

LIPOSOMAL



METHYL B-COMPLEX

+ LEMON RASPBERRY

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Methyl B Complex is a liposomal blend of eight B vitamins, trimethylglycine (TMG), and milk thistle seed extract, designed to fully support healthy energy levels, mood, cognition, immunity, cardiovascular health, methylation, detoxification, nervous system function, and optimal liver function.

EDUCATION

B VITAMIN DEFICIENCIES ARE PREVALENT IN OUR MODERN-DAY WORLD

Despite our era of food fortification, widespread deficiency of B vitamins - often subclinical—has been thoroughly documented.¹ B vitamins may be deficient due to age, hypochlorhydria, small intestinal bacterial overgrowth, a micronutrient-poor diet, or excessive use of alcohol or medications, such as proton-pump inhibitors, metformin, or hormone-based contraceptives.^{2,3,4} The National Institute of Health's (NIH) Dietary Office estimates that up to 15% of people in the U.S. are deficient in vitamin B12.⁵ As many as 13% of elite endurance athletes can show vitamin B6 deficiency, as well as 10% of those playing team sports.⁶ Niacin deficiency is twice as common in women as in men.⁷ Genes encoding the transformation of B12 to its bioactive forms—adenosylcobalamin and methylcobalamin—also impact health.⁸

The effect of vitamin B status on wellbeing can be lifelong; higher B vitamin intake in young adulthood is correlated with better cognitive function many years later in midlife.⁹

METHYLATED B12 IS CRITICAL FOR DNA REPAIR, AMINO ACID METABOLISM, & CARDIOVASCULAR HEALTH

Sufficient levels of all B vitamins are essential for optimal physiological and neurological functioning¹⁰, but the implications are especially profound when there is insufficient methyl B12 (methylcobalamin). B12 is already involved in the metabolism of every cell, as a cofactor in DNA synthesis, as well as fatty acid and amino acid metabolism, including the metabolism of homocysteine.¹¹ Low levels of methyl B12 have been linked to peripheral neuropathy, autism, multiple sclerosis, and mercury toxicity.^{12,13,14,15,16} High homocysteine levels, along with low levels of folate and B12, have been linked to an increased risk of cardiovascular disease, as well as Alzheimer's disease and oxidative stress.^{17,18,19,20}

B VITAMINS OPTIMIZE METHYLATION

Efficient methylation regulates gene expression and activity, DNA and RNA synthesis, and cell differentiation throughout the body.²¹ Deregulation of methylation machinery – both hypomethylation and hypermethylation – has been well studied.²² When methylation is slowed (hypomethylation), we can have trouble suppressing viruses²³, processing toxins in the liver²⁴,



Supplement Facts

Serving Size: 1 mL (2 Pumps) Servings Per Container: 50	Amount Per Serving	% Daily Value
Thiamin (Vitamin B1) (Thiamine HCl)	12mg	1000%
Riboflavin (as Riboflavin-5-Phosphate)	3.6mg	277%
Niacin (as Niacin, Niacinamide)	10mg	63%
Vitamin B6 (as Pyridoxine HCl)	6.7mg	394%
Folate (as Calcium Folate)	850mcg DFE	213%
Vitamin B12 (as Methylcobalamin)	500mcg	20833%
Biotin	500mcg	1667%
Pantothenic acid (as Calcium d-Pantothenate)	22.5mg	450%
Proprietary Blend	125mg	**
Phosphatidylcholine (from highly purified phospholipids), Milk Thistle Seed Extract, Trimethylglycine (as betaine)		

