Homocystrol™ + TMG

Cardiovascular Health

DESCRIPTION

Homocystrol™ + TMG, provided by Douglas Laboratories, contains significant amounts of activated **B** vitamins, trimethylglycine (betaine) and choline needed for proper metabolism of homocysteine, and the support of metabolic synthetic processes requiring methyl donors.

Revised Formulation

Homocystrol™ + TMG now provides bioavailable forms of B vitamins. Methylcobalamin, methylfolate, pyridoxal-5-phosphate, and riboflavin-5-phosphate are the forms most readily used by the body and do not require conversion once consumed.

FUNCTIONS

Homocysteinemia, or elevated plasma homocysteine, is a major factor that can influence poor cardiovascular health. High plasma levels of homocysteine appear to have negative effects on the vasculature, impairing the functional abilities of endothelial and smooth muscle cells. Suboptimal intake of several B vitamins, renal failure, environment, diet, stress, and genetic defects in homocysteine metabolism can all contribute to abnormal homocysteine levels.

Homocysteine is a sulfur containing amino acid that is created in the body from methionine, an essential amino acid derived solely from dietary intake. Methionine is metabolized into homocysteine via an intermediate, S-adenosylmethionine. Homocysteine can be metabolized to produce cysteine, a nonessential sulfur-containing amino acid, or it can be remethylated to methionine. Whether the body needs cysteine or methionine will dictate which path homocysteine metabolism will take.

Production of cysteine from homocysteine requires two specific enzymes for which vitamin B-6 is an essential coenzyme. Without adequate vitamin B-6, homocysteine cannot be metabolized into cysteine. The body can also metabolize homocysteine by remethylating it to methionine. The primary route by which homocysteine is remethylated to methionine requires folate in the form of methyltetrahydrofolate as a methyl donor and vitamin B-12 (methylcobalamin) as a coenzyme. Methyltetrahydrofolate, or L-methylfolate, is synthesized in the body from dietary folic acid. However, L-methylfolate can be used directly by the body, without the need for folic acid conversion via the enzyme 5,10-methylenetetrahydrofolate reductase (MTHFR). In certain populations, the body's ability to convert folic acid to 5-MTHF by use of this enzyme may be compromised due to genetic differences.

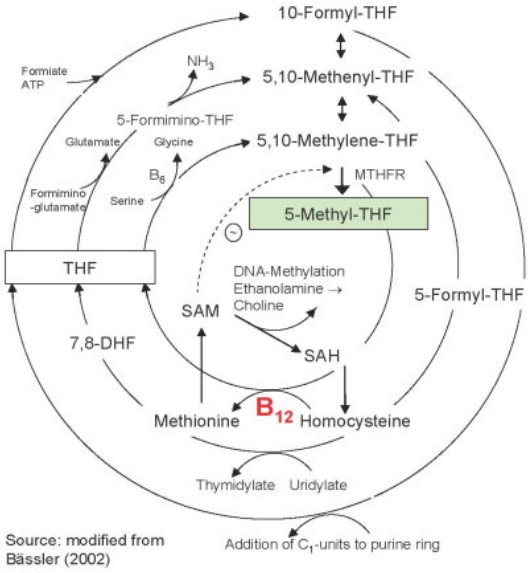
B vitamins, in particular folate, methylcobalamin, and vitamin B-6 are necessary for the body to metabolize homocysteine. A deficiency or suboptimal levels of any of these essential vitamins may cause plasma homocysteine levels to rise. Dietary surveys and epidemiological studies indicate that suboptimal levels of folate, vitamin B-12, and vitamin B-6 are common in many population groups. Elderly individuals, smokers, alcoholics, and medications users, including estrogens and popular medications for cholesterol and blood glucose control, are at risk for subclinical deficiencies of one or more of these B vitamins.

TMG, trimethylglycine, also known as betaine anhydrous, acts as a methyl donor in the methionine/homocysteine cycle. One route of homocysteine metabolism is by methylation to form methionine, using a methyl group from methylcobalamin or from trimethylglycine. Methionine is then converted to S-adenosylmethione (SAMe). Trimethylglycine is absorbed rapidly and has a high volume of distribution due to extensive distribution to tissues, including the kidneys and liver. When taken orally, trimethylglycine can support normal homocysteine levels.† Improvement in plasma homocysteine may be seen within a week, and steady state could be reached within a month.

