

Fully Active B Complex with Quatrefolic®

**Doctor's
BEST**

Science-Based Nutrition™



Optimized for Absorption and Utilization

The B vitamins are fundamental to life. Humans cannot make them, therefore we have to get them through the diet. **Doctor's Best Fully Active B Complex** is a full-spectrum B vitamin supplement, carefully designed for optimal absorption and utilization. This formulation provides the B vitamins in their safest, best tolerated, and most biochemically active forms. It includes vitamin C for added stability. It is hypoallergenic, with no unhealthy colorants or additives.

This formulation contains only ORTHO nutrients, namely those vitamin forms (called "vitamers") identical to those naturally built into the body's chemistry, as first described by Nobel Prize winner Linus Pauling.¹ ORTHO B vitamins are essential requirements for many enzymes, and without them these enzymes would be unable to function.²

INGREDIENTS & BENEFITS

The breakthrough features of this formulation include:

- **Supplies only the best-utilized B vitamin forms.** Most B vitamin supplements use cheap forms that are not optimally utilized in the body. This formulation does not compromise—it provides generous amounts of the most active B vitamers.
- **Substitutes naturally fully active folate for synthetic folic acid.** Folic acid is an artificial folate that is difficult for the body to assimilate.
- **Provides sufficient, fully active vitamin B12.** Very few supplements provide sufficient amounts of active vitamin B12.

Thiamin ("Vitamin B1") is fundamental to human metabolism because it is essential for the metabolism of oxygen.³⁻⁶ The microscopic "power plants" of our cells (mitochondria) require thiamin to generate energy, but elsewhere in the cells it is also required for energy generation.⁶ Thiamin is important for metabolizing amino acids, the building blocks of proteins,⁴ but is especially important for managing sugar and other carbohydrates, and can be depleted by high-carbohydrate diets.⁵ Thiamine even helps support the delicate blood vessels of the retina and other tissues in the presence of high levels of circulating blood sugar.⁷

This vitamin is absorbed only as thiamin (not as other thiamin vitamers) in the upper small intestine.⁶ Alcohol can impair the proteins that transport

thiamin, and high alcohol consumption is linked to thiamine deficiency.^{5,6} The body's thiamine stores also can be depleted by diuretic medications.⁸

The brain and other nervous tissues have especially high thiamin requirements.⁶ Other organs with high oxygen requirements, such as the heart, also have high demand for thiamine.⁴ The liver, which is also sensitive to alcohol, uses thiamine to help manage glyoxals, metabolic byproducts that can cause tissue damage.⁵

Riboflavin ("Vitamin B2") is a cofactor for various mitochondrial enzymes and therefore essential for the body to make energy.¹¹ Riboflavin is involved in a wide variety of energy transfer reactions—up to 4% of all known human enzymes may use riboflavin or molecules derived from it. Riboflavin is a necessary cofactor for the metabolism of homocysteine, a normal product of metabolism that can become toxic as it accumulates; and for the utilization of glutathione, a major antioxidant.² Riboflavin also supports important enzymes that recycle folate and activate vitamin B6.¹²

The C677T mutation is one of the most common mutations in humans, and impairs the body's ability to process the folate B vitamin. Riboflavin is an essential cofactor for the enzyme involved (MTHFR, methylene tetrahydrofolate reductase), and the mutation impairs riboflavin binding to the enzyme.² In a clinical trial, riboflavin supplementation markedly countered the negative effects of this mutation.¹⁰

Niacin and Niacinamide ("Vitamin B3")⁴ This vitamin is fundamentally essential for numerous enzymes that make and use energy. Both the niacin and niacinamide vitamers are readily activated to the cofactors that power these enzymes. Some of these enzymes have mutations that impair their binding with B3, and increased B3 intake often will improve their performance.²

Supplement Facts

Serving Size 1 Veggie Capsule
Servings Per Container 30

	Amount Per Serving	% Daily Value
Vitamin C (as ascorbic acid)	40 mg	45%
Vitamin B1 (from thiamin HCl)	60 mg	5000%
Vitamin B2 (from riboflavin and riboflavin-5-phosphate)	75 mg	5770%
Vitamin B3 (as niacinamide and niacin)	50 mg	310%
Vitamin B6 (from pyridoxine HCl and pyridoxal-5-phosphate)	50 mg	2940%
Folate (from Quatrefolic®, (6S)-5-methyltetrahydrofolic acid, glucosamine salt)	400 mcg DFE**	100%
Vitamin B12 (as methylcobalamin)	1000 mcg	41670%
Biotin	600 mcg	2000%
Pantothenic Acid (from d-calcium pantothenate)	100 mg	2000%

** DFE = Dietary Folate Equivalent

Other Ingredients: Modified cellulose (vegetarian capsule), microcrystalline cellulose, magnesium stearate (vegetable source), silicon dioxide.

Suggested Adult Use: Take 1 capsule daily with food, or as recommended by a nutritionally-informed physician.

Non-GMO / Gluten Free / Soy Free / Vegan

Store in a cool dry place.

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Vitamin B3 helps the liver maintain healthy cholesterol levels, as verified by multiple clinical trials.^{11,12} It is also essential for detoxifying alcohol,² and is readily depleted by excessive alcohol intake or by smoking.⁴ This formulation provides more niacinamide and less niacin, in order to avoid the troublesome skin flushing that niacin can cause. Niacinamide does not cause flushing.

