Vitamin B-12/Folic Acid

Clinical Applications/Research

- Fatigue
- Pernicious anemia
- Red blood cell formation
- Asthma
- Nervous system function
- Macronutrient metabolism
- Mood changes
- Menstrual problems
- Heart disease (homocysteine reduction)
- Diabetic neuropathy
- Hepatitis
- Urticaria
- Dermatitis
- Bursitis

Nutrient Applications

Vitamin B-12

VITAMIN B-12 (also known as cyanocobalamin) is essential in nervous system function, helps to build healthy red blood cells, increases energy level, stimulates utilization of carbohydrates, fats and proteins, and is important in DNA and RNA synthesis (the material that makes up our genetic code). The intrinsic factor, which is made in the stomach, is necessary for the absorption of B-12 into the small intestine. People who have low levels of HCL (hydrochloric acid is produced from the same cells that produce intrinsic factor) are at higher risk for inadequate B-12 absorption. People who do not biologically produce the intrinsic factor must get B-12 injections, which shoots the vitamin directly into the bloodstream, eliminating the need for intrinsic factor. Taking B-12 sub-lingually (under the tongue) also bypasses the small intestine and the need for intrinsic factor, so this method is also used for rapid absorption of B-12. Folic acid complements the actions of B-12 and synergistically boosts its activity, especially in red blood cell formation and homocysteine reduction.

Various Conditions

Vitamin B-12 supplementation has been used with some success in treating diabetic neuropathy (Murray M. and Pizzorno J., Enc of Nat Med., Prima Publ. Rocklin, CA, 1991 p. 284), in shortening recovery time from hepatitis (ibid. p. 352), and in treating urticaria (vascular reaction of the upper dermis) (ibid. p. 370). B-12 injections have been helpful in treating seborrhoeic dermatitis and bursitis (ibid, pp. 68,515). Vitamin B-12 is one of the B vitamins that has demonstrated the ability to reduce heart disease risk by lowering homocysteine levels. It is most effective when combined with vitamin B-6 and folate (Rosenberg IH. Colloquium on Homocysteine, Vitamins, and Arterial Occlusive Diseases. Experimental Biology Conference, Atlanta, Ga. 1995).

Folic Acid (Folate)

Folic acid functions as a coenzyme that is important for cell reproduction. Its functions are similar to vitamin B-12. It aids in red blood cell (RBC) production, protein utilization, RNA and DNA synthesis, and is important in pregnancy since it is needed for the division of cells in the body. Recent fortification of foods (Jan 1, 1998) with folate emphasizes the newly recognized value of this B vitamin.

Energy

Folic acid and vitamin B-12 work synergistically to build healthy red blood cells that carry oxygen to the tissues and optimize energy production.

Anemia

Folic acid can correct anemia when the cause is low folic acid. Folic-acid deficiency anemia (large, irregular red blood cells (RBCs)) is different than iron-deficiency anemia (small RBC's) and is not corrected by giving iron. Vitamin B-12 works similarly to folic acid, and high folic acid levels can mask a B-12 deficiency for a period of time, so excess folic acid should not be taken without B-12 if a deficiency of B-12 is possible. Folic acid can act synergistically to boost the actions of vitamin B-12 when it is marginally low.
Pregnancy
Recommendations of extra folic acid for pregnant women have stressed the importance of this B vitamin during this time. Rapid cell division utilizes folic acid, and studies have shown reduced risk for neural tube defects when extra folic acid is added to the diet (The Lancet. Prevention of neural tube defects: Results of the Medical Research Council Vitamin Study. 1991; 338:131-36). Pregnant females require at least double the amount of folic acid required by non-pregnant females.

Immune System
Folic acid is necessary for proper immune function. It is important in the single carbon transfer reactions needed for DNA synthesis and amino acid metabolism. In fact, deficiencies of folic acid, "disrupt the tissue barriers to infection and markedly depress the cell-mediated immune system" (Int J Vit Nutr Res. 49). “Any illness that increases the metabolic rate (for example, infection) or cell turnover (for example, gastrointestinal bleeding) increases folic acid requirements” (Gastroenterology Clinics of North America 1990; 19(2):482). Additionally, medications which inhibit intestinal folate absorption also increase folate requirements (ibid, p.482).

Heart Disease
In the last decade, research has shown that elevated levels of homocysteine (indicating faulty methionine metabolism) may be a major risk factor in the development of vascular diseases, including coronary artery disease. Although genetic factors seem to play a role, folic acid supplementation was found to be a major factor in lowering homocysteine levels in a clinical trial where the results indicated, “that folate deficiency may be an important cause of hyperhomocysteinemia in the general population” (Ubbini JB et al. J of Nutr. 1994; 124(10):1927-33). When the amounts and kinds of B vitamins were measured in a large scale study, it was found that for every 200 mcg of folate consumed daily, a woman’s heart disease risk fell by 11 percent (even after adjusting for other risk factors) (Rimm E. J Am Med Assoc Feb 4, 1998).

NOTE: Vitamin B-12 deficiency can arise due to conditions which interfere with B-12 absorption, such as inflammatory bowel disease, or gastric surgery.

Suggested Dosage

Vitamin B-12: 1000 mcg per day. Folic Acid: 400-800 mcg per day.

Disclaimer
The statements above have not been evaluated by the FDA. The nutritional suggestions and research provided are for informational purposes only and are not intended to diagnose, treat, cure or prevent disease and should not be used as a substitute for sound medical advice. Please see your health care professional in all matters pertaining to your physical health.

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