ALIMENTUM LABS

MethylGenic

Methylation, DNA, & Telomere Support

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Methylation, DNA, & Telomere Support

Ingredients including 5-MTHF and *Centella asiatica* extract (asiaticosides) for healthy *MTHFR*, *SLC19A1*, *PON1*, *TERT* and other gene expressions to support healthy methylation while restoring telomeres and reducing cellular aging.

Whole Body | Detox | Brain | Cardio

Health Indications

- Support Methylation Reactions
- Manage Homocysteine and Methionine Levels
- Promote Anti-Aging and Longevity
- Provides DNA Protection and Production
- Enhances Neurological Health
- Regulates Neurotransmitters
- Improve Symptoms of Methylation Gene Mutations
- Manage Histamine Intolerance
- Support Hormone Metabolism

Instructions For Use

MethylGenic: Take 2 capsules daily, with or without food, or as directed by your health care provider.

Liposomal MethylGenic: Take 1mL daily, or as directed by your health care provider.

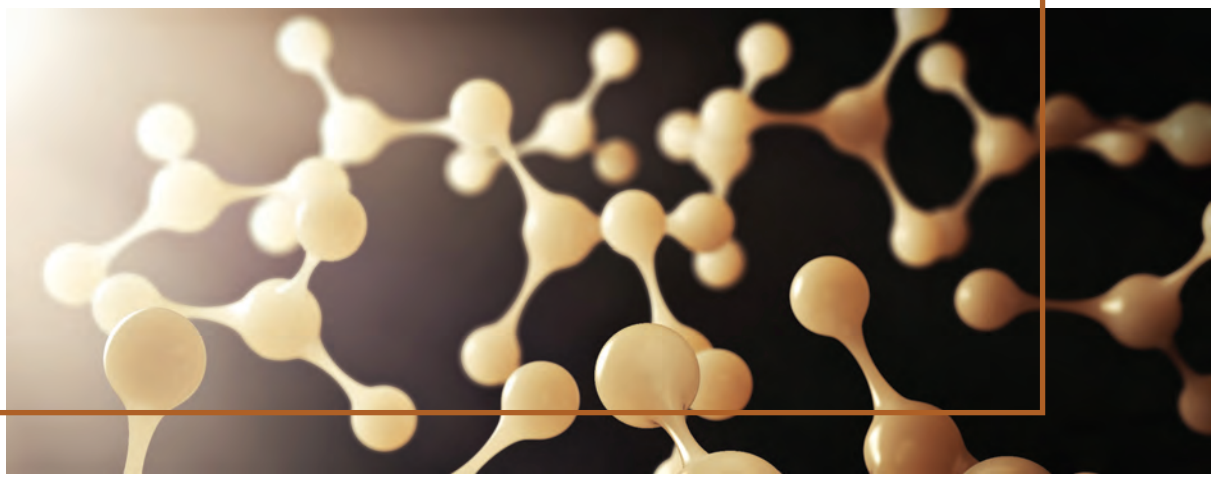
**Individual needs may vary; please consult your practitioner before altering the prescribed doses or protocols.

Product Description

Methylation is a chemical reaction that occurs in every cell of the body. Methylation is the process of adding or removing small molecules known as methyl groups, which are made up of one carbon atom and three hydrogen atoms. Despite its seemingly minor nature, methylation serves as the primary 'on/off' switch in numerous cellular processes. Perhaps most importantly, this reaction can regulate gene expression by turning genes on or off. Meaning, when there are a lot of methyl groups attached to the genetic blueprint molecule, DNA, genes become inaccessible for 'reading,' inhibiting the production of proteins and enzymes crucial for bodily functions. Conversely, when DNA has fewer methyl groups, genes become accessible for activation.

Because methylation is such a common reaction in the body, it involves multiple molecules and enzymes that must be recycled and reused to continue these processes. In a healthy body, these molecules are typically maintained in proper balance. However, genetic mutations, inadequate nutrition, toxin exposure, inflammation, and other factors common in our modern world can quickly disrupt this delicate balance. These imbalances can lead to the accumulation of normal intermediates in these reactions, such as homocysteine, which is essential but can be harmful in excessive amounts.

