Vitamins affect all functions in the body. Vitamins perform many tasks including promoting good vision, forming normal blood cells, creating strong bones and teeth, and ensuring the proper functioning of the heart and nervous system.

Generally, the body best uses vitamins from foods. A person eating a variety of foods and meeting their energy needs probably does not need to take vitamins.

The table on the reserve side provides recommended daily intake values for healthy adults. These recommendations were established by the Food and Nutrition Board of the Institute of Medicine of the National Academies and are based on the most recent available scientific evidence. While the recommended amounts for most vitamins are the same for adult men or women from ages 19 and up, for some vitamins such as vitamins D and B6, the recommended amount differs between age groups

When preparing foods, how can I keep the most nutrients in them?

- Nutrient loss occurs when vegetables are exposed to light and air; therefore don't wash, chop, or slice vegetables until you are ready to use them.
- Quickly but thoroughly rinse vegetables and fruits under cold running water, or dunk them in several changes of water in a basin. Avoid soaking them as you wash. Some vitamins dissolve in water.
- Eat the edible skins of vegetables and fruits. Most vitamins and minerals are found in the outer leaves, skin, and area just below the skin.
- Eat vegetables and fruits raw or cook them in little or no water. Steaming, microwaving, pressure cooking, and boiling in a covered pot in a small amount of water have all been shown to conserve nutrients about the same.
- Cut vegetables that need to be cooked in larger pieces. That way less vitamins will be lost.

If I need to take vitamins, does it matter where I buy them or when I take them?

It doesn't matter where you buy your vitamins. You're basically getting the same ingredients since most companies buy their vitamins and minerals from the same manufacturers. There are no federal standards that tell companies precisely how to manufacture supplements. However, the letters "USP" on a supplement label mean that the tablets meet the voluntary standards of the U.S. Pharmacopoeia, and that they dissolve in a lab test designed to mimic what happens in your stomach. Some of the best bargains on vitamins are the "store brands" that carry the names of large drug chains or retail stores since these companies are big enough to demand the best quality from vitamin makers.

While there isn't much evidence one way or the other, most experts recommend taking vitamins with meals because some nutrients are better absorbed when your digestive tract is digesting food. One exception is if you're taking high amounts of calcium, it can impair your ability to absorb iron. So if you're taking calcium and a multi with iron, take them at two different meals. Unless your doctor or pharmacist says otherwise, it's a good rule of thumb to wait a few hours between taking any prescription medication and taking a multivitamin, since some nutrients in the multi could interfere with the drug, and vice versa.

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References: **Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc (2000)** Food and Nutrition Board, Institute of Medicine.
Dietary Reference Intakes for Calcium, Phosphorus, Magnesium, Vitamin D, and Fluoride (1997) Food and Nutrition Board, Institute of Medicine.
Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium, and Carotenoids (2000) Food and Nutrition Board; Institute of Medicine.

AN APPLE A DAY

Valuing Vitamins

Factsheet-04-55
(Revised 2012)

University of Nevada Cooperative Extension

Prepared by University of Nevada Cooperative Extension and the University of Nevada School of Medicine.

