

# **MTHFR**

## **MethylTetraHydroFolate Reductase Deficiency**

### **New approach to medical problems from the Human Genome project**

Goal of the project was to identify genetic disorders that cause disease and then treat the cause not just the symptoms. MTHFR is the first one to have an FDA approved treatment. There are two common variants that can be tested (677, 1298) but as many as 50+ variants. If both genes are defective the pathway functions on about 10-15% at best.

FDA reviewed treatments are for

Anxiety, Depression	Deplin
Memory Loss	Cerefolin
Diabetic neuropathy (nerve Pain)	Meta NX
High Risk Pregnancy	Neevo, Neevo DHA, Prenate Elite, Thorne

Other symptoms that are treated by this pathway but don't have FDA approval

Elevated Homocysteine, fibromyalgia, chronic fatigue, Irritable Bowel, Migraines, Alzheimers, Chronic pain, Bipolar, Schizophrenia, Parkinson's, as well as prevention of Congenital anomalies, Down's Syndrome. Without treatment people are more prone to viral infections because the Methylation process is critical in shutting off viral replication as well as retaining heavy metals and other environmental toxins.

### **Who Benefits?**

30 % of the US population have both genes defective, 40% have one gene defective  
100% are exposed to environmental toxins that affect this pathway (BPA)

### **Effects of low Methylfolate**

- Low Serotonin, Dopamine, Norepinephrine
- Low Glutathione. Needed for toxin removal and Memory
- Low Tetrahydrobiopterine. Critical in nerve protection, neurotransmitters

### **Things that aggravate the genetic disorder**

- Heavy Metal load (fish, water, food) (mercury, lead, aluminum)
- Poor diet (highly processed foods)
- Medications (Glucophage, Birth Control, Levodopa)
- Anesthesia (Nitrous Oxide)
- Other enzyme defects (B6 conversion, Methionine synthase and reductase)
- Other diseases (diabetes, Lymphoma)
- Leiden Factor V, Prothrombin 20210

### **MEASURES THAT IMPROVE SYMPTOMS:**

- Dietary, vegetables, berries, fruits (better if fresh) Berries have the active form of folic acid already
- Mathematics, Accounting, Piano, Classical music - Suppress the overactive areas of the Brain
- Exercise

## *Nutritional protocol for MTHFR*

*Revised 11/07/2011*

The Human Genome project has developed a new approach to medical problems. There are several of the B vitamins that require activation before they are useful to the body. By taking the active forms of these vitamins you are able to bypass metabolic glitches and compensate for genetic and environmental problems. This protocol is designed to help treat these problems with nutritional therapy. It is not designed to replace your medications however you may be able to over time decrease the medications that you require to manage these problems. ***The Supplements should be added one at a time rather than start them all at once.***

### **METHYL FOLATE (Prescription)**

- **Deplin 7.5, 15 mg a day.** Methylfolate tends to increase energy. Take 7.5 mg at a time. If taking 15 mg take ½ in the am and ½ at noon. **Most widely used.**
- **MetaNX 1-2 tablets/day** Methylfolate (B9), Vit B6 (Pyridoxyl 5 Phosphate), Methyl B 12 Methylcobalamin. This works well 6 months to 1 year. In a small percent of the population the Vit B6 builds up and creates a tight band type headache. Great for nerve and surgical wound healing
- **CerefolinNAC. One tablet a day.** This is for Methylfolate, Methyl B12 and N-acetyl cysteine that helps form Glutathione which is important in memory and clearing toxins.
- **Neevo Prenatal, Prenate Elite, Thorne Prenatal** These prenatals contain Methylfolate

