

Methyl Balance™

Nutritional support for methylation†

Introduction

Methyl Balance is a unique formula that combines bioactive forms of four essential B vitamins with trimethylglycine (betaine). Vitamins B₂, B₆, B₁₂, and folate are provided in active, coenzyme forms for maximal bioavailability and function. The ingredients in Methyl Balance work together to synergistically support methylation processes and help maintain normal homocysteine metabolism.†

Product features

- The ingredients in Methyl Balance support healthy methylation in a variety of body systems, including liver detoxification, cardiovascular, neurological, and metabolic health by supporting SAMe production and the formation of methyl groups.
- Active forms of vitamins B₂ and B₆ are provided for improved absorption and bioavailability.
- Biologically active folate (as methylfolate, Metafolin®) and vitamin B₁₂ (methylcobalamin) are included in the formula.
- Methyl Balance is a hypoallergenic product free of the following common allergens: milk/casein, eggs, fish, shellfish, tree nuts, peanuts, wheat, gluten, soybeans, and corn. Contains no artificial colors, flavors, or preservatives.

Background

Methylation is a biochemical reaction involving the transfer of a one-carbon methyl group from one molecule to another. This deceptively simple molecular modification is critically important and enables living organisms to alter protein functions and cellular activities in response to changes in both internal and external environmental conditions. For example, in neural tissue, methylation of phospholipids helps regulate cell membrane fluidity and mediate cognition and neuronal synchronization. In pancreatic islet cells, methylation supports glucose-stimulated insulin secretion. Methylation of DNA is an important means of regulating gene expression and nuclear chromatin organization.

Methylation activity is directly influenced by key nutrients such as B vitamins, betaine, and SAMe.† One approach to optimizing methylation capacity in the body is to increase intake of nutritional cofactors that support production of SAMe and reduce buildup of metabolites that may obstruct cellular methylation pathways.† The most important nutrients to support healthy methylation are the active, coenzyme forms of vitamins B₂, B₆, B₁₂, folate, and betaine.†

Metabolizing homocysteine is also an important step in maintaining healthy cardiovascular and cognitive function. Vitamin B₆, B₁₂, and folate work together to metabolize homocysteine to methionine.† Betaine further supports the metabolism of homocysteine to methionine through an alternate pathway.†

How Methyl Balance works

- Riboflavin 5'-phosphate (vitamin B₂) functions primarily as two distinct coenzymes that support methylation through either the conversion of precursor forms of vitamin B₆ into an active form, or as a cofactor for the enzyme methylenetetrahydrofolate reductase (MTHFR), thus priming folate for its role in generating SAMe and re-methylating homocysteine.† Clinical studies have shown that plasma riboflavin levels are an independent determinant of plasma homocysteine.†
- Pyridoxal 5'-phosphate (PLP, sometimes also abbreviated as P5P) is the bioactive form of vitamin B₆. PLP contributes to methylation through the creation of L-5-MTHF, a methyl donor integral to the regeneration of methionine from homocysteine. SAMe is also connected to this regeneration process and, as a result, PLP plays an important role in ensuring adequate SAMe production. Inadequacies of PLP can thus lead to a buildup, not only of homocysteine, but its direct precursor and SAMe metabolite, S-adenosylhomocystine (SAH). PLP works in concert with other B vitamins to ensure continued, optimal methylation of the body's proteins, phospholipids, and DNA.†

†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.

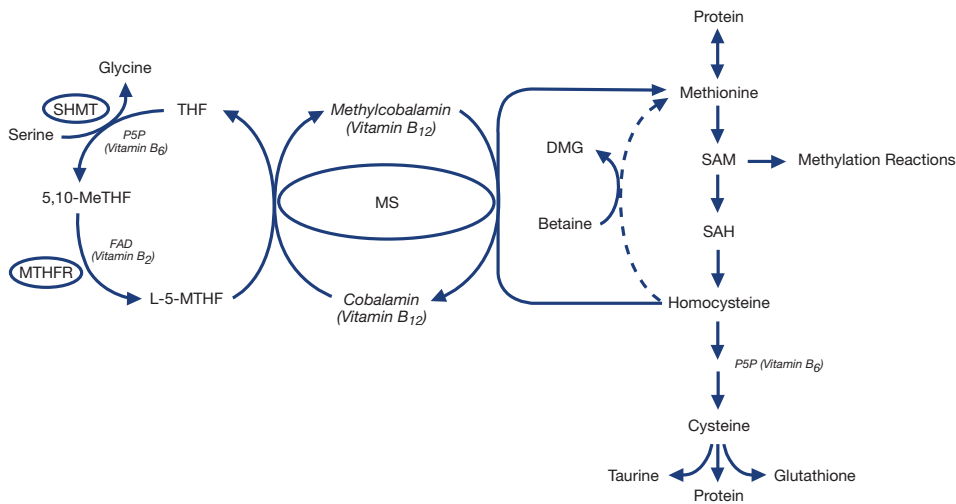


Fig. 1. Roles of vitamins B₂, B₆, B₁₂, folate, and betaine in the methionine cycle.

