

Methylcobalamin



Available in 60 tablets

- Vitamin supplement

Discussion

Vitamin B12 can be obtained through its synthesis by intestinal flora, from animal-based or fortified foods, or from supplementation. Unlike most other water-soluble vitamins, vitamin B12 (4 to 6 mg) is bound to a protein and stored in the liver as methylcobalamin or 5'-deoxyadenosylcobalamin. These are the coenzyme forms of B12 that are active in human metabolism. Reserve stores of B12 can become depleted due to poor dietary intake without supplementation, lack of intrinsic factor, or poor intestinal absorption.

Many vitamin B12 supplements on the market contain cyanocobalamin. The liver is able to convert a small amount of cyanocobalamin to methylcobalamin; however, methylcobalamin is the preferred form since it is the bioactive form and therefore better utilized. In a research study, tissue retention of cobalamin was greater when using the methyl- form versus the cyano- form. This was exemplified by the fact that urinary excretion of methylcobalamin was one-third less that of cyanocobalamin.^[1] Another point of interest regarding B12 supplementation is the commonly held belief that intramuscular injections of B12 are more effective than oral supplementation. In fact, oral supplementation is just as effective and carries the added benefits of lower cost and ease of administration.^{*[2,3]}

Methylation Methylcobalamin is required for the function of methionine synthase—the folate-dependent enzyme required for the synthesis of methionine, an amino acid, from homocysteine. Methionine, in turn, is required for the synthesis of S-adenosylmethionine (SAME), a methyl group donor used in many biological methylation reactions, including the methylation of a number of sites within DNA and RNA. As an example of its importance in homocysteine metabolism, one study showed that the addition of B12 to a folate regimen had a greater impact (7%) on homocysteine than did folate alone.^{*[4]}

Neurologic Health Methylcobalamin is necessary for the maintenance of a healthy nervous system. Chronic insufficiency can affect the spinal cord, peripheral nerves, optic nerve, and brain. This can be explained by methylcobalamin's role as a cofactor in myelin synthesis; in methylation of the toxic byproduct homocysteine, which is thought to damage neurons; and in the synthesis of monoamine neurotransmitters, such as serotonin, dopamine, and norepinephrine.^[5-7] Methylcobalamin is the preferred form of cobalamin

supplementation for neurologic health, and experimental research indicates that methylcobalamin shows better transport to organelles within nerve cells than does cyanocobalamin.^{*[8]}

Red Blood Cell Formation Like folate, erythroblasts require vitamin B12 for proliferation during their differentiation. Insufficient B12 levels will contribute to purine and thymidylate synthesis inhibition, impaired DNA synthesis, and erythroblast apoptosis, resulting in ineffective erythropoiesis.^{*[9]}

Sleep Support Methylcobalamin has been reported to affect the primary circadian rhythm associated with sleep.^[8,10] Research supports a role for methylcobalamin supplementation in modulating melatonin secretion, enhancing light-sensitivity, normalizing circadian rhythms, and improving sleep-wake cycles.^{*[11-13]}

Immune Health Research suggests an important role for B12 in immune system regulation. Human research demonstrated that methylcobalamin supplementation in patients with inadequate B12 levels improved CD4/CD8 ratio and NK cell activity, and augmented CD3-CD16+ cells, suggesting an important role in cellular immunity.^[14] In other research, among homologues studied, methylcobalamin was shown to have the strongest antibody production enhancement on an in vitro system.^{*[15]}

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Medicinal Ingredients (per tablet)

Vitamin B12 (Methylcobalamin).....5000 mcg

Non-Medicinal Ingredients

Xylitol, stearic acid, D-mannitol, citric acid, silicon dioxide, natural orange flavor, and magnesium stearate.

References

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Additional references available upon request

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