**Daily Value not established

Other Ingredients: Water, glycerin, ethanol, tocopherol, EDTA (as preservative), natural flavorings, natural citrus oils, natural mixed tocopherols

controlling inflammation and oxidation²⁵, and generating sufficient neurotransmitters in the brain, which can lead to depression.¹⁰ In contrast, hypermethylation results in higher levels of inflammatory cytokines as well as excess dopamine, norepinephrine, and serotonin, leading to irritability and anxiety.²⁶ Supplying methylated B12 with metabolically active folinic acid (folate) as well as the spectrum of other B vitamins ensures that sufficient B vitamins are available for metabolic activity, without creating imbalances in the body such as hypermethylation or hypomethylation.^{27,28} Intermediate active forms of folate, such as folinic acid, may be better tolerated than the final active form, methylfolate. Supplementation with folinic acid bypasses the deconjugation and reduction steps utilized with folic acid. Human absorption studies of folinic acid show a bioavailability of 92%.²⁹

B VITAMINS PROTECT THE BRAIN

B vitamins have shown measurable benefit in stroke, cognitive decline, dementia, and depression.^{30,31,32} High dietary intake of B vitamins, particularly vitamin B6, has been associated with better cognitive function in older adults.^{33,34} B complex vitamins significantly improve depression and anxiety in adults diagnosed with major depression.³⁵ Meanwhile, low folate intake has been linked to increased risk of mild cognitive impairment and dementia.³⁶ Serum vitamin B12 concentrations in the low normal range are present in about 30% of stroke patients over 70 years old.³⁷ Riboflavin and niacin may be neuroprotective and helpful in Parkinson's disease.^{38,39,40} High-dose riboflavin has been shown to reduce migraine severity and frequency⁴¹ while high dose biotin has improved symptoms in some patients with multiple sclerosis.⁴² Deficiency of thiamine has been linked to dementia, Alzheimer's disease, Parkinson's disease, and Huntington's disease.⁴³

B VITAMINS SUPPORT ENERGY, EXERCISE, AND ENDURANCE

B vitamins are critical to meet daily energy needs as well as to maintain and repair muscle mass in elite athletics and endurance sports.⁴⁴ Studies show that B6, riboflavin, and folate are frequently low in the diets of women who exercise regularly.⁴⁵ Up to 60% of male and female athletes can have poor vitamin B6 levels^{46,47}, and over half of athletes may have low levels of riboflavin.⁴⁸ Even after taking a multivitamin and mineral supplement for 8 months, 10% of athletes were still low in vitamin B6.^{49,50} B5, also known as pantothenic acid, is a significant component of the Krebs cycle and energy metabolism.

B VITAMINS SUPPORT OPTIMAL IMMUNITY AND HEALTHY INFLAMMATION LEVELS

Suboptimal levels of B vitamins can lead to chronic inflammation and reduced immune function. Thiamine (B1) deficiency is associated with an increase in neuroinflammation and increased production of pro-inflammatory cytokines such as IL-1, TNF-alpha, and IL-6.⁵¹ Riboflavin prevents lipid peroxidation and reduces some forms of oxidative injury.⁵² Niacin has been shown to lessen pro-inflammatory cytokines and lessen the effects of inflammation.⁵³ Vitamin B6 can reduce NF-kappa B activation by macrophages, dampening inflammation⁵⁴; it also modulates immunity and gene expression.^{55,56} Trimethylglycine (betaine) and milk thistle seed extract are both anti-inflammatory and support healthy liver function.^{57,58,59,60}

LIPOSOMES IMPROVE B VITAMIN ABSORPTION

Uptake and absorption of B vitamins can vary and can be limited by breakdown in the digestive tract. Liposomal delivery systems protect molecules from breakdown while enabling more rapid uptake. Liposomal formulations improve absorption of many molecules in the gastrointestinal tract, avoiding hepatic first-pass metabolism and resulting in higher bioavailability.^{61,62}

Quicksilver Delivery Systems® improve upon liposomal and emulsification technology with smaller, more stable particles made from the highest-grade ingredients available. In addition to exceptional absorption rates, these tiny liposomal and nanoemulsified particles increase diffusion across mucous membranes, enhance lymphatic circulation of nutrients and support cellular delivery.