

In summary:

[Thiamine](#) (B-1) helps the body cells convert [carbohydrates](#) into energy. It is also essential for the functioning of the heart and for healthy nerve cells, including those in the brain.

[Riboflavin](#) (B-2) works with the other B vitamins and is important for body growth and red blood cell production. Similar to thiamine, it helps in releasing energy from carbohydrates.

[Niacin](#) is a B vitamin that helps maintain healthy skin and nerves. It is also important for the conversion of food to energy and may have cholesterol-lowering effects. Studies have shown that it helps in the synthesis and repair of DNA and that it plays a role in signaling between nerve cells. It also acts as a potent antioxidant in brain cells.

[Vitamin B-6](#) is also known as pyridoxine. The more [protein](#) a person eats, the more vitamin B-6 is required to help the body use the protein. It aids in the formation of red blood cells and in the maintenance of normal brain function. It also assists in the synthesizing of [antibodies](#) in the immune system.

[Vitamin B-12](#), like the other B vitamins, is important for metabolism. It, too, helps in the formation of red blood cells and in the maintenance of the [central nervous system](#).

[Pantothenic acid](#) is essential for the metabolism of food. It is also essential in the synthesis of hormones and [cholesterol](#).

[Biotin](#) is essential for the metabolism of proteins and carbohydrates, and in the synthesis of hormones and cholesterol. Cholesterol is needed for the functioning of cell membranes, particularly in the brain. Promotes normal health of nerve tissue, blood cells and is essential for normal skin and hair growth.

[Folate](#) (folic acid) works with vitamin B-12 in the production of red blood cells. It is necessary for the synthesis of DNA, which controls heredity as well as tissue growth and cell function. Any woman who may become pregnant should be sure to consume enough folate -- low levels of this substance are associated with devastating birth defects such as [spina bifida](#). Many foods are now fortified with folic acid to help reduce the level of such birth defects.

[TMG \(Tri Methyl Glycine\)](#) Converts homocysteine into methionine, reducing the risk of cardiovascular events, cognitive decline, vascular dementia and Alzheimer's disease. [\(removing this from the formula due to moisture content.\)](#)

Food sources

[Vitamin B-12](#) is found in eggs, meat, poultry, shellfish, milk and milk products.

[Pantothenic acid and biotin](#) are found in eggs, fish, dairy products, whole-grain cereals, legumes, yeast, broccoli and other vegetables in the cabbage family, white and sweet potatoes, lean beef, and other foods.

Vitamins: Busy B's

Vitamin B3, commonly known as niacin, may protect against Alzheimer's disease and aging.

By: [Hara Estroff Marano](#)

Chicago researchers found that vitamin B3, commonly known as niacin, may protect against the mental ravages of age—Alzheimer's disease and the cognitive decline associated with aging.

The B vitamins consist of thiamin (B1), riboflavin (B2), niacin, pyridoxine (B6), folic acid, pantothenic acid, biotin, and cobalamin (B12). It also includes choline, a nutrient found in eggs that is needed to produce cell membranes and may slow age-related memory loss.

All the Bs play a critical role in brain function, from manufacturing neurotransmitters to regulating energy release in brain cells. Niacin seems to have a particularly potent role in maintaining mental agility.

At the Rush Institute for Healthy Aging in Chicago, Dr. Martha C. Morris monitored the health and dietary status of 815 adults age 65 and older for six years. None had Alzheimer's disease at the start of the study; six years later, 131 did.

Those with the lowest food intake of niacin were 80 percent more likely to be diagnosed with Alzheimer's disease than those with the highest intake. The rate of cognitive decline among the high-niacin-eaters was almost half (44 percent) that of those consuming less niacin.

Just what does niacin do? Other studies have shown that it helps in the synthesis and repair of DNA and that it plays a role in signaling between nerve cells. It also acts as a potent antioxidant in brain cells.

Severe deficiencies of several B vitamins have been shown to have profound effects on the brain, leading to abnormal brain waves, detectable as abnormalities on EEGs; impaired memory; and higher levels of anxiety, confusion, irritability, and depression. Even marginal deficiencies of B vitamins can cause EEG disturbances and inhibit mental performance.

Fatigue, irritability, poor concentration, anxiety and depression—all can be signs of a B vitamin deficiency. That's because compounds in the B complex are needed for everything from the healthy maintenance of brain cells to the metabolism of carbohydrates, the brain's source of fuel. Bs are also necessary for production of neurotransmitters, which regulate mood and conduct messages through the brain.

Thiamin deficiency is known to hamper the brain's ability to use glucose, decreasing energy available for mental activities. It also overexcites neurons so that they fire endlessly, poop out, and die. Being only marginally deficient in thiamin may nevertheless slow down your brainpower at any age.

Folic acid helps maintain normal levels of serotonin. Deficiencies contribute to depression, dementia, and schizophrenia. In a study of depressed patients taking lithium, those also given folic acid supplements for a year showed dramatic relief of depression, compared to those given no supplements.

