B-Supreme

COENZYMATED B VITAMIN COMPLEX

60 VEGETARIAN CAPSULES | NPN80057584 | BSP060-CN

THIS INFORMATION IS PROVIDED AS A MEDICAL AND SCIENTIFIC EDUCATIONAL RESOURCE FOR THE USE OF PHYSICIANS AND OTHER LICENSED HEALTH CARE PRACTITIONERS ("PRACTITIONERS"). PRODUCT INDICATIONS WITHIN THIS RESOURCE MAY BE DIFFERENT THAN WHAT IS LISTED ON THE LABEL AS PER HEALTH CANADA'S SELF-CARE NATURAL HEALTH PRODUCT REGULATIONS. THIS INFORMATION IS INTENDED FOR PRACTITIONERS TO USE AS A BASIS FOR DETERMINING WHETHER TO RECOMMEND THESE PRODUCTS TO THEIR PATIENTS. ALL RECOMMENDATIONS REGARDING PROTOCOLS, DOSING, PRESCRIBING AND/OR USAGE INSTRUCTIONS SHOULD BE TAILORED TO THE INDIVIDUAL NEEDS OF THE PATIENT CONSIDERING THEIR MEDICAL HISTORY AND CONCOMITANT THERAPIES. THIS INFORMATION IS NOT INTENDED FOR USE BY CONSUMERS.

B-Supreme by Designs for Health is a comprehensive B vitamin complex formula designed to promote micronutrient status for optimal cellular function and healthy physiology. It supplies clinically useful amounts of B vitamins in their preferred coenzymated and phosphorylated forms where possible to be used in biochemical reactions more readily and easily. B-Supreme contains the bioidentical and methylated forms of folate and vitamin B12 for superior bioavailability. Choline and trimethylglycine (TMG) are added to help support efficient methylation for optimal genetic expression.[1]

HIGHLIGHTS

- Formulated with bioidentical and coenzymated forms of B vitamins for enhanced absorption and bioavailability
- Features the bioactive form of folate, as Quatrefolic® [6S]-5-methyltetrahydrofolate (MTHF), and vitamin B12, as MecobalActive® methylcobalamin
- Choline and TMG added to support methylation pathways
- Vegetable capsule; suitable for vegetarians and vegans

B vitamins are a family of eight water-soluble micronutrients that are needed in small amounts by the body. B vitamins fall into two main categories: (1) those involved in the transfer of single-carbon atoms (i.e., one-carbon metabolism), and (2) those involved in the enzymatic reactions related to energy production and redox status.[2] High-risk populations for B vitamin deficiencies include vegans and vegetarians, alcoholics, patients with congestive heart failure, obesity, and diabetes, the elderly, and individuals who have had bariatric surgery.[3-5] Supplementation with B complex vitamins has been shown to reduce homocysteine (Hcy) levels (an inflammatory marker in cardiovascular, metabolic, and neurological conditions), slow the rate of cognitive decline, and exhibit analgesic properties by activating the nitric oxide/cyclic guanosine monophosphate (cGMP) pathway.[6-10]

The levels of vitamins B2, B6, B12, and folate found in B-Supreme are adequate for maintaining healthy Hcy levels for a large section of the population, but not for those with single nucleotide polymorphisms (SNP) in the Hcy metabolic pathways and/or folate receptor activity.[11-13] The GenomicInsight™ report by Diagnostic Solutions Laboratory identifies which nutrients are required in higher doses to normalize Hcy within the body. This test is relevant to both the maternal and paternal genomic profiles, considering that the offspring inherit a combination of both.[14]

Ingredient Highlights

Thiamin (vitamin B1) is an essential nutrient coenzyme for cellular energy production (ATP), making it a critical vitamin for normal growth and development, cardiac function, and brain and nervous system health. B1 plays a major neuromodulatory role in acetylcholine neurotransmission and is crucial to the structure and function of neurons and neuroglia.[5] Deficiency is often a result of gastrointestinal malabsorption caused by heavy alcohol dependence.[5] Animal studies showed that chronic alcohol application in conjunction with severe thiamine deficiency resulted in profound changes in neuroimmune genes, with a moderate-to-severe increase of pro-inflammatory cytokines within the thalamus, hippocampus, and frontal cortex.[15]

In healthy subjects, there was a linear dose response in whole blood and plasma levels following single oral doses, ranging from 100 mg to 1,500 mg of thiamine HCl, which corresponds to nearly 1,000 times the RDA.[5,16] Compared to a placebo, 50 mg of oral thiamine for 2 months led to improvements in mood and attention in 120 healthy, young females.[5,17]

Vitamin B2 (riboflavin and riboflavin-5-phosphate-derived coenzymes), flavin mononucleotide and flavin dinucleotide are crucial rate-limiting factors in many biochemical reactions, including heme protein synthesis and the synthesis, conversion, and recycling of niacin, B6, and folate. They are also essential cofactors in the redox cycle of glutathione, the metabolism of brain lipids and essential

fatty acids, thyroid hormone regulation, and iron absorption. Riboflavin is also a cofactor for methylenetetrahydrofolate reductase (MTHFR) and methionine synthase reductase enzymes, both fundamental in homocysteine metabolism. In individuals with the MTHFR 677TT SNP, 1.6 mg per day of riboflavin supplementation for 12 or 16 weeks lowered homocysteine levels and blood pressure, respectively, compared to a placebo.[5]

