MTHFR: Secret Enzyme With A Huge Impact

Science has only recently identified a common gene mutation that's a silent driver of many common ailments of which, the public is mostly unaware. Many physicians are still not aware or testing for this importance enzyme's presence in our body. The MTHFR gene mutation was once thought to effect 3 – 5% of the population. As as a result of improved testing methods we now find the MTHFR mutation is currently estimated to impact 30-50% people depending on ethnicity. This enzyme has a profound influence over everything from hormone regulation to body toxin removal and numerous nutritional deficiencies.[1]
We have combed the latest research to provide you, the reader, with the most comprehensive and easy to understand summary of what is necessary to know concerning the MTHFR gene.

What Does The MTHFR Gene Code For?

MTHFR is an acronym for the enzyme methylenetetrahydrofolate reductase, often referred to as "the detox gene." The actual scope of this enzyme is much wider than the term detox gene would suggest. This enzyme is responsible for breaking down folic acid into a usable form called 5-L-methyltetrahydrofolate, and is coded primarily in the two genes C677T and A1298C. 2

When this enzyme can't be produced or is diminished because of this mutation or a partial mutation, then lots of important downstream physiology is disrupted. One big impact is hindering methylation in the body. Methylation is required for health by every cell in our body and occurs billions of times per second.
Areas negatively impacted include DNA repair, immune function, detoxification, neurotransmitter production, hormone regulation, mood balancing, energy production and more.[3]

Examples of Critical Methylation in the Body:

Neurotransmitter Breakdown: epinephrine & melatonin

Hormones:

testosterone & estrogen

Toxin Removal

More specifically these two genes when mutated are associated with the following:
C677T – This mutation is most commonly associated with heart disease, heart attack, stroke, blood clots, peripheral neuropathy, anemia, miscarriages, congenital birth defects, and more.
A1298C – This mutation is most commonly associated with chronic illnesses such as; depression, fibromyalgia, chronic fatigue syndrome, migraines, Irritable Bowel Syndrome (IBS), memory loss, Alzheimer's and dementia, obsessive compulsive disorder (OCD,) bipolar disorder, schizophrenia, and more. [3]

Populations Containing Mixed Gene Mutation [4]

Depending on how many of the four locations are mutated will determine methylation reduction from 25% – 80% and beyond.

What Are The Signs of MTHFR?

There are many health consequences of MTHFR that when not addressed through diet and supplements interfere with methylate and contribute to serious diseases. As was noted previously, there are a number of genes that code for MTHFR; the genetic code that produces he enzyme impacting methylation efficiency. Sensitivity to medications, high homocysteine levels, low tolerance for alcohol and pain are some of the symptoms of the gene's effects on health.[3]

More severe symptoms can be broken down into the three categories; psychological, autoimmune/toxic
and cardiovascular as listed here:

Psychological

Addictive behavior
Alcoholism
Insomnia
Dementia/Alzheimer'
Schizophrenia
Anxiety
Autism and other spectrum disorders
Adult neurological conditions
Mood and psychiatric disorders
Behavioral disorders
Bipolar disorder
Depression

Autoimmune/Toxic

Diabetes.
Fibromyalgia/Chronic Fatigue Syndrome.
Cancer. *
Autism – 98% of autistic children have the C677T and A1298C anomaly.
Kids with autism are often low in homocysteine & glutathione. 5
Down's syndrome
Allergies or Multiple Chemical Sensitivities
Spina bifida, cleft palate or neural tube defects
Multiple Sclerosis
Hashimoto's or Hypothyroidism (The Thyroid Summit)
ADD or ADHD
Lyme Disease*
Chronic Viral Infections, Low T cells or reduced NK cells
Miscarriages, fertility, and problems during pregnancy
Allergies, immune system, and digestive problems
Problems associated with aging
Asthma
Chemical sensitivity

Cardiovascular

Pulmonary Embolism
Atherosclerosis

Neuropathy
Depleted CoQ10
Cardiovascular Disease
High blood pressure
Neuropathy – methylation is important to nerves (myelin sheath).
** Many of those listed are not directly implicated a result of MTHFR, i.e Lyme and cancer. Clearly Lyme disease is a bacterial infection, but because the immune system is dependent on methylation in order to function these and other opportunistic diseases are more likely to flourish. As an example, a reduction in natural killer cells, T cells and a more susceptible intestinal tract will lead to a body more prone to disease. Similarly with other listed, MTHFR is a contributing factor among many variables.*

What To Do To Offset MTHFR?

Supplements and/or adjusting to diets high in the following compounds will offset the methylation issues MTHFR produces.

Glutathione
Production of glutathione is particularly vulnerable to becoming ineffective when the body is depleted. As a critical compound used in the liver for detoxification its absence places stress on the liver as the toxins and heavy metals accumulate.

Betaine (trimethylglycine – TMG)
Betaine is a natural derivative caused by the breakdown of choline in the body. Betaine is found in beets, although spinach and quinoa contain twice the amount of betaine. For a Methyl donor, the body derives more benefits from SAMe and MSM.

Choline
Critical compound needed for methylation and when in combination with milk thistle multiples its effectiveness. Always choose a milk thistle supplement that includes choline for best results; we choose phosphatidylcholine for its added benefit to intestinal support.

B Vitamins; B2, B6, B9, and B12, B9 (Methyl-folate)
Critical for hormones, red and white blood cells (WBC) and glutathione production; B9, folate and folic acid are almost interchangeable. When the body requires methyl-folate the MTHFR gene mutation will not convert B9 into the methyl-folate enzyme. While folic acid is synthetic and very stable making it the favorite of vitamin companies, it's not the best choice and is useless in the presence of the MTHFR gene mutation. Folic acid also requires many vitamins and cofactors to transition to its useable methyl-folate form.

B6 & Magnesium
This combination lowers homocysteine levels, which improves relaxation and the ability to handle stress. Gluten free diets will need a B6 supplement.

B12 (Methylcobalamin)
Deficiencies in Methylcobalamin will stop the cycle of methyl-folate from continuing proactively forward after about a week. 8
Important: In the case of over methylation with any supplement, use niacin.

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