B vitamins are one of the most crucial components involved in supporting proper methylation and recycling of intermediate methylation molecules like homocysteine and methionine. MethylGenic offers a variety of the most bioavailable versions of B vitamins on the market, along with universal methyl donors like SAMe and essential micronutrients that are necessary for efficient methyl recycling to take place. Methylation is also an integral component of hormone and histamine metabolism, and can cause body-wide distress when this process becomes impaired. Additionally, MethylGenic includes other ingredients that enhance the function and stability of telomeres, which are molecules that protect the very DNA molecules that MethylGenic works to stabilize. MethylGenic is an exceptionally crafted product that supports all healthy methylation reactions, especially those involving DNA, and protects DNA itself, which is the foundation for healthy cells throughout the body.



Key Elements and Features of MethylGenic

Support for Individuals With *MTHFR* Gene Mutations

A large percentage of the population has some form of mutation in the *MTHFR* gene. While not typically life-threatening, these mutations have the potential to cause systemic dysfunction in one of the body's most crucial biological pathways: methylation. MethylGenic provides multiple components involved in the methylation pathway, including crucial building blocks, epigenetic modulators, enzymatic cofactors, and methyl group donors. This multifactorial support can significantly improve symptoms associated with *MTHFR* mutations.

Anti-Aging and Telomere Length Protection

Methylation plays a significant role in influencing the aging process and telomere length. Telomeres, the protective caps at the end of chromosomes, naturally shorten as cells divide and age. Methylation contributes to the regulation of genes like *TERT*, which are associated with telomere maintenance and cellular aging. Efficient methylation supports the preservation of telomere length, promoting cellular longevity and mitigating the effects of aging.

Manage Homocysteine Levels

Elevated levels of homocysteine in the blood have been associated with an increased risk of cardiovascular diseases, as high homocysteine levels can contribute to damage in blood vessels and promote atherosclerosis. Additionally, homocysteine is involved in processes that influence cognitive function, and elevated levels have been linked to a higher risk of neurodegenerative disorders. Maintaining optimal homocysteine levels is also crucial for bone health, as excessive levels may adversely affect bone density and increase the risk of fractures.

Regulate Neurotransmitter Production

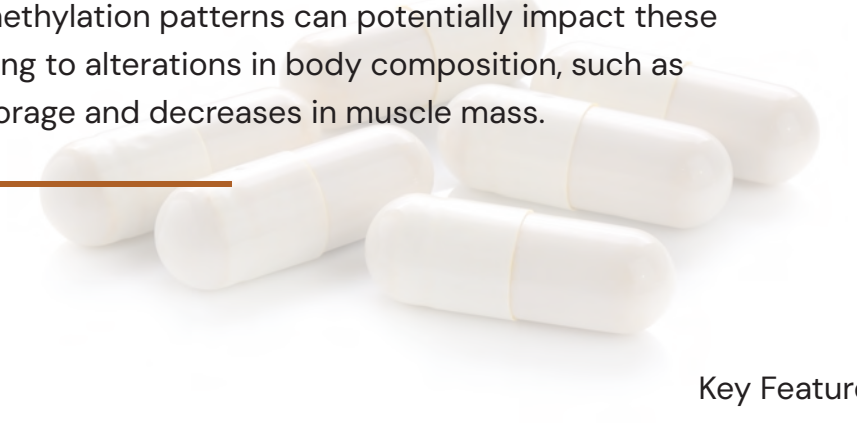
Methylation is necessary for the synthesis of neurotransmitters. Methyl groups, like those offered in MethylGenic, participate in the biosynthesis pathways of serotonin, dopamine, and norepinephrine. This process is essential to all nervous system functions including attention, focus, mood, and sleep and overall neurological health.

Manage Histamine Intolerances

Histamine is a biological molecule involved in various physiological processes, most notably in the immune response. Imbalances in histamine levels can lead to allergic reactions, inflammation, and other health issues. Methylation is directly involved in the breakdown and regulation of histamine levels. Proper histamine metabolism is crucial for preventing excessive histamine release, which can lead to allergic symptoms, inflammation, and other histamine-related issues.

Regulate Estrogen Metabolism & Body Composition

Methylation is directly involved in estrogen metabolism by aiding in the detoxification of estrogen compounds. This makes it important for both men and women. Methylation also influences various metabolic pathways, including those related to fat metabolism. Methylation contributes to the regulation of genes involved in lipid metabolism, adipogenesis (the formation of fat cells), and energy expenditure. Disruptions in methylation patterns can potentially impact these processes, leading to alterations in body composition, such as increased fat storage and decreases in muscle mass.



