



# From A to Zinc

## What Are Vitamins?

Vitamins are organic compounds that occur naturally in plant and animal tissues. They are necessary in very small amounts in the diet to promote growth and maintain health and life. Essentially, vitamins make it possible for other nutrients to be digested, absorbed, and metabolized by the body. It is important to remember that since vitamins do not contain calories, they provide no energy. Vitamins act as catalysts—they increase the speed of chemical reactions without being used up by the reaction. This explains why vitamins are only needed in minuscule amounts.

## Are There Different Types of Vitamins?

Vitamins can be divided into two groups—fat soluble (A, D, E and K) and water soluble (C and the B complex). The concentration of water soluble vitamins is regulated by the kidneys. Any intake in excess of the body's need is excreted in the urine. Fat soluble vitamins, however, are stored in the body, and excessive intakes (especially of vitamins A and D) can lead to toxicity. Some water soluble vitamins and most minerals can also be toxic in large amounts.

## How Do I Know If I Am Meeting My Vitamin Needs?

The best way to ensure you are receiving all the nutrients your body needs is to eat a well-balanced diet. The Recommended Dietary Allowances (RDAs) indicate the level of nutrients that will meet the needs of most healthy individuals. Because of an added safety factor, the RDAs are actually set higher than the level most people need. If your diet consists of a variety of foods from all the food groups, it is virtually impossible for you to develop a vitamin deficiency. In addition, many food products (like cereals, juices, and sports bars) are now fortified with many vitamins and minerals, making it easier than ever to meet our needs with foods alone.

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## What About Vitamin Supplements?

Since vitamins are only needed in tiny amounts, most healthy people can meet their needs through balanced, wholesome food choices. Situations in which a supplement may be recommended include pregnant women, elderly, strict vegetarians, people with multiple food allergies or intolerances, habitual dieters, and busy students with poor eating habits.

If you are going to take a supplement, select a multivitamin and multimineral that provides all nutrients below or at the RDAs. Prolonged intake of some vitamins in excess of the RDA can produce toxic effects, which may include: nausea, vomiting, skin disorders, liver and nerve damage, and even death. Remember, taking vitamin supplements won't fix a poor diet. They can't neutralize the damaging effects of excess saturated fat, salt, and sugar. Nor do they supply the disease-fighting phytochemicals found only in fruits, vegetables, and whole grains.

## Vitamins, Stress, and Energy

Many claims exist regarding the need for vitamin supplementation. While your need for vitamins during times of stress may increase slightly, this need almost never exceeds the RDAs. Also, vitamins

do not provide energy and will not help improve athletic performance. An athlete generally consumes more food and therefore receives more vitamins. The vitamins do not increase stamina or endurance, though, since they do not provide calories. Finally, if you are feeling tired or listless, you may need to sleep more, eat better, and be more physically active—taking a vitamin supplement is probably not the answer.

## Does Vitamin C Prevent the Common Cold?

Research findings do not support the theory that vitamin C prevents the common cold. High doses, however, may have an antihistamine effect and thus relieve some of a cold's symptoms. It's important to keep in mind that megadoses of vitamin C (>2000 mg/day) may be hazardous. And, it's easy to get plenty from foods alone. Just six to eight ounces of orange juice provides the RDA for vitamin C.

For more information about vitamins please visit [www.snac.ucla.edu](http://www.snac.ucla.edu).

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## Know Your Vitamins and Minerals

These charts highlight some basic vitamins and minerals, their sources and functions, and the Recommended Dietary Allowances (RDA) or Adequate Intakes (AI). Remember that just because a vitamin or mineral performs a specific function, it does not mean that more is better. Supplements providing more than the Upper Limit (UL) listed below may actually have toxic effects.