Vitamins	Recommended Intakes for Healthy Adults*	Some Significant Food Sources	What the Vitamin Does for the Body	Tolerable Upper Intake Levels (UL)** and Some Symptoms of Overconsumption
Vitamin A	Females: 700 mcg Males: 900 mcg	Retinol: Beef liver, fortified milk, dairy products, fish. Beta-carotene: Sweet potatoes, carrots, cantaloupe, apricots, pumpkin, dark green leafy vegetables, broccoli, tomatoes.	Retinol (fat soluble): Important in eyesight, bone and tooth growth, reproduction, and skin and hair. Beta-carotene (water soluble): Antioxidant (neutralizes some harmful substances). Helpful in the prevention of several chronic diseases.	UL = 3,000 mcg Retinol: Nausea, vomiting, headaches, blurred vision, increase of pressure inside skull, muscle incoordination. Chronic, excessive intake: bone mineral loss, liver abnormalities, and birth defects. Beta-carotene: Yellow to orange skin color..
Vitamin D	19-70 years: 15 mcg(600 IU) 71+ years: 20 mcg (800 IU)	Fortified milk, fish oils, high-fat fish, egg yolk. Produced in the body by sunlight action on the skin.	Essential for the maintenance and formation of bones and teeth; increases calcium absorption.	UL = 100 mcg (4,000 IU) – Excessive calcification of bone, kidney stones, calcification of soft tissues, headache, weakness, nausea, vomiting, constipation.
Vitamin E	15 mg	Plant oils (vegetable oils, margarine, salad dressing, shortening), whole grain products, tomato products, green and leafy vegetables, nuts, seeds.	Antioxidant (neutralizes some harmful substances), helps form and protect red blood cells, muscles and other tissues.	UL=1,000 mg – Interference with anticlotting medications (for example, coumadin).
Vitamin K	Females: 90 mcg Males: 120 mcg	Kale, collards, spinach, salad greens, broccoli, cabbage, Brussels sprouts, mayonnaise, soybean and canola oil.	Helps in the formation of blood clotting proteins and bone formation.	UL not determined – Interference with anticlotting medications (for example, coumadin).
Vitamin B1 (Thiamin)	Females: 1.1 mg Males: 1.2 mg	Pork, ham, whole grains, fortified or enriched breads and cereals	Helps the body release energy from carbohydrate, proteins, and fats for metabolism.	UL not determined – No known adverse effects.
Vitamin B2 (Riboflavin)	Females: 1.1 mg Males 1.3 mg	Dairy products, meats, fish, poultry, leafy green vegetables, fortified or enriched breads and cereals, broccoli, asparagus.	Helps the body release energy from carbohydrate, proteins, and fats for metabolism.	UL not determined – No known adverse effects.
Vitamin C (Ascorbic Acid)	Females: 75 mg Males: 90 mg	Peppers, citrus fruits, broccoli, strawberries, Brussels sprouts, papaya, tomatoes, cantaloupe, pineapple, potatoes, green leafy vegetables.	Antioxidant (neutralizes some harmful substances). Important for wound and bone healing, increases, resistance to infection, increases iron absorption.	UL=2,000 mg – Diarrhea, nausea, stomach cramps, kidney stones, increased uric acid, iron overload.
Niacin	Females: 14 mg Males: 16 mg	Meat, fish, poultry, enriched and whole grain products, fortified cereals, peanuts.	Helps in fat metabolism and energy production.	UL=35 mg - No known adverse effects.
Folacin (Folic Acid)	400 mcg	Legumes, green leafy vegetables, enriched and whole grain products, fortified cereals, liver, orange juice, wheat germ, yeast.	Necessary for the formation of red blood cells and protein metabolism. Builds genetic material for cells.	UL=1,000 mcg – No known adverse effects from foods; high supplement use may mask B12 deficiency.
Vitamin B6 (Pyridoxine)	19-50 years: 1.3 mg 51+ years: F: 1.5 mg, M: 1.7 mg	Whole grain and fortified cereals, meat, poultry, fish, potatoes, whole grain products, bananas, nuts, seeds.	Important for protein metabolism and absorption, nervous system function, and red blood cell formation	UL=100 mg – No known adverse effects
Vitamin B12 (Cobalamin)	2.4 mcg	Animal products (meat, poultry, fish, shellfish, dairy products, eggs), fortified cereals.	Essential for normal function of all cells, especially nerve cells, red blood cells, gastrointestinal cells.	UL not determined – No known adverse effects
Biotin	30 mcg	Liver, yeast, wheat bran, milk, egg yolk.	Necessary in the metabolism of proteins, fats, and carbohydrates.	UL not determined – No known adverse effects
Pantothenic Acid	5 mg	Liver, yogurt, meat, poultry, fish, milk, avocado, whole grains, legumes.	Essential for many functions that sustain life. Helps release energy from carbohydrates, fats, and protein.	UL not determined – No known adverse effects.

* The recommended daily intake values are established by the Food and Nutrition Board of the Institute of Medicine of the National Academies and are based on the most recent available scientific evidence. These recommendations are expressed in either milligrams (mg), or micrograms (mcg) ** The Tolerable Upper Intake Level (UL) is the highest level of daily nutrient intake that is likely to pose no risk of adverse health effects for almost all individuals in the general population.