B-Supreme

designs for health®

Comprehensive B vitamin formula featuring NatureFolate™

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This powerful and effective B vitamin combination formula supplies B vitamins in their preferred coenzymated forms, where possible, so the body does not have to phosphorylate them in order to be used in biochemical reactions. B-Supreme contains our proprietary NatureFolate™ blend of active isomer, naturally-occuring folates. Choline and trimethylglycine (TMG) are included to help support efficient methylation for optimal genetic expression.[1]

History of B Vitamins

B vitamins are a family of water-soluble nutrients that were discovered together at the beginning of the 20th century, initially thought simply to be "vitamin B." As nutrition advanced, however, it was learned that they are in fact a family of compounds, each with a distinct role to play in promoting health. B vitamins are now known to play critical roles in modulating biochemistry and metabolism, and represent the most common vitamins utilized by the body as cofactors for facilitating enzymatic function. The modern refined diet, high in sugar, alcohol, and devitalized foods, leads to lower levels of B vitamins. Numerous medications and chronic stress may lower B vitamin levels. High-risk populations such as vegans or vegetarians, alcoholics, the elderly, patients with congestive heart failure, or those who have had bariatric surgeries are at risk for vitamin B deficiencies.[2,7] While B vitamins have mainly been researched individually, they also have efficacious power when taken together. For example, B complex supplementation has been shown to decrease the levels of homocysteine, an inflammatory marker in cardiovascular, metabolic and neurological diseases, such as diabetic nephropathy and Alzheimer's disease, slowing the rate of cognitive decline.* B vitamins also exhibit analgesic effects via activating the nitric oxide GMPc pathway.[3-5,32,33]

Thiamin (Vitamin B1)

Vitamin B1 is needed for energy production, heart function, and the health of the brain and nervous system. Severe thiamin deficiency is often a result of heavy alcohol misuse which can lead to serious brain damage due to its major role in energy production. Animal studies showed that chronic alcohol application in conjunction with severe thiamin deficiency resulted in profound changes in neuroimmune genes, with a moderate to severe increase of proinflammatory cytokines within the thalamus, hippocampus and frontal cortex.[18] B1 also helps remove lead from the body.[9] Thiamin deficiencies are associated with energy, cardiovascular, and neurological disorders as vitamin B1 is an essential cofactor for several energy pathway enzymes to produce ATP.[10,11]

In an *in vitro* human clinical study 1 & 2 mcg/mL of thiamin supplementation on breast cancer cells for 24 hours significantly reduced cellular proliferation via reducing lactate levels and upregulating pyruvate dehydrogenase activity.[8]

Riboflavin (Vitamin B2): Antioxidant

Vitamin B2, also known as riboflavin, is another B vitamin that helps the body turn food into energy, and is considered a powerful antioxidant.[19] Patients with low thyroid function may have an increased need for vitamin B2, particularly in the activated form known as riboflavin-5-phosphate.[12] Taking riboflavin imparts a yellow color to the urine which is harmless.

Niacinaminde: Antioxidant Aiding Cellular Function and Brain Health*

Niacinamide is needed to metabolize food (carbohydrates, fats, and proteins) and is an essential factor in central nervous system health and function.[15] Niacinamide is converted into the coenzymes nicotinamide adenine dinucleotide (NAD) and NADP, which function in oxidation-reduction reactions.[20] The liver can convert niacin into niacinamide by adding an amine group. Biological responses to niacin, nicotinic acid and niacinamide are virtually equivalent when taken in common doses. When taken in supraphysiological doses they act differently (e.g., 500 mg niacin for stabilizing lipids[16]).Clinical signs of early niacinamide deficiency include lack of appetite, muscular fatigue, indigestion, depression, insomnia, headaches, glossitis, and skin lesions. Severe deficiency may lead to pellagra, with dermatitis, dementia, diarrhea, and possibly death (the "4 Ds" of pellagra).[17,20] Niacinamide (also known as nicotinamide) has been shown in research to protect and even regenerate islet cells of the pancreas and may be helpful for blood sugar support.[13,14] The mediation of redox reactions and sirtuin-protein regulation by NAD+ plays a major role in regulating metabolism and circadian rhythm, a key factor in brain health.[21] Concentrations of NAD+ decrease in the aging process and may be associated with age-related pathologies, such as neurodegenerative diseases, and increase in NAD concentrations via nicotinamide supplementation may be an effective anti-aging therapy and and prevent age-related associated disorders.[20, 21]