B6 and B12 contribute to the myelin sheath around nerve cells, which speeds signals through the brain. B12 and folic acid together are needed for making normal cells, including blood cells. Inadequate B12, found only in animal products, or folic acid can yield blood cells unable to carry vital oxygen to the brain.

These three Bs aid in the manufacture of the excitatory neurotransmitter GABA, as well as serotonin and dopamine, neurotransmitters that regulate mood. All three neurotransmitters interregulate each other, but the ways they work in concert or against each other are only beginning to be understood.

Lack of energy and the feeling of fatigue is an age-old complaint. Vitamins boost the energy levels of the human body. Vitamin B is known as the 'energy vitamin' and is vital for an energetic and long life. Although Vitamin B is abundant in a variety of natural foods, the typical American diet is deficient in Vitamin B. B-Vitamins are easily flushed out of the body. **Alcoholics and people on weight-loss diets are more prone to Vitamin B deficiency.**

The B-complex vitamins are a group of eight vitamins, which include thiamine (B1), riboflavin (B2), niacin (B3), pyridoxine (B6), folic acid (B9), cyanocobalamin (B12), pantothenic acid and biotin. Each vitamin plays a significant role in energy production. Deficiencies usually include more than one type of B-vitamin. To increase energy levels, a supplement of B-complex must be taken along with any single B-vitamin.

The B1-Thiamin vitamin plays an important role in the metabolic process of food and alcohol. It improves the function of the adrenal gland and boosts immunity. Low levels of the B2-Riboflavin cause fatigue, blindness and anemia. Riboflavin is required for the production of energy. Doctors also prescribe riboflavin for migraine and arthritis pain.

The vitamin B3-Niacin also helps the body produce energy. Niacin is used for treating neurological diseases and high cholesterol. In combination with Vitamin C, Niacin reduces the production of lipoproteins, a major risk factor in heart patients.

B5-Pantothenic acid is one of the main energy boosters. It is also referred to as the 'anti-stress' vitamin.

Vitamin B12 also helps fight fatigue. It is a vital nutrient for the formation of red blood cells. Red blood cells, in turn, are linked to our energy levels.

The B-complex vitamins work to keep the energy levels high. They can help prevent diseases since they are capable of repairing nucleic acids and immune cells. These vitamins are the foundation of good health and nutrition.

Vitamins and Minerals Can Improve Sleep

By: [Nikos M. Linardakis, M.D.](#) **Tharos Labs**

Every cell in the body needs the B vitamins (B1, thiamine, B2, riboflavin, B3, niacin, B5, pantothenic acid, B6, pyridoxine, B7, biotin, B12, cobalamine, and folic acid, folate)-particularly nerve cells. This is best exemplified by folate (the most common nutritional deficiency in the world). Women who are pregnant must have folate to avoid neural tube defects in their offspring. Vitamin B deficiency manifests itself in neurologic disorders, and thus, in sleep problems and muscle weakness. Vitamins B12 or B6 can also help in the therapeutic plan for depression.

P. Chan et al. investigated the safety and efficacy of vitamin B complex capsules in a double-blinded, placebo-controlled study in elderly patients with severe nocturnal leg cramps. After three months of the study, 86 percent of the patients taking vitamin B had prominent remission of leg cramps, whereas the placebo group experienced no difference. The frequency, intensity and duration of nocturnal leg cramps were reduced. Vitamin B complex is a relatively safe and effective alternative, which clinicians should consider in the treatment for nocturnal leg cramps.

Other studies suggest that vitamin B12 may maintain the homeostasis of sleep and/or wake cycles, improve the sleep quality and increase alertness in a work environment.

Sleep deprivation has been associated with a reduction in niacin, and one of the manifestations is also seen with pellagra-dermatitis. Therefore, for those individuals who lack appropriate sleep hours, a dose of niacin could help alleviate potential problems

Restless legs syndrome (RLS), a neurosensory disorder, has been associated with iron deficiency anemia. Thus, RLS is often treated with iron. Reduced serum folate levels have been associated with pregnant women with RLS. Serum ferritin and folate levels during pregnancy should be reviewed to minimize the complaints of restless legs, and to promote more healthy sleep and better daytime alertness during pregnancy.

go to: <http://www.swedish.org/111809.cfm> and Search B Vitamins – 17 pages of data about B Vits.

