



B-Vitamins

By Art Presser, PharmD - President, Huntington College of Health Sciences

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There are eleven B vitamins that are collectively called the B-Complex. The eleven vitamins include B-1, B-2 and B-6, which should be supplemented in equal strengths, as should choline and Inositol. That makes five. Rounding out the balance of the eleven are B-3, B-5, B-12, folic acid, biotin and PABA.

B Complex

B-Complex is referred to as the energy vitamins and stress fighters. They get this reputation because they are intimately involved in cellular energy metabolism, namely the glycolytic, Krebs cycle and pentose pathways. The B vitamins act as cofactors in converting carbohydrates into glucose which the body burns to produce energy.

For example, the process of glycolysis which converts energy stored as glycogen into glucose molecules requires vitamin B-6 and biotin. The conversion of pyruvate (a metabolite of glucose) to acetyl coenzyme A (the first step in the Krebs cycle in energy metabolism) requires B-5 and further metabolism requires biotin, B-2 and B-3. If you are missing any of these cofactors or helper nutrients the result will be fatigue and lethargy, and this is not even scratching the surface. If anyone ever gets to opportunity to view a metabolic pathway chart, its complexity is mind boggling.

B vitamins are also vital in the metabolism of fat

and protein. They are necessary for normal functioning of the nervous system and may be the single most important factor for the health of the nerves. During stressful situations the nervous system can become depleted of B vitamins. Stressful situations include physical or emotional overwork, infection or injury, fad or poor dieting, excessive use of alcohol and/or drugs and intense sports workouts. In addition, the B-Complex vitamins are sometimes called the beauty vitamins because they are essential for healthy hair, skin and nails.

Most people do not have to supplement with B-Complex because adequate amounts are present in better multi-vitamins. If you are not taking a multi-vitamin like this, consider one that contains all eleven B factors greater than 25mg each and depending on your stress level, upwards of 100mg each. Also remember that the B vitamins are water soluble and need to be replenished all day. This can be overcome with a proven “timed release” system. Take your B vitamins early in the day as it is unlikely that your energy chemistry pathways will be overburdened while you are asleep.

There are times when wellness challenges will make it necessary to supplement with individual B vitamins in higher doses. If this becomes necessary, like when I take extra B-1 to keep bird-size High Sierra mosquitoes from eating me alive, make sure you are already taking a B-Complex first. That is, don't take large doses of one B vitamin without showing your body the other ten. I believe this is confusing to the body. I know that we'll never find a food balanced like that.

Vitamin B-1 (Thiamine)

Thiamine is involved in the body's breaking down carbohydrates. A high carbohydrate diet

increases the need for B-1. B-1 increases the production of stomach acid needed for digestion and is necessary for muscle tone in the stomach and intestine.

Thiamine's nickname is the "morale" vitamin because drops in B-1 levels can result in depression. We find that Schizophrenics as well as those suffering from other mental disorders, tend to be low in B-1.

Thiamine is also necessary for growth, fertility, lactation, and normal functioning of the heart and nervous system.

The deficiency disease of B-1 is called Beriberi. Deficiency symptoms include cardiac palpitations, enlarged heart, myocardial lesions, polyneuritis (nerve inflammation), loss of ankle and knee jerk reflexes, toe and foot drop (paralysis of muscles which flex the foot), muscular weakness progressing to atrophy, mental instability, forgetfulness, vague fears, feeling of persecution, confusion, fatigue and loss of appetite.

If you are bothered by insect bites try taking 500mg (100mg for children) of thiamine three times daily. I will take even more than this when I go backpacking in mosquito season. As an appetite stimulant use the same dosage 30 minutes before meals, but swallow it with an ounce of apple juice that has been laced with bitters.

Vitamin B-2 (Riboflavin)

Some applications of B-2 are eye care, mouth cracks and migraine headaches. B-2 will usually be found in better eye formulae for its ability to prevent cataracts and ward off eye fatigue. It has long been used to treat cracks in the sides of the mouth. In addition, recent studies suggest that 400 mg. daily (divided doses) of B-2 can reduce the frequency of migraine headaches.

Vitamin B-3 (Niacin, Nicotinic Acid, Niacinamide)

Niacin's claim to fame in medicine today is its ability to at high doses, lower cholesterol and triglyceride levels. Because of the high doses required, I recommend using a form of niacin called inositol hexanicotinate which is a "non-flush" niacin. This avoids the necessity of

building your dose up over a period of time in order to tolerate the flushing. It is also a safe alternative to timed-release niacin that has been associated with abnormalities in liver function tests.

Vitamin B-5 (Pantothenic acid)

Deficiency symptoms of B-5 include fatigue, headache, nausea, personality changes, dizziness, rapid heart rate on exertion, gastric distress, muscle cramps, impaired coordination, numbness and tingling of hands and feet.

Therapeutic uses of B-5 may include allergies, arthritis and hypoglycemia.

Vitamin B-6 (Pyridoxine)

Therapeutic uses of B-6 include morning sickness, PMS and menopause for both emotional and physical symptoms, carpal tunnel syndrome, edema, birth control pills induced deficiencies, and the reduction of homocysteine, a toxic amino acid metabolite associated with heart disease (with B-12 and folic acid).

Vitamin B-12 (Cyanocobalamin)

Therapeutic applications for B-12 are fatigue, general weakness with loss of appetite, nerve health, shingles, nerve degeneration, stress, homocysteine control (when combined with B-6 and folic acid), and anemia. Many health professionals believe that if B-12 makes you feel better, it is presumptive evidence that you need it. It is water soluble and non toxic so there is nothing to lose by giving it a try.

Folic Acid

One of the great revelations of the 90's was the confirmation that a folic acid deficiency during pregnancy will increase the chances of having a child with spina bifida or anencephaly. Women of childbearing age who consume adequate amounts of folic acid daily (400 mcg) before conception will reduce their risk of having a pregnancy affected by neural tube defects.

Other therapeutic uses include lowering homocysteine levels (with B-6 and B-12), possible protection against intestinal parasites and food poisoning, a preventive for canker sores, and the possibility of helping to delay hair graying when used in conjunction with pantothenic acid and PABA.

PABA (Para-Aminobenzoic Acid)

Therapeutic applications include the prevention of eczema and loss of skin pigmentation, control of burn pain and topical use as a sunscreen.

Combined with pantothenic acid and folic acid PABA is purported to prevent prematurely graying hair.

Choline

Deficiency symptoms include fatty degeneration of the liver, brain and memory dysfunction, hemorrhagic (loss of blood) lesions in kidneys, bleeding ulcers, high blood pressure, heart muscle symptoms and atherosclerosis.

Therapeutic uses include memory enhancement, liver disorders, lowering cholesterol, nervous system disorders, and hair, skin, and nail enhancement.

Inositol

Deficiency symptoms include atherosclerosis, skin disorders, eye disorders, declining brain function, mood swings, and constipation.

Therapeutic applications include use as a lipotropic agent for hair health, as a calming agent and diabetes.

Biotin

Deficiency symptoms include various skin disorders, including a grayish pallor, loss of appetite and nausea, low-grade anemia, weariness, insomnia, muscle pain, depression, hypoglycemia and hair loss.

Therapeutic applications include hair health, eczema and candida.



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1204D Kenesaw
Knoxville, TN 37919
865-524-8079 • 800-290-4226
E-Mail: studentservices@hchs.edu
www.hchs.edu.com

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