B12 Squared

Dr. Wholeness

Clinical Applications

- Supports General Health*
- Supports Healthy Nervous System Function*
- Supports Healthy Cellular Function*

B12 Squared *combines two forms—adenosylcobalamin and hydroxocobalamin—of the cobalamin family of compounds to yield 2,500 mcg of non-methylated B12. This quick-dissolve, fruit punch-flavored tablet is formulated to support a healthy nervous system and healthy cellular function.**

All Dr. Wholeness Formulas Meet or Exceed cGMP Quality Standards

Discussion

Vitamin B12 (cobalamin) plays an essential role as a coenzyme in many biochemical processes that maintain or restore the health of the nervous system. B12 is intricately involved in multiple pathways, including those for homocysteine metabolism, fatty acid and nucleic acid syntheses, energy production, nerve metabolism (transmethylation processes), cell maturation, and support of the gastrointestinal mucosa.*[1]

Vitamin B12 naturally occurs in foods of animal origin, or it can be obtained from fortified foods such as cereal and nutritional yeast. Western diets typically provide adequate levels of B12, yet mild-to-moderate deficiency is fairly common with causes often related to vegan diets, malabsorption, or lack of intrinsic factor—a glycoprotein needed to release B12 from food. Recommendations for B12 supplementation range from the RDA level of 2.4 mcg daily, which is needed to meet basic needs of most individuals, to >1,000 mcg daily for individuals with severe deficiencies.*[2-4]

Studies dating back to the mid-1970s suggest that five forms of B12 naturally occur in food. They are adenosylcobalamin (AdCbl), cyanocobalamin (CNCbl), hydroxocobalamin (OHCbl), methylcobalamin (MeCbl), and sulphitocobalamin, with AdCbl and OHCbl reputed to be the most concentrated and frequently found in the food supply.[5] Hydroxocobalamin is a physiologically relevant, intermediate form of B12 that makes up half of all the circulating B12 in the blood supply and is said to have an excellent depot effect that ensures a bioavailable supply of B12. After uptake, all cobalamin forms are metabolized to the bioactive coenzyme variants MeCbl and AdCbl of which AdCbl is the most common B12 compound found in organs and tissues. Conversion to these bioactive forms can be impacted by genetics, nutrient deficiencies, or metabolic issues.*[1,2]

The conversion of cobalamin compounds to AdCbl occurs in the mitochondria of cells. This process generates methylmalonyl-CoA mutase, which catalyzes the formation of succinyl-CoA, an important intermediate involved in generating the intracellular energy provider adenosine triphosphate (ATP) through the Krebs cycle.*[1,6]

An equally complex conversion of cobalamins to MeCbl occurs in the cytosol of the cell. Methylcobalamin is required as a cofactor to methylate homocysteine to methionine, a conversion needed to sustain adequate synthesis of proteins, DNA, and neurotransmitters and ultimately support the function of the nervous system. Methylcobalamin is also a cofactor required for the conversion of 5-methyltetrahydrofolate to tetrahydrofolate.[1,6,7] Vitamin B12 supplements often contain synthetic CNCbl, which is widely used due to its heat stability and low cost. Supplemental forms of MeCbl, AdCbl, and OHCbl are bioidentical to the B12 that is found in animal foods and in human physiology. Hydroxocobalamin (OHCbl) is more efficiently converted into the bioactive forms than is CNCbl, which may warrant its use in individuals with deficiency. Because of the easy conversion of OHCbl to MeCbl, the use of OHCbl as a B12 supplement confers the benefit of the methylated form without delivering additional methyl groups that some people may not tolerate. Multiple studies have suggested better tissue retention, cellular uptake, and metabolic activation with supplementation of the bioidentical forms of B12.*[2,8]

A commonly held and often discussed belief regarding vitamin B12 is that intramuscular injections are more effective than oral supplementation. In many cases, oral B12 supplementation is adequate and equally beneficial while also offering the added benefit of lower cost and ease of administration.*[3,9,10]

Adeno+Hydroxo B12 provides AdCbl and OHCbl, both highly bioavailable forms of B12, for the support of a healthy nervous system and healthy cellular function in individuals who have been recommended to supplement with vitamin B12, particularly those seeking to limit their intake of methyl groups and may require a non-methylated B12.*

***These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.**

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Supplement Facts

Serving Size: 1 Quick-Dissolve Tablet
Servings Per Container: 60

	Amount Per Serving	%Daily Value
Vitamin B12 (as adenosylcobalamin and hydroxocobalamin acetate)	2,500 mcg	104,167%

Other Ingredients: Xylitol, microcrystalline cellulose, croscarmellose sodium, ascorbyl palmitate, natural flavors, and silica.

Directions

Take one quick-dissolve tablet daily, or as directed by your healthcare professional.

Consult your healthcare professional before use. Individuals taking medication should discuss potential interactions with their healthcare professional. Do not use if tamper seal is damaged.

Formulated To Exclude

Wheat, gluten, yeast, soy, animal and dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, and artificial preservatives.

References

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DRS-330
REV. 03/18/21