TMG (also referred to as betaine) functions as an important methyl donor. The donation of methyl groups by TMG can be very important for proper liver function, cellular replication, and detoxification reactions. Along with folate, TMG serves a vital role in methylation processes in the body. It also functions as an osmoregulator and a probable performance-enhancing aide.\(^1\) Methylation is a vital biochemical process for many important biological processes, including the metabolism of lipids and DNA. The body’s ability to methylate declines with age.\(^2\) Scientists suspect that adequate methylation of DNA can prevent the expression of harmful genes. In addition to its role as a methyl donor, TMG also plays a role in the manufacture of carnitine and serves to be protective of the kidneys.\(^3\) A dose of 3g or more daily has been correlated to homocysteine reduction.

Supplementation with methyl donors also serves to support a healthy lifestyle. Age associated progressive loss of DNA methylation is well documented,\(^4\) and it has been proposed that “reductions in methylation may be one of the mechanisms underlying the aging process.”\(^5\) In an article published in the Proceedings of the National Academy of Sciences, it was noted that in all the chromosomes assessed, “the average methylation level of all covered cytosine-phosphate-guanine (CpG) sites was lower in the centenarian sample (73.0%) than in the newborn one (80.5%)”.\(^2\) Additionally, the unmasked DNA methylation landscape shows that DNA obtained from a 103 year old donor was more unmethylated overall than DNA from the same cell type obtained from a neonate.

A positive association between the use of TMG and mood enhancement has also been noted as “a safe and effective tool” for mild despair.\(^6\)

Methylenetetrahydrofolate reductase (MTHFR) is a major enzyme in the folate cycle. It functions to convert 5,10-methylene tetrahydrofolate into 5-methyl tetrahydrofolate, which is the substrate for methionine and SAMe synthesis, as well as for the methionine methylation cycle. These methyl groups thus serve to link the folate cycle (one-carbon metabolism) with the methionine cycle (sulfur metabolism).\(^7\) In certain condition, these pathways have been shown to function abnormally. The brain, as compared to other organs, is theorized to be more vulnerable to oxidative insult as a consequence of the high energy demands from oxidative metabolism, the high concentration of polyunsaturated fatty acids, and relatively low antioxidant enzyme status. It has thus been theorized that once the buffering capacity of the cell is exceeded, damage occurs to proteins, and lipid membranes, resulting in the disruption of nuclear and mitochondrial DNA, and subsequently cellular dysfunction or apoptotic cell death.\(^7\) TMG may offer support in these instances.

TMG can also be beneficial for the reduction of homocysteine, particularly beneficial for those who cannot properly metabolize homocysteine, resulting in accumulation and extremely high levels, and potentially impacting cardiovascular function. Oral TMG functions to “methylate” homocysteine, allowing it to be removed from circulation. Furthermore, there is an increased frequency of the number of conditions associated with altered DNA methylation.

Common amounts used range from 100 mg per kg of body weight for infants, up to 3,000 mg daily for adults.
References


**Supplement Facts**

Serving Size: 1 level teaspoon (approx. 3 g)
Servings per Container: 80

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<tr>
<th>Ingredient</th>
<th>Amount Per Serving</th>
<th>% Daily Value</th>
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<tbody>
<tr>
<td>Trimethylglycine (glycine betaine)</td>
<td>3 g</td>
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*Daily Value not established

**Ingredients:** Trimethylglycine.
This product is gluten and dairy free.

**RECOMMENDATION:** One (1) level teaspoon per day mixed with eight (8) ounces of cool water (or the beverage of your choice) or as otherwise directed by a healthcare professional.

**KEEP OUT OF REACH OF CHILDREN**
Store in a cool, dry area.
Sealed with an imprinted safety seal for your protection.

Product # 7250  Rev. 02/15

To place your order for TMG Powder™ or for additional information please contact us below.

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These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.