PROTOCOL FOR LIFE BALANCE®

Dietary Supplement Information
for Physicians with Naturokinetics®
PRODUCT CODE: P0406
CATEGORY: MULTIVITAMIN

B Complex Neuro Factors

TECHNICAL SUMMARY

As co-factors in numerous biochemical reactions, B complex vitamins are critical for energy production and the proper metabolism of carbohydrates, fats, and proteins.* B vitamins are also important for the maintenance of normal nervous system function, blood cell production, and countless other metabolic processes.*

Biochemistry: Our B Complex Neuro Factors has a balanced combination of B vitamins in their activated co-enzyme states combined with vitamin C, betaine, *alpha*-lipoic acid, PABA, inositol and CoQ10.

Allergen and Additive Disclosure: Not manufactured with wheat, gluten, soy, milk, egg, fish, shellfish or tree nut ingredients. Produced in a GMP facility that processes other ingredients containing these allergens.

Delivery Form: Vegetable capsules.

ROLE AS NUTRIENT/FUNCTION

B vitamins are required as co-enzymes for numerous complex reactions that are essential to cellular function and energy production, notably at the mitochondrial level.* Some of the systems in which B vitamins function can be summarized as follows:

- Thiamin: citric acid cycle*
- Riboflavin: cellular respiratory chain, energy metabolism, metabolism of neurotransmitters*
- Niacin: production of NAD/NADP*
- Vitamin B6, B12: cellular energy production, glutathione and nucleotides biosynthesis, homocysteine recycling*
- Folate: biosynthesis of nucleotides and S-adenosylmethionine*
- Biotin: glucose and fat metabolism*
- Pantothenic acid: coenzyme A formation, fatty acid oxidation and other enzymatic reactions*
- Choline: biosynthesis of S-adenosylmethionine*
- Inositol (non-essential member of the B complex family): neurotransmitter signaling in the brain and central nervous system.*

Vitamin C is an antioxidant involved in many bodily functions, including in the nervous system, where it is involved in the synthesis of norepinephrine and some neuropeptides, as well as in the modulation of neurotransmitter receptors, the function of glutaminergic and dopaminergic neurons, and the synthesis of glial cells and myelin.*

Betaine, *alpha*-lipoic acid, PABA and CoQ10 are included to complement this nervous system support formula.*

NATUROKINETICS®

Liberation: B Complex Neuro Factors capsules pass standard gastric disintegration test in no less than 30 minutes.

Absorption: B vitamins and vitamin C are absorbed in various parts of the intestine via several different mechanisms. While vitamin B12 is absorbed in the small intestine, it requires intrinsic factor (IF) from the stomach to facilitate its absorption, as well as a properly functioning pancreas. At larger doses, as included in this product, B12 is passively absorbed in the intestine without IF in a non-saturable manner; this passive absorption typically represents 1% of the ingested dose.

Distribution: B vitamin distribution in the body differs depending on the vitamin. For example, the body has limited storage capacity for riboflavin; however it is found in most tissues with greater amounts in the liver, heart and kidneys and to a lesser extend in the blood. Thiamin is not stored in large amounts in the body, and it is found in greater amounts in muscle tissues including the heart, liver, kidneys and brain. Biotin accumulates in the liver; it is also found in significant amounts in the central nervous system and white blood cells. B12 is mainly stored in the liver but is also present in red blood cells, kidneys, muscle, bones and the brain.

Folate stores are small, with half of the body store of folate in the liver. Folate is present in all cells of the body as it is essential to cell survival.

B6 is mainly stored in muscle tissue, and to a lesser extent in the liver.

B5 is found throughout the body, where it is used for the synthesis of coenzyme A.

Vitamin C is found throughout the body, with higher concentrations in the pituitary and adrenal glands, white blood cells, eyes and brain.

