



# Newsletter

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## Methylation's Role in Neurotransmitter Synthesis and Mood Support

**Methylation** is a chemical step that involves the addition of a methyl group ( $\text{CH}_3$ ) to a compound in the body and is involved in many biochemical pathways, although it is most well known as part of the cycle where homocysteine is converted to methionine. These reactions require a methyl donor - a molecule that can give up a methyl group to be attached to another molecule. Among common methyl donors are L-methylfolate and methylcobalamin (methyl B12), which are methylated forms of dietary B vitamins folate and B12. Methylfolate is required to produce methyl B12, and the enzyme methylenetetrahydrofolate reductase (MTHFR) is required to convert dietary folate to methylfolate. Unfortunately for many, there are several common polymorphisms in the gene that codes for MTHFR that result in compromised ability to convert folate to the active (methylated) form. The consequences of the most well-known variants are similar to that of reduced dietary folate intake; however, diet changes or supplementation of folate will not remedy the situation. Correction must include direct supplementation with the methylated form of these nutrients. The frequency of MTHFR polymorphisms varies depending on geographical regions and various populations, but may be as prevalent as 50% in some regions.

Though methylation is well known for its role in pregnancy, cardiovascular health, inflammation and detoxification, recent literature explores and emphasizes its role in mood support, clearly demonstrating a correlation between decreased methylation ability and major depression, schizophrenia and bipolar disorder. Methylfolate displays anti-depressant effects via its roles in the central nervous system and is a critical co-factor for neurotransmitter synthesis. Specifically, methylfolate combines with  $\text{BH}_2$  utilizing the MTHFR enzyme to produce tetrahydrobiopterin ( $\text{BH}_4$ ) which is required by the rate limiting enzymes of monoamine neurotransmitter synthesis (serotonin, dopamine, norepinephrine and epinephrine). As such, it is essential for the production of these mood-regulating neurotransmitters. Methylfolate displays additional antidepressant activity via its role in the homocysteine cycle where the transformation of homocysteine to methionine requires methylcobalamin and methylfolate. Methionine is then converted to SAMe which is the methyl donor for all monoamines.

Supporting methylation has proven to be effective in decreasing and, in some cases, resolving depressive symptoms with or without concomitant antidepressant therapies. This supportive therapy may be particularly beneficial when neurotransmitter testing reveals low to low range serotonin, dopamine, norepinephrine and/or epinephrine levels.

# LABRIX ADVANCED WORKSHOP

## Important Update

The Labrix Advanced Workshop dates have been changed. The new dates are January 25-26, 2014 in Las Vegas, NV.

Our advanced training weekend offers an intimate and in-depth intensive on hormone balancing, the complex relationship between sex hormones, adrenal hormones and neurotransmitters, and the complicated symptom pictures that can result from these imbalances. This training is designed for the hormone-savvy practitioner, who is looking to elevate his or her practice through deeper understanding and additional clinical insight. Topics presented for discussion cover the gamut of clinical presentations and will be heavily case-based. Also included are clinical pearls and pitfalls, gleaned from the decades of combined clinical experience of Labrix co-founders Jay Mead, MD and Erin Lommen, ND along with additional perspective offered from expert guest speakers and Labrix clinical staff.

For more information click here: [www.labrix.com/law](http://www.labrix.com/law).

## Resources

1. Farah, MD FAPA An expert review of clinical challenges in psychiatry CNS Spectr. 2009; 16:1 (Suppl 2): 10-7
2. Gilbody S, Lewis S, Lightfoot T. Methyltetrahydrofolate reductase (MTHFR) genetic polymorphisms and psychiatric disorders: a Huge review. Am J Epidemiol. 2007 Jan 1; 165(1):1-13
3. Miller AL. The methylation, neurotransmitter, and antioxidant connections between folate and depression. Alt Med Review. 2008; 13(3), 216-226.
4. Zappacosta B, Romano L, Persichilli S et al. Genotype prevalence and allele frequencies of 5,10-methylenetetrahydrofolate reductase (MTHFR) C677T and A1298C polymorphisms in Italian newborns. LabMedicine. 2009 Dec; 40(12), 732-736.

## Upcoming events

Labrix Advanced Workshop  
January 25-26, 2014  
[Register Here](#)

Save The 2014 Core Training Dates

March 1, 2014 in Atlanta, GA  
April 5, 2014 in Chicago, IL