Gene Spotlight

Multiple genes support methylation-related reactions by producing proteins with diverse roles, such as adding or removing methyl groups, recycling intermediates, converting vitamins into usable forms, and transporting substrates into cells. Mutations in any of these genes can affect protein function, potentially inhibiting reactions, leading to harmful intermediate accumulation, decreased vitamin levels, and altered DNA methylation levels throughout the body. MethylGenic provides essential building blocks for methylation reactions and ingredients that support healthy gene expression, even in the presence of mutations, to support proper methylation.

Genetic Interactions

MTHFR (Methylenetetrahydrofolate Reductase) Gene

MTHFR is perhaps the most well-known gene related to methylation. The enzyme it encodes is involved in the conversion of folate (vitamin B9) into its active form, which is essential for many methylation reactions in the body.[1]

MTR (Methionine Synthase) Gene

The enzyme encoded by the *MTR* gene is involved in the conversion of homocysteine to methionine, a critical step in the methylation cycle. Methionine is then used to produce S-adenosylmethionine (SAMe), a universal methyl donor utilized in various methylation reactions.[2]

MTRR (Methionine Synthase Reductase) Gene

The enzyme encoded by the *MTRR* gene supports the function of the MTR enzyme by helping to regenerate cobalamin (vitamin B12), a cofactor required for MTR activity. Proper functioning of MTRR is essential for the conversion of homocysteine to methionine.[3,4]

SLC19A1 (Solute Carrier Family 19 Member 1) Gene

The *SLC19A1* gene encodes an enzyme known as the Reduced Folate Carrier (RFC). The importance of *SLC19A1* in longevity and methylation is primarily associated with its role in folate metabolism. Folate is a B-vitamin that plays a crucial role in various cellular processes, including DNA synthesis, repair, and the regulation of gene expression through methylation.[5]

PON (Paraoxonase) Genes

The paraoxonase (PON) family of enzymes (PON-1, PON-2, and PON-3) influence methylation through their antioxidant, anti-inflammatory, and detoxification effects. Oxidative stress, inflammation, and cell-disrupting toxins can affect epigenetic processes, including DNA methylation. It is suggested that by reducing these stressors, PON enzymes may help maintain a balance in epigenetic regulation. *PON1* is well known for detoxifying certain environmental toxins and pesticides like glyphosate. Conversely, when methylation levels are too high, the PON family of enzymes may not be expressed appropriately.[6,7]

TERT (Telomerase Reverse Transcriptase) Gene

This gene encodes a protein that makes up part of an enzyme called telomerase. Telomerase is responsible for protecting chromosomes by preventing the shortening of telomeres, which are located at the end of chromosomes. Through this function, telomerase preserves genetic information during cell division by counteracting the shortening of telomeres, which normally occurs with each cell division. Telomerase activity is particularly crucial for cells that undergo numerous divisions, such as certain types of stem cells and germ cells that develop into egg or sperm cells. These cells require higher levels of telomerase activity to prevent premature programmed cell death.[8]

How MethylGenic Works

MethylGenic provides a powerful combination of ingredients that support the methylation pathway through multiple avenues. It provides multiple essential B vitamins that are precursor molecules to many methylation reactions and intermediates. Additionally, it provides critical methyl donors such as SAMe, offering potent cellular support. Unique enzyme cofactors, which are required for enzymes to function correctly, have been included to support methylation reactions and intermediate recycling at an often-overlooked level. Moreover, MethylGenic provides epigenetic support for genes directly involved in methylation, DNA protection, and cellular health. Together, these ingredients make MethylGenic an impressively comprehensive support supplement for essential cellular and DNA health.

Key Ingredients

SAMe

SAMe, or S-adenosyl-L-methionine, is a molecule known as the 'universal methyl group donor.' SAMe is required for three major metabolic pathways: transmethylation, transsulfuration, and polyamine synthesis. This means it is critical for proper methylation to occur, as well as being a precursor for glutathione and several types of amino groups. SAMe is a clinically relevant molecule with uses ranging from supporting basic cellular health to enhancing mood.[9]

Vitamin B12 (Methylcobalamin)