- Methylcobalamin is an active coenzyme form of vitamin B₁₂, the only form that directly participates in methylation. As a cofactor for methionine synthase, methylcobalamin supports remethylation of homocysteine to methionine.¹ As previously noted, methionine is a precursor to SAMe, the principal biochemical driver of methylation reactions in the body. Methylcobalamin also participates in the conversion of folate L-5-MTHF. Methylcobalamin thus stands at the crux of the methionine cycle and folate cycles, supporting both methylation and optimal functioning of folate.[†]
- L-5-Methyltetrahydrofolate (L-5-MTHF), also known as methylfolate, is a B-complex vitamin that occurs in several bioactive forms. L-5-MTHF is an important supplier of methyl groups to the methionine cycle, and as part of that process, is integrally involved in the synthesis of the body's primary methyl donor, SAMe. Persons with impaired endogenous synthesis of L-5-MTHF may have reduced methylation capacity. Studies show supplementation with L-5-MTHF elevates blood levels of total and active folates more effectively than folic acid in these persons.¹² Clinical trials also find supplemental L-5-MTHF supports cardiovascular function and mood.^{13,4}
- Betaine, or trimethylglycine, is a choline metabolite that is critically important to human health. Betaine is a secondary source of methyl groups for the remethylation of homocysteine to methionine. This pathway becomes important when availability of folate is compromised. Even in persons with normal folate metabolism, betaine has been shown to account for approximately half of homocysteine methylation in the liver. Studies in humans find that plasma betaine levels correlate inversely with homocysteine concentrations, especially when folate levels are low.¹⁵

Formula

SUGGESTED USE: 1 capsule daily with food or as directed by a healthcare professional.

Caution: If you are pregnant, nursing, have a medical condition, or taking prescription drugs, consult your healthcare professional before using this product. Keep out of the reach of children.

Supplement Facts		
Serving Size 1 Capsule		
Amount Per Capsule	% Daily Value	
Riboflavin (as riboflavin 5'-phosphate)	30 mg	2,308%
Vitamin B ₆ (as pyridoxal 5'-phosphate)	15 mg	882%
Folate (as Metafolin [®] L-5-methyltetrahydrofolate)	1,360 mcg DFE	340%
Vitamin B ₁₂ (as methylcobalamin)	1,000 mcg	41,667%
Betaine (trimethylglycine)	600 mg	*

*Daily Value not established.

Other ingredients: Vegetarian capsule (hydroxypropyl methylcellulose, water), microcrystalline cellulose, L-leucine, and silicon dioxide.

[†]Metafolin[®] is a registered trademark of Merck KGaA, Darmstadt, Germany.



MBA 60 capsules



How supplied

60 capsules per bottle.

Storage

Store in a cool, dry place (59°F to 85°F) away from direct light.

References

1. Hustad S, et al. Riboflavin as a determinant of plasma total homocysteine: effect modification by the methylenetetrahydrofolate reductase C677T polymorphism. *Clin Chem.* 2000 Aug;46(8 Pt 1):1065-71.
2. Biselli PM, et al. Effect of folate, vitamin B₆, and vitamin B₁₂ intake and MTHFR C677T polymorphism on homocysteine concentrations of renal transplant recipients. *Transplant Proc.* 2007;39:3163-5.
3. Antoniadou C, et al. 5-methyltetrahydrofolate rapidly improves endothelial function and decreases superoxide production in human vessels: effects on vascular tetrahydrobiopterin availability and endothelial nitric oxide synthase coupling. *Circulation.* 2006;114:1193-201.
4. Guaraldi GP, et al. An open trial of methyltetrahydrofolate in elderly depressed patients. *Ann Clin Psychiatry.* 1993;5:101-5.
5. Chiuve SE, et al. The association between betaine and choline intakes and the plasma concentrations of homocysteine in women. *Am J Clin Nutr.* 2007 Oct; 86(4):1073-81.

†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.

klaire.com | 888 488 2488