Vitamin	What It Does	Best Sources	RDA or AI	UL
A (Beta carotene can be converted to vitamin A)	Important for vision, immune system, healthy skin, and mucous membranes	Fortified milk and eggs (carrots, sweet potatoes, and green leafy vegetables are rich in beta carotene)	Men: 900 mcg Women: 700 mcg	3,000 mcg.
D	Helps calcium absorption and retention; bone mineralization	Fortified milk, eggs, fish oils, and self-synthesis with sunshine on skin	5mcg. (200 IU)	50 mcg. (2000 IU)
E	Antioxidant (stops toxic substances from building up in body)	Vegetable oils, wheat germ, nuts and seeds	15 mg. (22 IU natural or 33 IU synthetic)	1000 mg. (1500 IU natural or 1100 IU synthetic)
K	Blood clotting and bone formation	Green leafy vegetables (can be made by intestinal bacteria)	Men: 120 mcg. Women: 90 mcg.	No UL
C	Antioxidant; needed for wound healing, forming collagen in bones, cartilage, muscle, and blood vessels; aids in calcium and iron absorption	Citrus fruits, tomatoes, potatoes, broccoli, strawberries, cabbage, and spinach	Men: 90 mg. Women: 75 mg.	2000 mg.
B1 (Thiamin)	Needed to metabolize carbohydrates to energy; nerve function	Whole and enriched grains, pork, liver, and beans	Men: 1.2 mg. Women: 1.1 mg.	No UL
B2 (Riboflavin)	Needed to metabolize food for energy, healthy skin, and normal vision	Whole and enriched grains, meat, and milk products	Men: 1.3 mg. Women: 1.1 mg.	No UL
B3 (Niacin)	Needed to metabolize food for energy; maintains healthy skin and nervous system	Meat, fish, poultry, eggs, milk, beans, nuts, whole and enriched grains	Men: 16 mg. Women: 14 mg.	35 mg.

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<b>Vitamin</b>	<b>What It Does</b>	<b>Best Sources</b>	<b>RDA or AI</b>	<b>UL</b>
B6 (Pyridoxine)	Needed for protein metabolism; helps make red blood cells	Meat, fish, poultry, beans, whole grains, and green leafy vegetables	1.3 mg.	100 mg.
Folate	Needed to form new cells	Green leafy veggies, orange juice, beans, enriched grains	400 mcg.	1000 mcg.
B12 (Cobalamin)	Needed to form new cells; maintains nerve cells	All animal foods, fortified cereals, and soy products	2.4 mcg.	No UL
<b>Mineral</b>	<b>What It Does</b>	<b>Best Sources</b>	<b>RDA or AI</b>	<b>UL</b>
Calcium	Needed to build and maintain bone, normal blood clotting, muscle contraction, and nerve transmission	Milk products, fish with edible bones, broccoli, collard greens, fortified soy products and juices	9-18 yrs. old: 1300 mg. 19-50 yrs. old: 1000 mg.	2500 mg.
Phosphorus	Part of cell membranes; needed for energy transfer	Meat, poultry, fish, milk products, nuts, and beans	700 mg.	4000 mg.
Magnesium	Needed to build bone, muscle contraction; nerve transmission; protein synthesis	Nuts, beans, whole grains, green leafy vegetables, seafood, and chocolate	Men: 400 mg. Women: 310 mg.	350 mg. (as a supplement)
Potassium	Helps regulate fluid and mineral balance, muscle contractions, nerve transmission, and protein synthesis	All fresh, whole foods: Fruits, vegetables, meats, milk, grains, and beans	4700 mg.	No UL
Iodine	Part of thyroid hormone which regulates growth and metabolic rate	Iodized salt, bread, seafood, plant and animal products grown in most parts of the country	150 mcg.	1100 mcg (not recommended in supplement form)
Iron	Oxygen transport in blood and muscle cells; needed for use of energy	Meat, poultry, fish, eggs, beans, leafy green vegetables, dried fruit, and enriched grains	Men: 8 mg. Women: 18 mg.	45mg.
Zinc	Part of many enzymes, involved in immune reactions, taste perception, wound healing, and sperm production	Seafood, meats, poultry, beans, whole and enriched grains	Men: 11 mg. Women: 8 mg.	40mg.
Selenium	Antioxidant	Seafood, meats, whole grains, and vegetables (depending on soil)	55 mcg.	400 mcg.
Fluoride	Helps form bones and teeth; makes teeth resistant to decay	Fluoridated drinking water, tea, and seafood	Men: 4 mg. Women: 3 mg.	10 mg.
Chromium	Works with insulin to help the body use blood sugar	Whole grains, meat, nuts, and seeds	Men: 35 mcg. Women: 25 mcg.	No UL
Copper	Component of enzymes in iron metabolism	Seafood, meat, nus, seeds, drinking water, whole grains	900 mcg	10,000 mcg.