

Vitamin B12 Overview

Vitamin B12 (Cyanocobalamin) is a water-soluble, cobalt-containing vitamin in the Vitamin B complex family. It has a role as a cofactor in enzymes involved in the metabolism of proteins, fats, and carbohydrates and it is needed to produce succinyl CoA, an intermediary in the Krebs cycle that generates ATP for cellular energy. It is necessary for the synthesis of the insulating sheath around neurons, for cell reproduction, and for proper red blood cell production. B12 deficiency results in megaloblastic anemia, gastrointestinal lesions, and nerve damage. Vitamin B12 and folic acid have a close relationship. Both are required for synthesis of cellular DNA, blood cell formation, nervous system maintenance and heart health by transferring methyl groups between amino acids and lowering homocysteine.

Research on B12 is important on two fronts: brain health and heart health. Studies show that vitamin B12 levels decrease with age; various measures of cognitive impairment are associated with reduced B12 status. In a survey of patients with senile dementia, 78% had B12 deficiency. When supplemented with vitamin B12, significant improvements in IQ, motor function and mental state were noted. In terms of heart health, elevated plasma homocysteine concentrations are a risk factor for vascular disease and birth defects such as neural tube defects. Recent studies have shown that plasma homocysteine can be lowered by folic acid (400-800 mcg) combined with vitamin B12 (6 mcg). The combination of B12 with folic acid is significantly more effective in reducing homocysteine levels than is folic acid alone.

B12 must bind to a protein called intrinsic factor secreted by the stomach for its absorption from the lower part of the small intestine. Many drugs can interfere with the absorption of vitamin B12 including ulcers drugs (such as cimetidine, omeprazole), and drugs used to treat seizures (such as phenytoin (Dilantin) and phenobarbital). Deficiency can occur with inadequate intake of B12, which must come from animal products, after gastric surgeries, pancreatic disorders, bacterial overgrowth or intestinal parasites, and damage to the intestinal cells.

Dietary Sources: B12 is only produced by bacteria, so it is only found in food products of animal origin and in some fermented vegetable products such as tempeh and miso (fermented soybeans).

Dosage: The RDA for vitamin B12 for adults is 2.4 micrograms; for pregnant women, 2.6 micrograms; and for lactating women, 2.8 micrograms. It is commonly found that at least 10 to 30% of people over 50 years of age have difficulty absorbing food-bound vitamin B12, so they should eat foods fortified with the vitamin or take a supplement.

Side Effects: There are no confirmed reports of toxic side effects associated with vitamin B12 supplements – even at the very high injected doses commonly used to restore cognitive function in elderly subjects suffering from B12 deficiency. Oral intakes as high as 3000 mcg are considered non-toxic.

(Source: www.supplementwatch.com)

Research Overview

1. Used in the treatment of homocysteine heart disease
2. Reduces atherosclerosis
3. Improves memory
4. Increases ability to concentrate
5. Reduces risk of cardiovascular disease
6. Increases energy levels
7. Corrects some forms of anemia
8. Improves vascular endothelial function
9. Inhibits AIDS related dementia

Vitamin B12 Citations (236)

Vitamin B12: 236 Citations

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