**Due to some individuals having sensitivities to even small doses of the other form of vitamin B3 niacin (or nicotinic acid), we have excluded this from our formula. For individuals seeking aggressive niacin therapy for the purpose of lowering lipids or for various circulatory disorders, consider our 500 mg Niacin CRT featuring our "Controlled Release Technology" which releases at a steady, controlled rate over 10-12 hours.*

Vitamin B6: For Good Health

Vitamin B6 in B-Supreme is presented as pyridoxine and the activated form known as pyridoxal-5-phosphate (P5P). Vitamin B6 plays an important role in vital life processes, which include amino acid metabolism, hemoglobin production, the efficient functioning of the nervous and immune systems, and the modulation of blood sugar.[23] B6 supports overall female hormonal balance and is very useful in the management of PMS,[10] as well as nausea and vomiting that may accompany pregnancy.[23] Vitamin B6 is shown to down-regulate oxidative stress mechanisms, playing a role in cognitive function; thus a low serum level of B6 is suggested to play a role in the pathophysiology of Alzheimer's disease.[3,23] The active form of vitamin B6, (P5P), plays a vital role in the synthesis of several stress and mood-lated neurotransmitters — GABA, serotonin, dopamine, epinephrine and norepinephrine — as a necessary cofactor for conversion.[24] Vitamin B6 deficiency can reduce levels of these neurotransmitters, which may lead to increased anxiety, depression, and stress-related disorders.[24] Deficiency is also linked to increased levels of homocysteine, and patients with deficiency exhibited a six-fold higher risk of cardiovascular disease than healthy patients.[25]

Folate: For Wellness

Folates are essential cofactors in one carbon metabolism and their deficiency is associated with health risks such as neural tube defects, cancers and hyperhomocysteinemia. "Folic acid" and "folate" are often used interchangeably, but more appropriately, folic acid refers to the fully oxidized synthetic compound (pteroylmonoglutamic acid) used in dietary supplements and in food fortification, while folate refers to the various tetrahydrofolate derivatives naturally present in foods. It seems that since the mandatory folic acid fortification of cereal-grain products in the U.S. in 1998, many breakfast cereals are over-fortified with folic acid. Consumption of cereal along with other folic acid-containing beverages and dietary supplements could result in a chronically high intake of synthetic folic acid.[26] The appearance of unmetabolized folic acid in the bloodstream following intake of as low as 400 micrograms per day of folic acid from fortified foods or supplements caused many scientists to be concerned with the potential health risk of unmetabolized folic acid since it is thought to aggravate pre-existing cancers. Research found that folic acid supplementation is associated with increased cancer risk, especially colorectal cancers, and may promote preexisting neoplasms.[27-29] However, there is contradicting evidence reporting folic acid may be protective against BRCA-linked breast cancers.[30]