Vitamin B6 (as pyridoxine hydrochloride and pyridoxal-5-phosphate),^{2,4} This vitamin is essential for at least 112 enzymes that metabolize carbohydrates, amino acids, and fatty acids—some 3% of all the known human enzymes.² It is also essential for routing potentially harmful homocysteine along the “trans-sulfuration” pathway to produce glutathione and other important sulfur antioxidants.¹³

Vitamin B6 is vital for early brain development and for the metabolism of various brain chemical transmitters.² Nerve cells both in the brain and elsewhere in the body rely heavily on B6.¹⁴ Certain neuroleptic drugs may impair the brain’s B6 utilization and increase dietary B6 requirements.² Vitamin B6 deficiency is relatively common in the U.S. (more than 10 percent of the population, according to the Centers for Disease Control¹⁷).

Folate (as methyl-tetra-hydro-folate or MTHF, Quatrefolic®),^{2,4,16} This vitamin is a major dietary source of methyl groups, which are essential for a number of enzymes that make DNA, repair damaged DNA, and regulate gene activity via epigenetic actions.¹³ Folate’s central importance for such “housekeeping” functions make it crucial to the health of all our cells, tissues, and organs. Folate is also crucial for a healthy pregnancy.^{2,4} This need arises soon after conception, so that all women of reproductive age are well advised to have sufficient folate intake.

The brain especially needs methyl from folate to make cell membranes that go to form the nerve cell connections (synapses). Adequate folate intake is also essential for the routine recycling of homocysteine.^{2,13}

Vitamin B12 (cobalamin), as methylcobalamin (methyl-B12). This vitamin works very closely with folate to support methyl metabolism and recycle homocysteine.

In the U.S., the typical means of replenishing depleted B12 has been by injection. Yet in Sweden physicians have been routinely prescribing B12 supplements instead of injections for over 30 years, with consistent success.¹⁸ This formulation supplies 1000 micrograms of the methyl-B12 vitamer, which is proven to be well absorbed and utilized when taken by mouth. Clinical research also proves that this generous daily allowance of methyl-B12 makes “sublingual” B12 dosing unnecessary.¹⁹

Biotin. This B vitamin is built into the molecular structure of at least five enzymes called carboxylases that are widely involved in energetics, fat metabolism, and the metabolism of branched-chain amino acids important for many protein functions.^{2,4,20} Mitochondria require biotin for their energy functions (together with all the other B vitamins).²¹

Biotin is also an important epigenetic vitamin, being used to help regulate DNA structure and stabilize gene activity, mainly through its binding to proteins closely associated with the DNA.²⁰ More than 2000 human genes have been identified that depend on biotin.²²

Pregnant women often are deficient in biotin²³ and lactation requires higher dietary intakes.⁴ Healthy immune responses and immune cell replacement depend on having adequate intake.²⁰ Smoking can deplete biotin, as can certain anticonvulsant medications.²⁰

Pantothenic acid (as calcium pantothenate, “Vitamin B5”),^{4,24} We need this vitamin to make coenzyme A (“CoA”), a fundamental metabolic factor. Our cells use CoA to make amino acids, proteins and hormones, to metabolize fats into useful fatty acids, and to build cell membranes.²⁴ CoA with its pantothenate component is also an absolute requirement for the major energy-generating enzymes. Freezing, canning, and refining deplete this vitamin from foods.⁴

B Vitamins Work Together for Energy and Coping with Stress*



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Many of the enzyme systems that manage energy generation, methyl group transfers, antioxidant defense, and numerous other metabolic pathways require more than one B

vitamin in order to function. As examples, two key energy enzymes (pyruvate dehydrogenase and ketoglutarate dehydrogenase) require vitamins B1, B2, B3 and B5 to do their jobs.² The methyl transfer enzyme that recycles homocysteine (methionine synthase) must have both fully active folate and fully active vitamin B12 available, in order to carry out its pivotal function.²⁵ The mitochondria, which generate over 90 percent of our life energy, need all the B vitamins to make energy. They also need the B vitamins to assist their antioxidant defenses, which protect them from self-destruction by the oxygen free radicals they generate as byproducts.²¹

The B vitamins’ fundamental importance to metabolism helps explain their importance to the body’s defenses against stress. Clinically, they can help the individual cope with emotional stress.²⁶ Lifestyle stressors such as smoking and excessive alcohol consumption tend to deplete them from the body.^{27,28} So does physical work and intensive exercise.^{29,30}

Help Maintain Brain Health and Wellbeing Across the Lifespan*

B vitamins are indispensable for healthy management maintenance of healthy memory, mood and other brain functions, across the lifespan. In a 2-year clinical trial with subjects aged over 70 years, a B vitamin combination (folate, B6 and B12) showed benefit for memory and other cognitive functions as compared against placebo.³¹ The simpler combination of folate and B12 improved memory in a trial with subjects aged 60 to 74 years.³² Folate’s fundamental importance for mood management is well established.³³

Overall, the importance of the B vitamins for energy and for coping with stress, as well as for the brain, heart, circulation, immune response, and whole-body wellbeing is fully established. **Doctor’s Best Fully Active B Complex** is based on the most advanced clinical and basic science research on these vitamins and their most fully active vitamers. This supplement is fully optimized for safety and efficacy, and is an excellent means to ensure that the body’s needs for B vitamins are being satisfied.

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