Choline, also considered a B vitamin, can be oxidized to betaine which serves as a methyl donor to convert homocysteine to methionine. Dietary intake of choline might also support healthy homocysteine level.† The effect of dietary choline intake may be greatest on those with lower folate levels.

Homocystrol™ + TMG

Cardiovascular Health



Source: modified from Bässler (2002)

* THF (Tetrahydrofolate)

INDICATIONS

Homocystrol™ + TMG may be a useful dietary supplement for individuals who wish to support healthy homocysteine metabolism and metabolic processes that require methyl donation. †

FORMULA (#201329-90X)

Serving Size 3 Vegetarian Capsules
Servings Per Container 30

Riboflavin.....50 mg
(as Riboflavin-5-Phosphate)
Vitamin B-6 .....50 mg
(as Pyridoxal-5-Phosphate)
Folate .....800 mcg
(as L-methylfolate, Metafolin®)
Vitamin B-12 .....1,000 mcg
(methylcobalamin)
Magnesium……..... 50 mg
(as Magnesium Chelate)
Trimethylglycine….....1,000 mg
(Betaine)
Choline .....150 mg
(as Choline Bitartrate)

Other ingredients: Hydroxypropyl methylcellulose (capsule), cellulose, vegetable stearate, and silica

SUGGESTED USE

Adults take 3 capsules daily, in divided doses, or as directed by your healthcare professional.

Homocystrol™ + TMG
Cardiovascular Health

SIDE EFFECTS
No adverse effects have been reported.

STORAGE
Store in a cool, dry place, away from direct light. Keep out of reach of children.

REFERENCES
Abby SL, Harris IM, Harris KM. Homocysteine and cardiovascular disease. J Am Board Fam Pract 1998;11:391-8.

Aronow WS, Ahn C. Association between plasma homocysteine and peripheral arterial disease in older persons. Coron Artery Dis1998;9:49-50.

Brouwer IA, van Dusseldorp M, Thomas CM, et al. Low-dose folic acid supplementation decreases plasma homocysteine concentrations: a randomized trial. Am J Clin Nutr 1999;69:99-104.

den Heijer M, Brouwer IA, Bos GM, et al. Vitamin supplementation reduces blood homocysteine levels: a controlled trial in patients with venous thrombosis and healthy volunteers.

Arterioscler Thromb Vasc Biol 1998;18:356-61. Kang SS. Treatment of hyperhomocyst(e)inemia: physiological basis. J Nutr 1996;126:1273S-5S.

Lentz SR. Mechanisms of thrombosis in hyperhomocysteinemia. Curr Opin Hematol 1998;5:343-9. Moustapha A, Robinson K. High plasma homocysteine: a risk factor for vascular disease in the elderly. Coron Artery Dis 1998;9:725-30.

Selhub J, Jacques PF, Bostom AG, et al. Relationship between plasma homocysteine, vitamin status and extracranial carotidartery stenosis in the Framingham Study population. J Nutr 1996;126:1258S-65S.

J. Scott (2001):
Methyltetrahydrofolate: The Superior Alternative to Folic acid. Nutraceuticals in health and disease prevention, 75-90 [Krämer K, Hoppe PP and Packer L, editors]. New York: Marcel Dekker Inc.

O. Hasselwander, W. Hönlein, L. Schweillert, K. Krömer (2000): 5-Methyltetrahydrofolate: The active form of folic acid. Functional foods 2000.

Olthof MR, van Vliet T, Boelsma E, Verhoef P. Low dose betaine supplementation leads to immediate and long term lowering of plasma homocysteine in healthy men and women. *J Nutr* 2003;133:4135–8.

For more information on Homocystrol™ + TMG visit douglaslabs.com

† 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.

Manufactured by
Douglas Laboratories
600 Boyce Road
Pittsburgh, PA 15205
800-245-4440
douglaslabs.com

**You trust Douglas Laboratories.
Your patients trust you.**