Available in 60, 90, & 120 count capsules

Supplement Facts

Serving Size 1 capsule

Amount Per Serving		% Daily Value
Thiamin (Vitamin B-1) (as Thiamin HCl)	100 mg	8333%
Riboflavin (Vitamin B-2) (as Riboflavin and Riboflavin-5-Phosphate)	50 mg	3846%
Niacin (Vitamin B-3) (as Niacinamide)	50 mg NE	313%
Vitamin B-6 (as Pyridoxine HCl and Pyridoxal-5-Phosphate)	50 mg	2941%
Folate (as NatureFolate™ Blend - organic spinach powder, calcium folinate,Quatrefolic® [6S]-5-methyltetrahydrofolate - glucosamine salt)	340 mcg DFE	85%
Vitamin B-12 (as Methylcobalamin)	250 mcg	10417%
Biotin (as d-Biotin)	2000 mcg	6667%
Pantothenic Acid (as d-Calcium Pantothenate)	100 mg	2000%
Choline (as Choline Dihydrogen Citrate)	30 mg	5%
Trimethylglycine (TMG)	200 mg	*

*Daily Value not established.

Other Ingredients: Cellulose (capsule), silicon dioxide, vegetable stearate.

Folate status plays a vital role in brain health and neurodevelopment from conception through adulthood as a necessary nutrient for proper DNA methylation and one-carbon metabolism.[31] Accordingly, DFH has chosen not to add more synthetic folic acid into the diet, and instead has included NatureFolate™, a natural folate blend, in B-Supreme. NatureFolate™ is made from a concentrated organic spinach powder containing a blend of natural folates, including 5-methyltetrahydrofolate (5-MTHF) and 5-formyltetrahydrofolate with additional fortified 5-formyltetrahydrofolate as calcium folinate. For more information and references, please see the DFH Rationale for Replacing Folic Acid with NatureFolate™ available upon request. In addition, B-Supreme includes the patented folate derivative Quatrefolic®, an innovative form of folate that has demonstrated high bioavailability and solubility as well as long lasting stability.

Vitamin B12: A Must Supplement for Strict Vegetarians

Vegetarians are particularly susceptible to low vitamin B12 levels, as B12 is the only B vitamin found exclusively in animal products. In particular, pregnant vegans need to supplement months prior to pregnancy, because pregnancy increases B12 requirements. Mothers undersupplied with B12 may have babies with neurological problems. Also, older adults are often low in vitamin B12.[34-38] If left untreated, B12 deficiency can manifest in serious hematological and neurological disorders.[37] Methylcobalamin is the activated and more bioavailable form of B12 that better supports the methylation pathways and has been shown to slow cognitive decline and gray matter atrophy.[39]

Biotin: Strengthening Nails and Balancing Blood Sugar

Biotin can help strengthen nails in humans by 25% in those with weak or brittle nails.[42,43] High-dose biotin supplementation improved postprandial blood glucose in diabetic animal models, and completely normalized blood sugar and blood cholesterol levels in gestational diabetic rats.[40,41]

Pantothenic Acid: For Stress and Wound Healing

Pantothenic acid, previously known as vitamin B5, is a member of the B complex family that helps immune function, energy generation, and the body's production of stress hormones.[44]

B Vitamin Contraindications

- **Niacin and Niacinamide:** Avoid both of these forms in high doses in cases of jaundice, heart conditions including angina and rheumatic heart disease, ulcers, gastritis, renal failure, or gout.
- **Vitamin B6:** Patients taking levodopa should avoid vitamin B6 (as B6 can inactivate this medication). Lactating women should not take more than 50 mg of B6 per day, as higher doses may suppress lactation.
- **Folate:** Do not combine folate or folic acid supplements with the cancer drug, methotrexate.
- **Biotin:** It is important to keep in mind that high dose biotin supplementation may interfere with diagnostic assays used to measure hormones like thyroid function tests.[42]

Recommended Use:

- Take one capsule per day with a meal, or as directed by your health care practitioner.

For a list of references cited in this document, please visit:

https://www.designsforhealth.com/techsheet-references/b-supreme-references.pdf

Dosing recommendations are given for typical use based on an average 150 pound healthy adult. Health care 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.

Quatrefolic® is covered by U.S. Patent No. 7,947,662 and is a registered trademark of Gnosis S.p.A.

***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.**

To contact Designs for Health, please call us at (860) 623-6314, or visit us on the web at www.designsforhealth.com.