THE TUESDAY MINUTE

IT'S TIME TO FEEL GOOD AGAIN

THIS WEEK'S TOPIC

Converting Folic Acid To Active 5-MTHF

"We preach 'live foods for living people and dead foods for dead people' but only 11% of people eat the recommended servings of fruits & vegetables."

We may preach "Live foods for living people and dead foods for dead people" but the general public is not responding because only 11% eat the daily recommended 5-7 servings of fruits and vegetables. And sadly, the fruits and vegetables don't have the nutrients in them that they did 100 years ago. So it's not surprising that people are not getting the folic acid they need from food.

Of that 11% we hope patients have healthy digestion and absorption and are not eating under too much stress. Now add birth control pills, NSAIDS and many other medications known to deplete folic acid and we have a reason to be concerned. Then figure in the understanding that some people have a genetic inability to convert what little folic acid is left into the form the body uses called 5-methyltetrahydrofolate and well… "Houston, we have a problem".

Here's how the pathway works. Folic acid is in an oxidized form and must be converted by the body to the reduced form called folate. Folate is converted to dihydrofolate then into tetrahydrofolate then into methylene tetrahydrofolate and finally into the 5-methyltetrahydrofolate or 5- MTHF.

Folate → dihydrofolate → tetrahydrofolate ↔ methylene-THF → 5- methyltetrahydrofolate or 5- MTHF

The nutrients needed to convert folic acid to 5-MTHF are riboflavin (B2,) niacin (B3), pyridoxine(B6), zinc, vitamin C and the amino acid serine. Any depletion in these nutrients will slow the process down.
But the real issue is the final conversion step into the metabolically active form. The last step depends on an enzyme called 5-MTHF reductase. Sometimes that enzyme is mutated.

There are many different mutations which could be passed down by one, or both of your parents. But the two mutations that are gaining more attention in the scientific community occur on the points at C677T and A1298C on the MTHF gene. You will also see them written as just 677 and 1298. The two major combinations of MTHF Reductase mutations are called heterozygous or homozygous.

Heterozygous means you have one copy of either the 677 mutation, or the 1298 mutation, plus a normal one from the other parent. This results in a 40% reduction in the ability to make 5-MTHF.

Homozygous means you have both copies of either the 677 mutation, or the 1298 mutation, one from each parent. A Homozygous or a double positive is a 70 % reduction in the conversion process.

Insufficient conversion to the active 5-MTHF form can contribute to cervical dysplasia, neoplasia in ulcerative colitis, vitiligo, gum disease, depression, cardiovascular disease, peripheral neuropathy, restless leg syndrome, insomnia, dementia, mucosal health, schizophrenia, ADD, bipolar disorders and autism. But common presentations that you will see in your office can include macrocytic anemia, fatigue, irritability, tendon hyper-reflexivity, diarrhea, weight loss, insomnia and depression.

Let's go a step further in folate biochemistry. Homocysteine is a marker for inflammation. The body needs adequate levels of B6, B12 and folic acid. In some cases B2, methyl donors like betaine or choline, magnesium, and possibly molybdenum to keep homocysteine levels low.

We now know that if homocysteine is elevated nitric oxide levels are reduced. Evidence suggests that by lowering homocysteine we can increase nitric oxide... one of the Holy Grail enzymes to dilate blood vessels. So for those patients with reduced ability to convert folic acid to 5-MTHF, if we add supplementation to support that pathway we can affect nitric oxide production.

As we lower homocysteine, methionine is increased. Methionine is very important to chelate heavy metals and reduce toxins.So keeping homocysteine low has all kinds of ancillary benefits.

Dr. Chris Melitis, a naturopath who does a lot of genetic testing to see if the 5-MTHF reductase gene is functional finds some pregnant woman with relatively healthy homocysteine but still have one or both of the genes missing to make 5-MTHF. We have to ask 2 questions. Prenatally, "does the mom convert folic acid to 5-MTHF?" And "does the baby convert folic acid to 5-MTHF?" Unless we know for sure it is prudent to start using 5-MTHF as a prenatal.

Dr. Walter Schmitt mentioned at his seminar called "Better Results with Injury, Inflammation and Pain" that 5-MTHF was his most frequently used nutrient. He demonstrated an in-office test showing how to determine if the body can make the conversion. You can see the link below. However, testing genetically for the mutation will motivate the patient to supplement for life as well as screen their close family members.

Several years ago Biotics Research Corporation developed a product called Methylfolate Plus with 800 mcg per tablet of 5-MTHF. Newer research shows that some people need higher doses and Biotics has released a new product called 5-MTHF Plus Forte which contains 5 mg of 5-MTHF per tablet as well as 50 mcg of methylated B12.

The importance of 5-MTHF and methylation can't be over emphasized. It is involved in so many processes including dopamine, epinephrine and norepinephrine, serotonin, melatonin and DNA synthesis. And more and more data is confirming the link between MTHF reductase, genetic polymorphisms and psychiatric disorders especially for depression, schizophrenia, and bipolar disorders. Remember stress, phase 2 detoxification, and many prescription drugs will reduce 5-MTHF pools.

Knowing you have a genetic deficiency or at least knowing you have a stronger need for the activated form could change someone's whole life.

Thanks for reading this week’s edition. I'll see you next Tuesday.