METHYL PROTECT provides therapeutic doses of vitamins B6, B12, and folate in a highly absorbable liquid formula. These essential B vitamins support proper endogenous methylation activity as well as healthy production of red blood cells, neurotransmitters, hormones, and nucleic acids. The compound homocysteine occurs as a byproduct of the series of B12/B6/folate-dependent methylation reactions involved in methionine/cysteine metabolism. Elevated levels of homocysteine have been associated with cardiovascular risk through believed promotion of atherosclerotic plaque development and enhanced blood clotting activity. In clinical trials, supplementation with the involved B vitamins has been shown to reduce circulating homocysteine levels and therefore support cardiovascular health.*

FOLATE (FOLIC ACID) is the 5-formyl derivative of tetrahydrofolate (THF) and is found naturally in foods. Folate, or vitamin B9, has multiple functions in the body, including DNA replication, nucleotide biosynthesis, and amino acid metabolism. Folate participates in body reactions as one of the five forms of THF and serves as an acceptor and donor of one carbon units and methyl groups. Insufficient intake of folate has been linked to numerous adverse health effects, including increased risk of dementia, cancer, and birth defects. The association between folate deficiency and neural tube defects is so evident that the U.S. FDA implemented legislation in 1998 requiring the fortification of all refined grain products with folic acid as a preventative measure. Folate as N5-methyl THF functions as a methyl donor to vitamin B12 in the methionine synthase reaction that regenerates methionine from homocysteine. Without sufficient folate, regeneration of methionine cannot occur, resulting in possible homocystinemia. This reaction...
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is also dependent upon B12 availability as it serves as the prosthetic group for methyl donation within the reaction. Insufficient B12 can also impair the ability of N5-methyl THF to be converted back to THF via methyl donation. As a result, endogenous reactions that are dependent upon THF as a substrate, such as purine synthesis, are impaired. This phenomenon is known as the “methyl-folate trap” and demonstrates the complex interrelationship between folate and vitamin B12.*

VITAMIN B6 (PYRIDOXAL 5'-PHOSPHATE) is a water-soluble vitamin that participates in over 100 body reactions. The phosphate ester derivative pyridoxal 5'-phosphate (PLP) is the principle coenzyme form and is a cofactor for endogenous transaminase activity. PLP-dependent reactions include the synthesis of both serotonin and the catecholamines and the production of hemoglobin, steroid hormones, and nucleic acids. Vitamin B6 deficiency has been linked to emotional abnormalities, carpal tunnel, low immunity, and premenstrual syndrome. Conversion of homocysteine to the amino acid cysteine requires two PLP-dependent reactions. This pathway facilitates the de novo synthesis of cysteine from methionine and also provides an alternative pathway for the breakdown of homocysteine.*

VITAMIN B12 (METHYLCOBALAMIN) is a coenzyme involved in nucleic acid metabolism, red blood cell synthesis, methyl transfer, and myelin synthesis and repair. Absorption of vitamin B12 is dependent upon gastric secretion of the glycoprotein intrinsic factor. Among aging adults, secretion of intrinsic factor is often reduced, leading to an increased risk of vitamin B12 deficiency and the related pernicious anemia. The liquid form of B12 in Methyl Protect allows patients to bypass the intrinsic factor-dependent pathway for enhanced absorption. Vitamin B12 deficiency is also common among strict vegans and those who have undergone long-term treatment with certain antibiotics. Long-term insufficient intake of vitamin B12 can lead to megaloblastic anemia, impaired folate metabolism, and many neurological disorders including depression, paresthesias, and memory loss. Remethylation of homocysteine to methionine also requires the methycobalamin form of B12.*

REFERENCES: