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## Vitamins: Their Functions and Sources

### Topic Overview



The tables below list the vitamins, what they do in the body (their functions), and their sources in food.

#### Water-soluble vitamins

Water-soluble vitamins travel freely through the body, and excess amounts usually are excreted by the kidneys. The body needs water-soluble vitamins in frequent, small doses. These vitamins are not as likely as fat-soluble vitamins to reach toxic levels. But niacin, vitamin B6, folate, choline, and vitamin C have upper consumption limits. Vitamin B6 at high levels over

a long period of time has been shown to cause irreversible nerve damage.

A balanced diet usually provides enough of these vitamins. People older than 50 and some vegetarians may need to use supplements to get enough B12.

**Water-soluble vitamins**

Nutrient	Function	Sources
Thiamine (vitamin B1)	Part of an <u>enzyme</u> needed for energy metabolism; important to nerve function	Found in all nutritious foods in moderate amounts: pork, whole-grain or enriched breads and cereals, legumes, nuts and seeds
<u>Riboflavin</u> (vitamin B2)	Part of an enzyme needed for energy metabolism; important for normal vision and skin health	Milk and milk products; leafy green vegetables; whole-grain, enriched breads and cereals
Niacin (vitamin B3)	Part of an enzyme needed for energy metabolism; important for nervous system, digestive system, and skin health	Meat, poultry, fish, whole-grain or enriched breads and cereals, vegetables (especially mushrooms, asparagus, and leafy green vegetables), peanut butter
Pantothenic acid	Part of an enzyme needed for energy metabolism	Widespread in foods
Biotin	Part of an enzyme needed for energy metabolism	Widespread in foods; also produced in intestinal tract by bacteria
Pyridoxine (vitamin B6)	Part of an enzyme needed for protein metabolism; helps make <u>red blood cells</u>	Meat, fish, poultry, vegetables, fruits
<u>Folic acid</u>	Part of an enzyme needed for making <u>DNA</u> and new cells, especially red blood cells	Leafy green vegetables and legumes, seeds, orange juice, and liver; now added to most refined grains
Cobalamin (vitamin B12)	Part of an enzyme needed for making new cells; important to nerve function	Meat, poultry, fish, seafood, eggs, milk and milk products; not found in plant foods
Ascorbic acid (vitamin C)	<u>Antioxidant</u> ; part of an enzyme needed for protein metabolism; important for immune system health; aids in iron absorption	Found only in fruits and vegetables, especially citrus fruits, vegetables in the cabbage family, cantaloupe, strawberries, peppers, tomatoes, potatoes, lettuce, papayas, mangoes, kiwifruit

**Fat-soluble vitamins**

Fat-soluble vitamins are stored in the body's cells and are not excreted as easily as water-soluble vitamins. They do not need to be consumed as often as water-soluble vitamins, although adequate amounts are needed. If you take too much of a fat-soluble vitamin, it could become toxic.

A balanced diet usually provides enough fat-soluble vitamins. You may find it more difficult to get enough vitamin D from food alone and may consider taking a vitamin D supplement or a multivitamin with vitamin D in it. Refer to [HealthLinkBC File #68e Food Sources of Calcium and Vitamin D](#) for food source ideas and information on supplements. Talk to your health care provider about the right supplement for you.

### Fat-soluble vitamins

Nutrient	Function	Sources
Vitamin A (and its precursor*, beta-carotene)  *A precursor is converted by the body to the vitamin.	Needed for vision, healthy skin and mucous membranes, bone and tooth growth, immune system health	Vitamin A from animal sources (retinol): fortified milk, cheese, cream, butter, fortified margarine, eggs, liver  Beta-carotene (from plant sources): Leafy, dark green vegetables; dark orange fruits (apricots, cantaloupe) and vegetables (carrots, winter squash, sweet potatoes, pumpkin)
Vitamin D	Needed for proper absorption of <u>calcium</u> ; stored in bones	Egg yolks, liver, fatty fish, fortified milk, fortified margarine. When exposed to sunlight, the skin can make vitamin D.
Vitamin E	Antioxidant; protects cell walls	Polyunsaturated plant oils (soybean, corn, cottonseed, safflower); leafy green vegetables; wheat germ; whole-grain products; liver; egg yolks; nuts and seeds
Vitamin K	Needed for proper blood clotting	Leafy green vegetables such as kale, collard greens, and spinach; green vegetables such as broccoli, Brussels sprouts, and asparagus; also produced in <u>intestinal</u> tract by bacteria

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### **Is it an emergency?**

If you or someone in your care has chest pains, difficulty breathing, or severe bleeding, it could be a **life-threatening emergency**. Call **9-1-1** or the local emergency number immediately.

If you are concerned about a possible poisoning or exposure to a toxic substance, call **Poison Control** now at **1-800-567-8911**.