

# Activated B-Complex



**Koshland Pharm**  
Custom Compounding Pharmacy

## Clinical Applications

- Supports Carbohydrate Metabolism\*
- Supports Healthy Nervous System/Adrenal/Immune Function\*
- Supports Cardiovascular Health\*
- Supports Healthy Mental Function and Mood\*

**Activated B-Complex** contains the entire spectrum of B vitamins to support adrenal and neurological functions. It features activated forms of vitamins B2, B6, and B12; benfotiamine, a fat soluble, more physiologically active form of thiamine; and folate as Quatrefolic<sup>®</sup>, which is proven to have greater stability, solubility, and bioavailability over calcium salt forms of 5-MTHF.\*

All Formulas Meet or Exceed cGMP Quality Standards

## Discussion

The water-soluble B vitamins have to be absorbed in the small intestine and then go to the liver where they are biotransformed into their active coenzyme forms. Activated B-Complex contains vitamins B1 (thiamine), B2 (riboflavin), B6 (pyridoxine), and B12 (methylcobalamin) in their physiologically-active form making them easier to absorb and “ready-for-use.” For example, in patients receiving pyridoxine HCl, only 33 percent responded with an increase in plasma pyridoxal-5'-phosphate (P5P); however, the level increased in all of the patients receiving P5P.\*<sup>[1]</sup>

Folate is provided as 5-methyltetrahydrofolate (5-MTHF), which bypasses metabolic steps to folate bioactivity. Despite research showing that folic acid and 5-MTHF have equivalent bioavailability and that supplementation with large doses of folic acid can “force” its conversion to the more active form, 5-MTHF may be the preferred form to replenish folate. This may be especially applicable to those with digestive challenges or genetic variations in folate metabolism.<sup>[2-4]</sup> In this formula, 5-MTHF is provided as Quatrefolic—the glucosamine salt of 5-MTHF. In vitro and in vivo studies have proven that Quatrefolic has greater stability, solubility, and bioavailability over calcium salt forms of 5-MTHF. Folate is stored in small amounts in red blood cells (RBC), and RBC folate has been shown to be higher after supplementation with 5-MTHF compared to folic acid and placebo. Likewise, patients given 5 mg of 5-MTHF experienced plasma levels of 5-MTHF 700% greater than patients given folic acid.\*<sup>[5]</sup>

Another unique ingredient in this formula is benfotiamine (S-benzoylthiamine O-monophosphate), a safe, fat-soluble analog of thiamine. One study showed that it not only raised blood and tissue levels of thiamine at least five times higher than the water-soluble salt, but it also remained bioavailable after oral administration up to 3.6 times longer than thiamine salt.<sup>[6]</sup> Benfotiamine is the most potent of a class of thiamine-derived compounds present in small quantities in members of the *Allium* genus. The superiority of its biological activity compared to thiamine rests in its structure—a thiazole ring opens to allow easy diffusion through a membrane and then closes to become structurally active.\*

Benfotiamine increases transketolase activity, thereby diverting from three natural, yet destructive metabolic pathways: 1) it decreases the glucose metabolites that lead to the buildup of certain types of detrimental advanced glycation end products (AGEs); 2) it normalizes protein kinase C activity; 3) it protects the retina by preventing the activation of NF-kappaB therein.<sup>[7]</sup> Research suggests it may also protect the kidneys and endothelial cells.<sup>[8]</sup> Benfotiamine is useful for replenishing thiamine, this may be especially true in individuals that use the vitamin at a higher rate or in those with lifestyle habits that deplete it.\*<sup>[9-11]</sup>

\*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.