B-Complex: B vitamins have long been known as the "Anti-Stress Vitamins." B vitamins are essential in providing support against anxiety and depression. The more stress we have in our lives, the faster the B vitamins are used up. This is important to understand, as B vitamins are also critical in: energy production; maintaining healthy nerve function; liver detoxification processes; healthy skin and muscle tone; and are essential co-factors in hundreds of other chemical reactions with the body. Homocysteine levels, when elevated, can cause stroke, heart disease, and Alzheimer's disease. Homocysteine levels are reduced by proper amounts of B6, B12 and Folic Acid. B vitamins are important in the functioning of the liver and in energy metabolism. They are necessary for the formation of the red blood cells, numerous hormones, and specific neurotransmitters. Adding a full B vitamin complex, and or adding all the B vitamins separately, is part of the standard protocol in EDTA IV Chelation therapy. [If high amounts of stress are present in your life, it is essential to increase the amount of B vitamins in your diet. You will not be able to get enough B vitamins in your food to meet your body's physiological needs, when modern day stresses are prevalent in your life.](#)

The B vitamins are water-soluble vitamins. This means that they are excreted in the urine and can be quickly depleted from the body. When we take more water-soluble vitamins than we need, small amounts are stored in body tissue, particularly the liver, but most of the excess is excreted in urine. Because water-soluble vitamins are not stored in the body in appreciable amounts and are depleted from the body so quickly, it is important that we take supplements of the B vitamins in large daily amounts to replenish these important vitamins in our body.

The B vitamins act as coenzymes, compounds that unite with a protein component called an apoenzyme to form an active enzyme. The enzyme then acts as a catalyst in the chemical reactions that transfer energy from the basic food elements to the body. The B vitamins are a group of eight vitamins, which include thiamine (B1), riboflavin (B2), niacin (B3), pyridoxine (B6), folic acid (B9), cyanocobalamin (B12), pantothenic acid and biotin. Most of the B vitamins have been recognized as coenzymes, and they all appear to be essential in facilitating the metabolic processes that are essential for life. These vitamins are essential for the breakdown of carbohydrates into glucose, which provides us energy, the breakdown of fats and proteins, which aids the normal functioning of the nervous system, muscle tone in the stomach and intestinal tract, and healthy skin, hair, and eyes.

The B vitamins are important for the proper formation of every cell in your body, particularly nerve cells. This is why it is so important for pregnant women to take supplements that contain the B vitamins, particularly folic acid, and why a deficiency of certain B vitamins manifests itself first as a depressed mood or being moody. **Vitamin B1**, or thiamine, helps the body turn carbohydrates into energy. It also helps your body metabolize proteins and fats. Vitamin B1 deficiency affects the functioning of gastrointestinal, cardiovascular, and peripheral nervous systems. Thiamine deficiency can cause Beriberi and Wernicke-Korsakoff syndrome, sometimes seen in alcoholics. Symptoms of beriberi include loss of appetite and overall lassitude, digestive irregularities, and a feeling of numbness and weakness in the limbs and extremities. We need **vitamin B2**, or riboflavin to complete several reactions in the energy cycle. Common symptoms of vitamin B12 deficiency are reddening of the lips with cracks at the corners of the mouth, inflammation of the tongue, and a greasy, scaly inflammation of the skin.

Niacin, or nicotinic acid, helps us metabolize carbohydrates. Chronic Niacin deprivation leads to pellagra, a disease characterized by skin lesions, gastrointestinal disturbance, and nervous symptoms. Niacin, (**Vitamin B6**) is a coenzyme for several enzyme systems involved in the metabolism of proteins, carbohydrates, and fats. Long-term use of large doses of vitamin B6 can, however, cause complications in the peripheral nervous system. **Vitamin B12, or cyanocobalamin**, is a complex crystalline compound that functions in all cells, but especially in those of the gastrointestinal tract, the nervous system, and the bone marrow. Vitamin B12 helps the development of our red blood cells and if lacking in B12, a person will commonly suffer from pernicious anemia

We need at least 400 mcgs of **folic acid** for the synthesizing nucleic acids and the forming red blood cells. Its deficiency most commonly causes folic-acid-deficiency anemia. Symptoms include gastrointestinal problems, such as sore tongue, cracks at the corners of the mouth, diarrhea, and ulceration of the stomach and intestines. **Pantothenic acid** promotes a large number of metabolic reactions essential for our growth and well-being. Its deficiency can result in growth failure, skin lesions, and even graying of the hair. **Biotin** is important in metabolic processes that result in the formation of fats and the utilization of carbon dioxide. Biotin deficiency results in anorexia, nausea, vomiting, tongue inflammation, paleness, depression, and dermatitis.

Research studies have shown that the B vitamins, particularly folate, B12, and B6 help lower homocysteine levels, hence the risk of heart attacks.

[In a nutshell, Vitamins B6 and B12 are extremely helpful at protecting the heart and nerves and lowering levels of the damaging homocysteine.](#)

Reference: 1. Effect of homocysteine-lowering therapy with folic acid, vitamin B12, and vitamin B6 on clinical outcome after percutaneous coronary intervention. G. Schnyder, M. Roffi, Y. Flammer, et al., The Swiss Heart Study: A randomized controlled trial. *JAMA.*, 2002, vol. 288, pp. 973—979