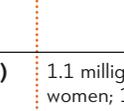
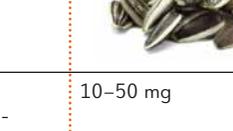
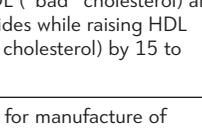
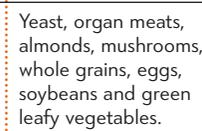
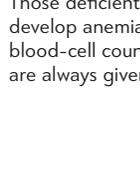
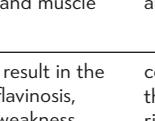


All About B Vitamins

B Vitamin	Recommended Dietary Allowance	Recommended by Integrative Medicine Specialists*	Role in Health	Best Food Sources	Signs of Deficiency
B-1 (Thiamin) 	1.4 milligrams (mg)	15–50 mg 	Facilitates smooth functioning of enzymes necessary for function of muscles, nerves and heart. Has been used in treating cancer, heart disease and Alzheimer's disease. Useful in aiding emotional balance.	Sunflower seeds, peanuts, soybeans, whole wheat and nuts.	Lack of B-1 has a marked effect on the central nervous system, and a thiamin-deficient person may experience fatigue, memory loss, depression, headache and muscle weakness. Severe deficiency can result in neurological problems and cardiovascular problems, anorexia, weight loss, confusion, and depression.
B-2 (Riboflavin) 	1.1 milligrams, women; 1.3 milligrams, men	10–50 mg	Helps maintain health of skin, eyes and nerves. Helps produce niacin (B-3) and pyridoxine (vitamin B-6) from certain amino acids. Used to treat migraines.	Yeast, organ meats, almonds, mushrooms, whole grains, eggs, soybeans and green leafy vegetables.	Severe deficiency may result in the condition called ariboflavinosis, marked by a sense of weakness, sore throat, mouth problems — including crusty material at the corners or a red tongue — and, in the worst cases, anemia. Those at risk include people with anorexia or those following an extremely low-fat diet.
B-3 (Niacin) 	14 milligrams, women; 16 milligrams, men	20 to 150 mg. Different forms of niacin (nicotinic acid vs. niacinamide) are recommended depending on the condition being treated.	Important for health of the digestive system, skin, eyes and hair. In higher doses, niacin may help lower LDL (“bad” cholesterol) and triglycerides while raising HDL (“good” cholesterol) by 15 to 35 percent. Protective for the heart. Essential for manufacture of adrenal hormones and red blood cells. Also important for utilizing fats and carbohydrates. Has been used to facilitate wound healing.	Liver and other organ meats, eggs, fish, and peanuts.	In the beginning, B-3 deficiency may manifest initially through weakness, sore mouth and tongue, and weight loss. In later stages, deficiency may include diarrhea, inflammation of the skin and mental confusion. Deficiency may follow a serious gastrointestinal illness or alcohol consumption that impedes absorption.
B-5 (Pantothenic Acid) 	4–7 milligrams	5 to 10 mg.	Essential for manufacture of adrenal hormones and red blood cells. Also important for utilizing carbohydrates, proteins and fats. Has been used to lower cholesterol and help treat wounds.	Liver and other organ meats, milk, legumes, fish, poultry and vegetables.	Deficiency of this B vitamin is reportedly rare, but those with inadequate amounts can experience fatigue, nausea, and the feeling of pins and needles in hands and feet.
B-6 (Pyridoxine) 	1.5 milligrams, women; 1.7 milligrams, men	25–100 mg	Helps to form the neurotransmitters serotonin, dopamine and norepinephrin, which are essential for mental health, and the enzyme insulin, which maintains normal levels of blood sugar. Important to the health of red blood cells, the immune system and infection-fighting antibodies. Has been used to treat fatigue and protect the heart.	Whole grains, legumes, bananas, seeds and nuts, potatoes, Brussels sprouts, and cauliflower.	Deficiency of B-6 can cause a progressive series of problems. Initially, vague symptoms include insomnia, fatigue, depression, gastrointestinal pain and slow wound healing. As time goes on, deficiency can cause anemia and elevated cholesterol. In the latest stages, deficiency can lead to neurological symptoms, seizures and kidney stones.
B-7 (Biotin) 	No RDA, but the Food and Nutrition Board of the Institute of Medicine recommends 35 to 60 micrograms (mcg) a day.	100–400 mcg	Required for synthesis of fatty acids. Also helps to manufacture proteins and in gene expression. Has been used to treat hair loss and brittle fingernails and to stimulate production of insulin in diabetics.	Brewer's yeast, organ meats and soybeans.	Anemia, pale or flaking skin, pins-and-needles sensation in the fingers and toes, and sore tongue are some of the symptoms of biotin deficiency.
B-9 (Folate or Folic Acid) 	400 micrograms	400–1,200 mcg. Natural folate sources preferred over synthetic folic acid.	Makes red blood cells. According to some studies, up to 800 micrograms of B-9 a day — either from food or a supplement — may help ward off cognitive decline and even reduce the risk of Alzheimer's disease. For older adults, those who consume alcohol and others who may not get or absorb enough folate, supplements may reduce risk of cancer, especially colon and breast, and may help reduce risk of heart disease. May also help reduce risk of cardiovascular disease.	Green leafy vegetables such as spinach, kale, beet greens and Swiss chard; and asparagus and avocados.	Those deficient in folic acid may develop anemia and low white-blood-cell counts. Pregnant women are always given B-9 supplements, because deficiency can lead to neural tube deficits, including spina bifida, in the fetus.
B-12 (Cyanocobalamin) 	2.4 micrograms	400–1,000 mcg	Makes red blood cells. Essential for cell metabolism and function of the nervous system and brain. Older adults should routinely consume extra B-12 from fortified foods or supplements to prevent deficiency. Used to treat fatigue and depression; protects the heart; has been seen as a useful adjunct in cancer treatment.	Liver, kidney, fish, eggs, poultry, meat and dairy products.	Those with B-12 deficiency may experience fatigue, pale complexion and anemia. Men with B-12 deficit may suffer low sperm counts and problems with infertility. Severe B-12 deficiency has been associated with higher risk of esophageal cancer.
PABA 	No RDA	50 mg	Known for antioxidant properties; also blocks ultraviolet light from the sun.	Organ meats, wheat germ, whole grains, eggs and brewer's yeast.	Deficiency has never been recorded in humans.
Inositol 	No RDA	150–500 mg	Primary component of cell membranes and important for cell division. Works with choline to help transport fat from the liver. Helps to control blood cholesterol levels. Used in supplement form to treat anxiety, and panic and obsessive compulsive disorder.	Whole grains, fruits, meats, dairy products and yeast. Egg yolks, organ meats, legumes and lecithin.	Deficiency has never been recorded in humans.
Choline: technically not a vitamin, but often considered to be part of the B family. Works with inositol.	No RDA, but the Food and Nutrition Board of the Institute of Medicine recommends 125 to 550 micrograms a day.	50–500 mcg	Needed as primary building block of the neurotransmitter acetylcholine, essential for the cognitive and motor functions of the nervous system. Together with inositol, has been effectively used to treat premenstrual syndrome.	Egg yolks, organ meats, legumes, peanut butter, lettuce, cauliflower and lecithin.	Since choline is produced by the body itself, severe deficiency is extremely rare; because it is required by every cell, the outcome of such a deficiency would be fatal.

* Depending upon practitioner and nutritional profile of client.