Methylcobalamin must be acquired through dietary intake as it is not produced in the body. This metabolically active form of vitamin B12 works directly within the cells. Methylcobalamin is required for MTR and MTRR enzymes to function appropriately. It protects the integrity of myelin nerve sheaths, thereby protecting nerve function. Recent research suggests that methylcobalamin may also cross the blood-brain barrier to directly support healthy neuron function by preserving the integrity of myelin sheaths and consequently protecting nerves.[2,10,11]

Folate/5-MTHF

Folate, also known as Vitamin B9, is an essential nutrient acquired through diet that is required for proper methylation, cell growth, and has many benefits ranging from cardiovascular health to fertility support. MethylGenic contains the active, naturally occurring form of folate, 5-methyltetrahydrofolate (5-MTHF), which is considered superior to folic acid. It can be challenging for people to consume enough folate through diet alone, so supplementation with high-quality ingredients like those provided by MethylGenic is invaluable.[10,12]

Selenium (L-Selenomethionine)

An extremely important mineral, selenium helps the body recycle and produce antioxidants to prevent the damage caused by reactive oxygen species (ROS). Inflammation and oxidative stress are known to damage cells and shorten telomeres. Increasing selenium consumption can protect telomere length both by managing oxidative stress and by stimulating the telomerase enzyme coded by the TERT gene.[13–15]

Zinc (Lipoate)

Zinc lipoate is exclusive to Alimentum Labs and is a highly bioavailable form of zinc. Supplementation with zinc lipoate may help prevent DNA damage and improve antioxidant levels.[16]

Betaine HCl

Betaine, a derivative of choline also known as trimethylglycine, supports the body's normal betaine-homocysteine methyltransferase (BHMT) pathway. It aids in recycling vitamin B12 and preventing high levels of homocysteine. Additionally, it assists the mitochondria in managing oxidative stress through the NO/ONOO cycle.[17,18]

Niacinamide (Vitamin B3)

Niacinamide is an important B vitamin that is vital for maintaining stable energy levels and is involved in balancing SAMe levels in the body, one of the most important methyl group donors.[19,20]

Vitamin B6 (Pyridoxine AKG)

Vitamin B6 is an integral coenzyme used in the homocysteine-methionine cycle, while alpha-ketoglutarate is an essential intermediate in the tricarboxylic acid cycle, which is a primary part of cellular energy production. Alpha-ketoglutarate can also regulate the methylation of DNA histones, which may potentially be able to manage age-related conditions and delay aspects of aging.[21,22]

Riboflavin-5-Phosphate (Vitamin B2)

Riboflavin-5-Phosphate is a bioavailable form of vitamin B2, which is one of the most important B vitamins involved in the folate-methionine cycle. It serves as a cofactor in several enzymatic reactions that directly enable DNA methylation reactions to occur.[22]

D-Biotin

Vitamin B7, also known as vitamin H, supports normal cellular energy processes and glucose metabolic processes. Additionally, it binds in lower concentrations to certain histones and may help prevent DNA damage.[23]

Molybdenum

Molybdenum is one of the basic elements that exists in our universe. It is also a cofactor, assisting essential enzymes in the body to function properly. Molybdenum serves as a cofactor for the sulfite oxidase enzyme, which converts the metabolic intermediate sulfite to sulfate. The accumulation of sulfite can be extremely harmful because it inhibits appropriate protein bonding of enzymes and reduces levels of cysteine and glutathione. These issues can significantly alter the function of proteins and enzymes throughout the body, leading to widespread dysfunction.[24]

Centella Asiatica

Centella asiatica, also known as Gotu Kola, is a powerful medicinal herb traditionally used in Southeast Asia. It contains a phytonutrient known as asiaticosides, which has the ability to prevent cellular death, improve wound healing, and protect against reactive oxygen species (ROS). Recent studies show that the compound DLBS1649 from *C. asiatica* can prevent telomere shortening, which may contribute to its anti-aging effects. *C. asiatica* contains B and C vitamin complexes and is a potent antioxidant due to its carotenoids. It can stimulate cell turnover, particularly in the skin, and has been shown to have neuroprotective effects, which may be used to manage changes associated with aging.[25–28]

Choline L-Bitartrate

Choline is a micronutrient acquired through diet. It serves as a precursor to several important molecules involved in major biological reactions. Choline can be converted to acetylcholine, which is utilized in the brain and the general nervous system. Additionally, it can also be broken down into betaine. MethylGenic offers the most bioavailable form of choline on the market, choline L-bitartrate.[29]

