

# Liquid B12

1 FL. oz or 4 FL. oz



## Clinical Applications

- Supports Healthy Methylation\*
- Supports Neurological Health\*
- Supports Red Blood Cell Formation\*
- Supports Healthy Sleep Patterns\*
- Supports a Healthy Immune System\*

*Methylcobalamin is the active, coenzyme form of vitamin B12, prepared as a liquid for rapid and efficient absorption. In addition to its role in supporting red blood cell function, Methylcobalamin is the preferred form of B12 for regulating homocysteine and for supporting numerous aspects of neurological health.*

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Liquid B12

## 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.<sup>[1]</sup>

## 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-adenosyl methionine (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.<sup>\*[4]</sup>

## 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.<sup>[5-7]</sup> 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.<sup>\*[8]</sup>

## 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.<sup>\*[9]</sup>

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.



## Sleep Support

Methylcobalamin has been reported to affect the primary circadian rhythm associated with sleep.<sup>[8,10]</sup> Research supports a role for Methylcobalamin supplementation in modulating melatonin secretion, enhancing light-sensitivity, normalizing circadian rhythms, and improving sleep-wake cycles.\*<sup>[11,12]</sup>

## 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.<sup>[13]</sup> In other research, among homologues studied, Methylcobalamin was shown to have the strongest antibody production enhancement on an in vitro system.\*<sup>[14]</sup>

<b>Supplement Facts</b>		
Serving Size 1 Dropperful (Approximately 1 mL)		
Servings Per Container 30		
Amount Per 1 Dropperful	% Daily Value	
Vitamin B <sub>12</sub> (as methylcobalamin)	1,000 mcg	41,667%

Other ingredients: Purified water, glycerin, cranberry and cinnamon flavoring, and ionic copper solution.

**Suggested Use:** Shake well before serving. Place 1 dropperful (1.0 mL), 1 to 5 times daily in the mouth and hold for thirty seconds before swallowing or as directed by a healthcare practitioner.

Do not use if shrinkwrap is broken or missing. Store in a cool, dry place (59°F-85°F) away from direct light. Refrigeration after opening maximizes freshness.

Available in two different size 1 FL.oz or 4 FL.oz

## References

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