Niacinamide (vitamin B3) is also crucial for cellular energy production and mitochondrial health. Vitamin B3 is converted into the coenzymes nicotinamide adenine dinucleotide (NAD+) and NAD+ phosphate that function in oxidation-reduction reactions.[18,19] The mediation of redox reactions and sirtuin-protein regulation by NAD+ play an important role in regulating metabolism and circadian rhythm, which are key factors in brain health.[20] NAD+ concentrations decrease with age and may be associated with age-related pathologies (e.g., neurodegenerative diseases) and increases in NAD+ concentrations through niacinamide supplementation may support healthy aging.[19,20]

Pantothenic Acid (vitamin B5) is required to facilitate coenzyme A and acyl carrier protein production, as both are essential to fatty acid synthesis. Supplementation may help support healthy lipid and triglyceride metabolism in those with hyperlipidemia.[21]

Vitamin B6 is provided as pyridoxine HCl and the activated form of pyridoxal-5-phosphate (P5P). P5P is an essential cofactor in the synthesis of several stress- and mood-related neurotransmitters — gamma-aminobutyric acid, serotonin, dopamine, epinephrine, and norepinephrine. Reduced levels may lead to increased anxiety, depression, and stress-related conditions.[22] P5P insufficiency is also linked to increased Hcy levels; patients with a deficiency exhibited a sixfold increased risk of cardiovascular disease compared with those with sufficient levels.[23]

Biotin plays an important role in hair, nail, and skin health, and in the metabolism of glucose, fats, and amino acids.[24,25] Large doses of biotin (60+ times the RDA) have been shown to support healthy lipid metabolism and healthy glycemic control and insulin sensitivity in diabetic subjects.[5]

Folate provided as Quatrefolic® is a 5-MTHF glucosamine salt form shown to dissociate reliably before absorption and to raise plasma folate levels.[26] The 5-MTHF in this formula may be more bioavailable than naturally occurring folates that are covalently bonded to polyglutamate chains.[26] An animal study showed Quatrefolic® to be 1.12 times and 9.7 times more bioavailable than the 5-MTHF calcium salt form and folic acid, respectively.2[7] Research has shown that plasma folate levels increased more quickly above the desired level of 50 nM with 5-MTHF than with folic acid supplementation.[28] Folates are essential cofactors in one-carbon metabolism and their deficiency is associated with health risks, such as neural tube defects, cancers, and hyperhomocysteinemia.[29]

Vitamin B12 as methylcobalamin has been shown in clinical studies to improve vitamin B12 status.[30] Methylcobalamin is bioidentical to the B12 occurring in human physiology and animal foods, and it is the preferred B12 source compared to its synthetic counterpart, cyanocobalamin.[30] Supplemental methylcobalamin is converted to cobalamin, a building block for the synthesis of intra-cellular methylcobalamin and adenosylcobalamin to support methylation and mitochondrial enzymes, respectively. This process is similar to the metabolism of supplemental adenosylcobalamin or hydroxycobalamin. Individuals following a strict plant-based diet are susceptible to low B12 levels, as B12 is the only B vitamin found exclusively in animal products. If left untreated, deficiency can manifest as hematological and neurological disorders. Supplementation with methylcobalamin has been shown to slow cognitive decline and gray matter atrophy.[31,32] In a dose-response study, researchers found that 500 mcg per day was the most effective dose for normalizing B12 status in marginally deficient older adults.[5]

Vitamin B Contraindications

- Avoid high doses of niacin/niacinamide in cases of jaundice, ulcers, gastritis, renal failure, gout, or heart conditions, including angina and rheumatic heart disease.
- Patients taking Levodopa should avoid vitamin B6, as it can inactivate this medication. Lactating women should not take more than 50 mg of B6 per day, as higher doses may suppress lactation.
- High doses of biotin may interfere with diagnostic assays used to measure hormones, such as thyroid function tests.[24]
- Do not combine folate or folic acid with the drug methotrexate.

BENEFITS

- Supports B vitamin status in the body
- Promotes the optimal intake of essential micronutrients for overall health
- Supports healthy homocysteine metabolism
- May be helpful for individuals following vegan or vegetarian diets

Medicinal Ingredients (per capsule):

Trimethylglycine (Betaine)	200 mg
Pantothenic acid (Calcium d-pantothenate)	100 mg
Thiamine (Thiamine HCL)	100 mg
Vitamin B2 (Riboflavin, Riboflavin-5-Phosphate sodium)	50 mg
Vitamin B3 (Niacinamide)	50 mg
Vitamin B6 (Pyridoxal 5-phosphate, Pyridoxine HCL)	50 mg
Choline (Choline dihydrogen citrate)	30 mg
Biotin	2 mg
Vitamin B12 (Methylcobalamin)	250 mcg
Folate ([6S]-5-methyltetrahydrofolate, glucosamine salt)	200 mcg

Non-Medicinal Ingredients: Hypromellose, silicon dioxide, magnesium stearate (vegetable source), stearic acid (vegetable source).
Recommended Dose: Adults: Take 1 capsule per day with a meal, or as directed by your health care practitioner. Consult a health care practitioner for use beyond 3 months.

Refer to the product label for dosing instructions, age-appropriateness, and relative risk statements. Healthcare practitioners are encouraged to use clinical judgement with case-specific dosing based on intended goals, subject body weight, medical history, and concomitant medication and supplement usage.

REFERENCES

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