine*

Vitamin E: *fat soluble*; may slow effects of aging, help maintain immune system

Top sources: almonds, sunflower seeds, red bell peppers, butternut squash, dark green leafy vegetables

Vitamin K: *fat soluble*; enables production of prothrombin and other proteins needed for blood clotting and bone crystal formation

Top sources: kale, collard greens, spinach, broccoli, Brussels sprouts, chicory, celery

MINERALS

Minerals = inorganic, meaning no carbon, and hold their chemical structure

Calcium: *major mineral*; most abundant mineral in the body; stored in teeth and bones. Promotes strong bones and teeth; plays a role in contraction and relaxation of blood vessels; nerve conduction; secretion of hormones such as insulin

Top sources: yogurt and other dairy foods, soy, collard greens, kale, arugula

Chloride: most commonly found as sodium chloride (NaCl); nerve conduction (heart health, muscle function), absorb glucose and water, regulate blood volume and blood pressure

Top sources: salt

Chromium: *trace mineral*; important in metabolism of fats and carbs; stimulates fatty acid and cholesterol synthesis; aids in insulin action and glucose metabolism

Top sources: beef, liver, eggs, chicken, oysters, wheat germ, potatoes, black pepper

Copper: *trace mineral*; formation of enzymes; formation of RBC's (with iron); helps keep nerves, immune system and bones healthy; aids iron absorption

Top sources: oysters and other shellfish, whole grains, beans, nuts, potatoes, organ meats (liver), dark leafy greens, dried fruits, cocoa, black peeper, yeast

Fluoride: *trace mineral*; teeth health, new bone formation

Top sources: fortified tooth paste and water, low but present in some beverages, teas, marine fish

Iodine: *trace mineral*; needed for conversion of food to energy; normal thyroid function and production of thyroid hormones

Top sources: naturally found in the body; iodized salt, seafood, dairy

Iron: *trace mineral*; supports formation of hemoglobin (carries O₂); *iron in animal sources are more easily absorbed than plant sources*

Top sources: cooked clams, lean beef, dark meat turkey; cooled spinach, green peas, dried figs and apricots, beans (kidney, garbanzo, soy)

Magnesium: *major mineral*; plays a role in contraction and relaxation of muscles (regulation of heart rhythm), synthesis of protein and DNA, and the production and transport of energy from carbs, fat, and protein; promotes strong bones and brain health

Top sources: spinach, green peas, soybeans, almonds

Manganese: trace mineral in formation and maintenance of bone and connective tissue; also plays a role in wound healing; crucial in protecting mitochondria; involved in the metabolism of carbs, amino acids, and cholesterol

Top sources: pineapple, spinach, sweet potatoes, nuts, oats, berries

Molybdenum: *trace mineral*; cofactor for enzymes that perform important chemical transformations (eliminating toxins, catabolism of purines. Generally the breakdown of bad stuff.)

Top sources: beans (navy, lima, kidney, black), black-eye peas, lentils, split peas

Phosphorus: *major mineral*; helps build bones and teeth, building block of DNA; kidney function, storing energy; supports development and repair of tissues and cells; metabolism of carbs, fats, proteins

Top sources: dairy products, eggs, meat, poultry, fish, nuts, legumes, whole grains, hard potatoes, garlic

Potassium: *major mineral and also an electrolyte*; plays key role in vascular disregulation; regulation of blood pressure; supports normal muscle contraction, nerve conduction, supports heart and kidney function, maintenance of body's proper fluid balance

Top sources: white beans, potatoes, plantains, broccoli, kiwi

Selenium: helps proper function of the thyroid gland; may play a role in fertility (especially in men)

Top sources: brazil nuts, fish, whole grains, wheat germ, sunflower seeds; selenium in vegetables is dependent on selenium content of the soil

Sodium: *major mineral*; also an electrolyte; nerve conduction, heart function and muscle contraction, absorb glucose and water, regulate blood volume and blood pressure

Top sources: salt

Sulfur: *major mineral*; helps with protein synthesis; helps with proper structure/health of joints, hair, nails, skin

Top sources: eggs, legumes, whole grains, garlic, onions, brussel sprouts, cabbage

Zinc: *trace mineral*; cellular metabolism, required for several enzyme function, plays a role in immune function, protein synthesis, wound healing, DNA synthesis

Top sources: oysters, red meat, poultry, beans, nuts, crab, lobster, fortified foods (cereal, dairy)

***A person can get too much of any one of these that can cause undesirable side effects.