Supplement Facts

Serving Size 2 Veg Capsules Servings Per Container 30

	Amount Per Serving	% Daily Value
Vitamin C (from Magnesium Ascorbate)	60 mg	67%
Thiamin (Vit. B-1) (from Thiamin HCl and Cocarboxylase)	50 mg	4167%
Riboflavin (as Riboflavin & from Riboflavin-5-Phosphate Sodium)	50 mg	3846%
Niacin (Vitamin B-3) [from Inositol Hexanicotinate and NAD (Nicotinamide Adenine Dinucleotide)]	100 mg	625%
Vit. B-6 (from Pyridoxine HCl and P-5-P Monohydrate)	50 mg	2941%
Folate [from Quatrefolic® (6S)-5-MTHF** Glucosamine Salt]	680 mcg DFE [400 mcg (6S)-5-MTHF**]	170%
Vit. B-12 (as Methylcobalamin and Dibencozide)	250 mcg	10,417%
Biotin	1,000 mcg	3333%
Pantothenic Acid (Vitamin B-5) (from Calcium Pantothenate and Pantethine)	50 mg	1000%
Choline (from Choline Bitartrate)	25 mg	5%
Betaine Anhydrous	50 mg	†
Alpha Lipoic Acid	50 mg	†
PABA (Para-Aminobenzoic Acid)	25 mg	†
Inositol (from Inositol Hexanicotinate, Inositol Hexaphosphate and Inositol)	30 mg	†
CoQ10 (Coenzyme Q10)	10 mg	†

† Daily Value not established.

Other ingredients: Cellulose (capsule) (acid-resistant), Cellulose Powder, Stearic Acid (vegetable source) and Silica.

- **Active Co-Enzyme Forms**
- **Nervous System Health***

SUGGESTED USAGE: Take 2 capsules daily with food, or as directed by your healthcare practitioner.

*These statements have not been evaluated by the FDA. This product is not intended to diagnose, treat, cure, or prevent any disease.

Metabolism: B vitamin metabolism is complex and follows different pathways; for example biotin is metabolized via *beta*-oxidation and sulfur oxidation.

Riboflavin is metabolized to flavin mononucleotide, which can be used to form some flavoproteins, but it is mainly converted to flavin adenine dinucleotide (FAD), the predominant flavocoenzyme in body tissues.

Thiamin, once it reaches cells, is rapidly phosphorylated to form thiamin diphosphate (TPP). It can then be metabolized into thiamin monophosphate (TMP), and finally can be recycled back into thiamin.

Folate metabolism, which is an integral part of its function, is complex and requires other B vitamins like vitamins B6, B12 and NADP (a niacin derivative). Folate is essential for metabolic pathways involving cell growth, replication and survival.

Vitamin B6 (B6) comprises a group of six related compounds: pyridoxal (PL), pyridoxine (PN), pyridoxamine (PM), and their respective 5'-phosphates [PLP (also known as P-5-P), PNP, and PMP]. Most of the absorbed non-phosphorylated B6 goes to the liver where PN, PL, and PM are converted to PNP, PLP, and PMP by PL kinase. PNP and PMP are oxidized to PLP by PNP oxidase. PMP is also generated from PLP via aminotransferase reactions. PLP can be oxidized to 4-pyridoxic acid (4-PA), which is released by the liver and excreted in urine.

B5 is metabolized in the liver to coenzyme A, which is known for its role in the synthesis and oxidation of fatty acids, and the oxidation of pyruvate in the TCA cycle.

In cells, B12 is extensively metabolized by a series of proteins.

Elimination: B vitamins and vitamin C are eliminated in urine. Biotin, riboflavin, and B12 are also eliminated through the bile. B12 is then partially reabsorbed in the intestine; the non-reabsorbed portion is eliminated in feces. Most of the folate excreted in the kidneys is reabsorbed in the proximal renal tubule.

CLINICAL VALIDATION

- In a 2-year, randomized, placebo-controlled study, 156 healthy elderly volunteers with memory complaints received B-vitamin supplementation (folic acid 0.8 mg/d, vitamin B12 0.5 mg/d, vitamin B6 20 mg/d) or placebo. At the end of the supplementation period, volunteers from the vitamin B group had significantly less atrophy of grey matter (GM) vs. placebo group in posterior brain regions.

SAFETY INFORMATION

Tolerability: The tolerability of this specific blend of ingredients has not been clinically evaluated; however, B vitamins, even at large daily doses, are typically well tolerated.

Contraindications: None known.

INTERACTIONS

Drug Interactions, Supplement Interactions and Interaction with Lab Tests have not been clinically evaluated for this specific blend of ingredients.

STORAGE

Store in cool, dry environment in a tightly sealed container, ideally between 56° and 86° F and at <55% humidity.

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