

B12 Methylated



CLINICAL APPLICATIONS

- Provides High Concentration, Fast-Absorbing Bioactive Methylcobalamin and MethylFolate (100% as 5-MTHF)
- Boosts Energy Levels and Supports Red Blood Cell Production
- Promotes Cardiovascular Health and Homocysteine Balance
- Rejuvenates Nerve Cell Function and Boosts Cognitive Health
- Supports a Positive Mood and Healthy Sleep Cycle Regulation

ESSENTIAL VITAMINS

B12 Methylated includes a concentrated and bioavailable source of two key B vitamins- B12 and folate. Each tablet provides 5,000 mcg of methylcobalamin and 1,000 mcg of folate as Quatrefolic® (100% 5-MTHF). This synergistic blend of methyl-donating B vitamins quickly boosts tissue and brain levels to support numerous systems in the body.

Overview

Vitamin B12 works along with folate in many body processes. These include increasing metabolic energy and red blood cell production, supporting mood regulation and cognitive function, up-regulating methylation, increasing DNA synthesis and repair, and supporting the formation of the protective myelin sheath, the insulating exterior that speeds up nerve cell transmission.

Most B12 supplements contain cyanocobalamin. In order for B12 to be utilized in the body, the liver must first remove the cyanide molecule and attach a methyl group to form methylcobalamin, the biologically active, tissue-ready form. Research has shown that methylcobalamin is more efficiently used and retained in the body than the cyanocobalamin form.^[1]

Adding significant synergy to this formula is the methylated form of folic acid, 5-methyltetrahydrofolate (5-MTHF). 5-MTHF activates B12 in the body by donating its methyl group to cobalamin, forming methylcobalamin. 5-MTHF requires the enzyme 5-methylenetetrahydrofolate reductase (5-MTHFR) in order to be converted from folic acid into its active form, 5-MTHF. Enzyme defects, malabsorption and congenital deficiency of 5-MTHFR can result in an impaired ability to activate folic acid. In individuals with a genetic defect of this

enzyme, supplementation with 5-MTHF may be the preferable form of folate supplementation.^[2]

Energy Support †

Vitamin B12 plays a large role as a cofactor in enzymes involved in the metabolism of proteins, fats and carbohydrates, and is required to produce succinyl CoA, an intermediary in the Krebs cycle that generates cellular energy in the form of adenosine triphosphate (ATP). Due to its role in the production of ATP, vitamin B12 deficiency is often characterized by fatigue and weakness. Supplementation with methylcobalamin and 5-MTHF has been shown to promote increased energy levels.

Peripheral Circulation and Nerve Cell Health †

In a double-blind study, oral administration of methylcobalamin (500 mcg three times daily for four months) showed a significant improvement in neuromuscular health. The subjects in the control group reported improvement in muscle aches, fatigue, sensitivity to pain, circulation, muscle cramps and reflexes.^[3]

Cardiovascular Health and Homocysteine Balance †

Homocysteine is a molecule which is synthesized in the body from the amino acid methionine. Maintaining healthy homocysteine balance is crucial for supporting arterial and cardiovascular health. Both 5-MTHF and methylcobalamin are required to maintain optimal homocysteine balance. 5-MTHF acts as a methyl donor, providing a methyl group to vitamin B12. The methylated form of B12 (methylcobalamin) then transfers the methyl group to homocysteine, resulting

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in consistent recycling of homocysteine to methionine. In addition to supporting homocysteine recycling, 5-MTHF and methylcobalamin support healthy arterial blood flow by increasing nitric oxide production. In a six-week, randomized, crossover study of 52 individuals, folate supplementation (5 mg/day) significantly improved flow-mediated dilation of the brachial artery.^[4]

Mental and Cognitive Health[†]

B12 has been shown to be beneficial for maintaining a positive mental outlook because it acts as a methyl donor and increases the synthesis of s-adenosylmethionine (SAM-e), a nutrient that has powerful mood and sleep-cycle regulating properties. Due to B12's ability to increase the production of neurotransmitters and nerve cell transmission, B12 has been shown to improve cognitive function. 5-MTHF plays a significant role in mood regulation as it is required as a methyl group donor for the production of neurotransmitters such as serotonin.^[2]

Sleep Cycle Regulation[†]

Methylcobalamin and 5-MTHF are both required nutrients for the biosynthesis of melatonin, the hormone that helps induce sleep. Within the central nervous system, the neurotransmitter serotonin is converted into melatonin in a pathway that requires the donation of a methyl group. Several studies have demonstrated that supplementation with methylcobalamin modulates melatonin secretion and helps to normalize the sleep-wake cycle.^[5-9]

Directions

1 tablet per day or as recommended by your health care professional.

Does Not Contain

Gluten, yeast, artificial colors and flavors.

Cautions

If you are pregnant or nursing, consult your physician before taking this product.

Supplement Facts^{v1}

Serving Size 1 Tablet
Servings Per Container 60

1 tablet contains	Amount Per Serving	% Daily Value
Folate (as Quatrefolic® (6S)-5-Methyltetrahydrofolic acid glucosamine salt)	1,000 mcg	250%
Vitamin B12 (as Methylcobalamin)	5,000 mcg	83,333%

ID# 599060 60 Tablets

References

1. Okuda K, Yashima K, Kitazaki T, Takara I. Intestinal absorption and concurrent chemical changes of methylcobalamin. *J Lab Clin Med* 1973;81: 557-567.
2. 5-methyltetrahydrofolate. *Altern Med Review* 2006; 11(4).
3. Yaqub BA, Siddique A, Sulimani R. Effects of methylcobalamin diabetic neuropathy. *Clin Neurol Neurosurg* 1992;94(2):105-111.
4. Doshi SN, McDowell IF, Moat SJ, et al. Folate improves endothelial function in coronary artery disease: an effect mediated by reduction of intracellular superoxide? *Arterioscler Thromb Vasc Biol* 2001;21:11-96-1202.
5. Tomoda A, Miike T, Matsukura M. Circadian rhythm abnormalities in adrenoleukodystrophy and methyl B12 treatment. *Brain Dev* 1995;17:428-431.
6. Yamada N. Treatment of recurrent hypersomnia with methylcobalamin (vitamin B12): a case report. *Psychiatry Clin Neurosci* 1995;49:305-307.
7. Ohta T, Ando K, Iwata T, et al. Treatment of persistent sleep-wake schedule disorders in adolescents with methylcobalamin (vitamin B12). *Sleep* 1991;14:414-418.
8. Mayer G, Kroger M, Meier-Ewert K. Effects of vitamin B12 on performance and circadian rhythm in normal subjects. *Neuropsychopharmacology* 1996;15:456-464.
9. Hashimoto S, Kohsaka M, Morita N, et al. Vitamin B12 enhances the phase-response of circadian melatonin rhythm to a single bright light exposure in humans. *Neurosci Lett* 1996;220:129-132.

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