Serine

Serine is an important amino acid critical for cellular health and neuroprotection. It stimulates genes to produce stabilizing neurotransmitters and helps prevent systemic and neurological inflammation. Serine also serves as a precursor to cysteine, making it yet another critical player in the body's homocysteine cycling.[30]

Carnosine

Carnosine possesses anti-aging, neuroprotective, and gene-regulating abilities. By reactive oxygen species (ROS) and harmful metals, it protects the body, especially the brain, from inflammation and premature aging. Carnosine can also inhibit the activity of monoamine oxidase-A (MAO-A) enzyme, which tends to increase in activity with age. Supplementation with carnosine can help inhibit MAO-A activity, which can then help preserve normal brain activity in young, healthy brains.[31]

Rhodiola Rosea

Rhodiola rosea is a plant native to cold, northern regions of Asia and Europe. It has been used in traditional Chinese medicine to aid in stroke recovery. *Rhodiola rosea* contains a unique compound known as salidroside, which provides epigenetic effects by modulating the PI3K/AKT pathway. This pathway is integral to the cell cycle, contributing to the cellular protective effects of this ingredient in MethylGenic.[32]

Ascorbyl Palmitate

This is a form of Vitamin C that is highly bioavailable due to its fat-soluble nature resulting from its bond to palmitate oil. Vitamin C is a powerful antioxidant that protects cells and DNA from reactive oxygen species (ROS). It has been shown to be an epigenetic modulator by controlling levels of methylation in DNA. Moreover, it may even have anti-cancer effects due to its ability to regulate gene expression.[33,34]

Theanine

Theanine is an amino acid derived from green tea. It helps protect cells from damage caused by environmental toxins and the buildup of harmful metabolic intermediates. It also has the ability to improve mood and cognitive function due to its structural similarity to the neurotransmitter glutamate.[35,36]

Ribonucleic Acid (RNA)

RNA is a molecule present in most organisms. Similar to DNA, it is used to hold genetic information. In MethylGenic, RNA is provided as a source of nucleotides for cells to aid in DNA repair and the building new cells.[37]

Boron Glycinate

Boron is a trace mineral acquired through diet that offers numerous health benefits. It helps to build and support the function of important molecules like SAMe and nicotinamide adenine dinucleotide (NAD+). Both of these molecules are critical in proper cellular function and energy production. Boron has also been shown to possess antioxidant, anti-inflammatory, hormone-stabilizing, and bone-strengthening abilities.[38]

Liposomal Delivery: Maximizing Nutraceutical Benefits

Liposomal technology is an advanced method for delivering nutraceuticals, utilizing microscopic, spherical structures called liposomes. These liposomes are composed of phospholipids, the same fundamental building blocks of our cell membranes, which provides exceptional biocompatibility. The active nutraceutical compounds in MethylGenic are encapsulated within the liposomal sphere, offering a crucial shield and leading to significant advantages:

Key Benefits of Liposomal Delivery

Enhanced Protection

The liposomal sphere acts as a vital barrier, protecting delicate nutrients from the harsh environment of the gastrointestinal tract and preventing premature degradation.

Superior Bioavailability & Absorption

This protection significantly enhances how much of the nutraceutical the body can use, ensuring a greater proportion of the active ingredient reaches the bloodstream and target cells.

Increased Efficacy

By improving delivery, liposomal technology leads to more effective utilization of the supplemented nutrients.

More Potent Health Benefits

The enhanced absorption and efficacy result in more powerful and noticeable health benefits.

Improved Tolerability

By protecting the gut from direct contact with certain ingredients, liposomal delivery can reduce gastrointestinal discomfort often associated with traditional high-dose supplements.

Enhanced Product Stability

Beyond digestive protection, liposomes shield sensitive nutrients from environmental factors like oxidation, light, and heat, contributing to a longer and more potent shelf life.

Warnings/Contraindications

When used as directed there are no known contraindications for MethylGenic.

It is always recommended that you consult your practitioner prior to adding any new supplement to your regimen if you are pregnant, breastfeeding, experiencing renal failure, undergoing an organ transplant(s), managing diabetes with insulin, or are taking medication(s) for any pre-existing conditions.

Safety

All ingredients are tested before use for:

- Pathogenic microbial contaminants
- Heavy metals and/or chemical contaminants
- Purity

Additional Information

- cGMP Facility
- Gluten Free
- Dairy Free
- Vegan
- No Sugar
- Non-GMO

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