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Activated B-Complex




# Supplement Facts


Serving Size: 1 Capsule  
Servings Per Container: 90

	Amount Per Serving	%Daily Value
Thiamin (as thiamine HCl)	20 mg	1667%
Riboflavin (as riboflavin 5'-phosphate sodium)	20 mg	1538%
Niacin (130 mg as niacinamide and 10 mg as niacin)	140 mg	875%
Vitamin B6 (as pyridoxal 5'-phosphate)	20 mg	1176%
Folate (as Quatrefolic® (6S)-5-methyltetrahydrofolic acid, glucosamine salt)	400 mcg DFE	100%
Vitamin B12 (as MecobalActive™ methylcobalamin)	400 mcg	16,667%
Biotin	400 mcg	1333%
Pantothenic Acid (as d-calcium pantothenate)	150 mg	3000%
Choline (as choline dihydrogen citrate)	30 mg	5%
Benfotiamine	20 mg	**

\*\* Daily Value not established.

**Other Ingredients:** HPMC (capsule), stearic acid, magnesium stearate, and silica.

 Quatrefolic® is a registered trademark of Gnosis S.p.A. Produced under US patent 7,947,662.

 MecobalActive™ is a trademark of Ferrer Health Tech.  
The active form of B<sub>12</sub>

## Directions

Take one capsule once or twice daily, or as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medication should discuss potential interactions with their healthcare practitioner.

## References

1. Labadarios D, Rossouw JE, McConnell JB, et al. Vitamin B6 deficiency in chronic liver disease – evidence for increased degradation of pyridoxal-5-phosphate. *Gut*. 1977;18:23-27. [PMID: 838399]
2. Yakut M, Ustün Y, Kabaçam G, et al. Serum vitamin B(12) and folate status in patients with inflammatory bowel diseases. *Eur J Intern Med*. 2010 Aug;21(4):320-23. [PMID: 20603044]
3. Halsted CH, Villanueva JA, Devlin AM. Folate deficiency, methionine metabolism, and alcoholic liver disease. *Alcohol*. 2002 Jul;27(3):169-72. [PMID: 12163145]
4. Kluijtmans LA, Van den Heuvel LP, Boers GH, et al. Molecular genetic analysis in mild hyperhomocysteinemia: a common mutation in the methylenetetrahydrofolate reductase gene is a genetic risk factor for cardiovascular disease. *Am J Hum Genet*. 1996 Jan;58(1):35-41. [PMID:8554066]
5. Willems FF, Boers GH, Blom HJ, et al. Pharmacokinetic study on the utilisation of 5-methyltetrahydrofolate and folic acid in patients with coronary artery disease. *Br J Pharmacol*. 2004 Mar;41(5):825-30. [PMID: 14769778]
6. Loew D. Pharmacokinetics of thiamine derivatives especially of benfotiamine. *Int J Clin Pharmacol Ther*. 1996 Feb;34(2): 47-50. [PMID: 8929745]
7. Thornalley PJ. The potential role of thiamine (vitamin B1) in diabetic complications. *Curr Diabetes Rev*. 2005 Aug;1(3):287-98. [PMID: 18220605]
8. Stirban A, Negrean M, Stratmann B, et al. Benfotiamine prevents macro- and microvascular endothelial dysfunction and oxidative stress following a meal rich in advanced glycation end products in individuals with type 2 diabetes. *Diabetes Care*. 2006 Sep;29(9):2064-71. [PMID: 16936154]
9. Woelk H, Lehl S, Bitsch R, et al. Benfotiamine in treatment of alcoholic polyneuropathy: an 8-week randomized controlled study (BAP I Study). *Alcohol*. 1998 Nov-Dec;33(6):631-38. [PMID: 9872352]
10. Ayazpoor U. Chronic alcohol abuse. Benfotiamine in alcohol damage is a must [in German]. *MMW Fortschr Med*. 2001 Apr 19;143(16):53. [PMID: 11367995]
11. Schupp N, Schmid U, Heidland A, et al. New approaches for the treatment of genomic damage in end-stage renal disease. *J Ren Nutr*. 2008 Jan;18(1):127-33. [PMID: 18089459]

## Does Not Contain

Wheat, gluten, corn, yeast, soy, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.

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