### **METHYL FOLATE (Over the counter options)**

- **Methyl-Life (L-5-MTHF).** Methylfolate 10 & 20 products are similar to Deplin 7.5 & 15 mg prescriptions, respectively. **B-Methylated II** is similar to prescription MetaNX (only it has more methylcobalamin and no P5P/B6). Order online at [www.methyl-life.com](http://www.methyl-life.com).
- **Methylfolate (MTHF).** 1mg, 5mg available at **Malley's Pharmacy, Prescription pharmacy** age 8-12, 1 mg, age 12+, 2 mg (7.5 tablets equal to 1 Deplin)
- **Methyl-Guard. Thorne Pharmaceuticals** Available at **Malley's Pharmacy, Prescription pharmacy** age 0-3, 1 capsule, age 3-5. 2 capsules, age 6-8. 3 capsules. (6 tablets are approx equal to MetaNX)
- **Solgar Metafolin** 400 and 800mcg. Available at **Super Supplements**

### **NEXT ITEM METHYL B-12**

**You may require additional supplementation to support this pathway.**

Options for Methyl B-12:

- **Methyl B-12 5000 mcg Oral dissolving tablets** every day (usually 1 but up to 4x/day) Jarrow Brand seems to be the best absorbed
- **Methyl B12 oral drops** This works well for infants and children.
- **Methyl B-12 (15 or 25 mg/ml)** 0.1-0.5ml sub-cutaneous injection every 1-3 days  
It can lower blood sugars at about 8 hours. In diabetes, use daily.  
Your urine may be an orange-red about 4-6 hours after the shot. That is your body clearing the excess. I have found that some people that are very ill have not noticed this till several weeks into treatment. The injection has to be compounded, needs a prescription and be refrigerated. Regular compounding pharmacies do not have the special equipment to do this. Some pharmacies that do:

Malley's Pharmacy 509-943-3030 (local)  
Hopewell Pharmacy NJ 800-792-6670.

***Other supplements that seem to help with this particular metabolic pathway include:***

- **BH4 (tetrahydrobiopterin)** Order from Nutrimedical.com. 2.5-5 mg/day.
- Only a few studies available but helps with ADD/ADHD and refractory depression
- **N Acetyl Cysteine** 600 mg, Once a day. This helps make glutathione which clears toxins like heavy metals, Helps with memory
- **Full Spectrum Minerals** Mineral supplement with Amino Acid Chelate (AAC)
  - Take one a day. NOW brand and others are available.
- **Vit B6 (Pyridoxyl 5 Phosphate or P5P), 25 mg** This is in Meta NX. This B vitamin can build up in some people and it causes a headache that feels like a tight band.
- **Vitamin C** 1,000-3000 mg up to 3 times a day. This helps with regenerating glutathione as well as helping to have 2-5 Bowel movements a day
- **Epsom Salt bath** Soak feet or body with ½ -1 cup of salts 2/3 times/week
  - The magnesium absorbs directly. It helps with improving the mineral balance. It also adds the sulfate that is critical in clearing toxins. It is not well absorbed orally.
- **DMG-Dimethylglycine. (another option in TMG)** 100-250mg/day Start with one a day This adds methyl groups to the amino acid that your body uses in the methylation.
- **Zinc** 20 -50 mg/day. Especially important in eye sensitivity which is common.
- **Omega 3 (Flax seed or Fish oil that has mercury removed)** 1-2 tablets per day.  
*Some fish oil tablets don't have the mercury removed.* Helpful with brain/nerve healing
- **Vitamin E** 400 IU - Once a day
- **Silymarin (milk weed Thistle)** 150 mg 1-2 tabs/day. Boosts glutathione
- **Glutathione SR (Thorne pharmaceuticals)**. 1-2 tablets/d This may give symptoms as the toxins come out so it may be useful to do on a 3 days on, 4-11 days off. Available at Malley's Pharmacy

**5-9 serving's of fruits and vegetables are key to getting many of the minor but essential nutrients.**

Laboratory evaluation may be useful. This allows testing for the genetic predisposition and looks for toxicity in the B6. It helps identify people who would benefit from long term therapy.

**MTHFR** (Methylenetetrahydrofolate Reductase) This is an initial test for gene defect.

**Homocysteine** This seems to be optimal if under 6.3. Do baseline and follow if over 7.5.

**HbA1C.** This is a estimate of glucose intolerance. If in the 5.5 to 8 range you can have more problems with dosing the Methyl B12 and it should be given every day.