**Biochemical Factors in Behavior Disorders, ADHD and Mental Illness**

https://www.walshinstitute.org

**Nutrients and Mental Health**

Our mental health is partly dependent upon having the proper amounts of these critical brain chemicals.  Some psychiatrists express their scorn for nutrient therapies, claiming that they are too puny to have any real clinical potency.  They often say, ‘You really need a drug medication to get the job done for a serious condition like depression.’ My favorite response begins by asking the question, ‘Where do our neurotransmitters come from?’ Each of us should ask the question, ‘Who am I nutritionally?’ The answer to this question is important for all but may be especially critical for persons with mental health problems.  – Dr. Bill Walsh

The Walsh Approach looks at 5 to 8 main biochemical factors, from methylation status to essential fatty acid imbalances. An analysis of an individual’s unique symptoms, history and biological lab results, results in a personalized nutrient program (designed to match biotypes). The following biochemical and nutritional factors are the primary one’s considered in determining an individual’s biotype.

**Overmethylation**

Because of access to a large database of biochemical information from more than 20,000 patients with mental health problems, we have learned most of these persons have striking abnormalities in specific nutrients required for neurotransmitter production and functioning. For example, many persons who suffer from anxiety and depression are overmethylated which results in excessive activity at dopamine, norepinephrine and serotonin receptors.  Typical symptoms include sleep disorders, underachievement, upper body pain, and an adverse reaction to serotonin-enhancing substances such as Prozac, Paxil, Zoloft, methionine, and SAMe.  Nutrient treatment focuses on folates, Vitamins B-3 and B-12 that reduce activity of dopamine and norepinephrine.  These persons should strictly avoid supplements containing copper, methionine, and other nutrients that could worsen anxiety and depression.

**Undermethylation**

Many patients with obsessive-compulsive tendencies, oppositional-defiant disorder, or seasonal depression are undermethylated which is associated with low serotonin neurotransmission.  They generally exhibit seasonal allergies, perfectionism, competitiveness, and other distinctive symptoms and traits.  A high percentage have an inborn tendency to be depleted in calcium, magnesium, methionine, and Vitamin B-6.  These undermethylated persons may benefit from Paxil, Zoloft, and other serotonin-enhancing medications, although nasty side effects are common.  A more natural approach is to directly correct the underlying problem using SAMe, methionine, calcium, magnesium, amongst others.  Although most undermethylated patients thrive on folates, supplements of folates must be avoided for patients whose problems are dominated by low activity at serotonin receptors.  Folic acid, folinic acid, and methylfolate all reduce serotonin/dopamine neurotransmission by an epigenetic mechanism, and this effect overwhelms the folate benefits of improved methylation and serotonin synthesis.

**Copper Overload**

A common problem in ADHD, behavior disorders, and hormonal depression is a genetic inability to control copper, zinc, and manganese levels due to improper functioning of metallothionein proteins.  Elevated copper can cause striking changes in the levels of dopamine and norepinephrine in the brain and are also associated with hormonal imbalances and intolerance to estrogen. These persons must avoid nutritional supplements and "enriched" foods containing copper. In addition, we recommend they drink bottled water and limit use of swimming pools and jacuzzis treated with copper sulfate anti-algae agents.  Foods to be limited due to high copper content include shellfish, chocolate, and carob.  Biochemical treatment focuses on zinc, B-6, and other nutrients that stimulate metallothionein synthesis and functioning.

**Pyrrole Disorder**

A common feature of many behavior and emotional disorders is pyroluria, an inborn error of pyrrole chemistry which can result in a dramatic deficiency of zinc and Vitamin B-6.  Common symptoms include explosive temper, emotional mood swings, poor short-term memory, and frequent infections.  These patients are easily identified by their inability to tan, poor dream recall, abnormal fat distribution, and sensitivity to light and sound.  The decisive laboratory test is analysis for pyrrole levels in urine.  Treatment centers on normalizing blood levels of B-6 and zinc.

**Glucose Dyscontrol**

Our database indicates a significant number of our patients have chronic low blood glucose levels.  This problem generally isn’t the cause of behavior disorders, depression, etc., but instead is an aggravating factor which can trigger striking symptoms.  Typical symptoms include drowsiness after meals, irritability, craving for sweets, trembling, anxiety, and intermittent poor concentration and focus.  Treatment includes chromium, CoQ-10, and other glucose-stabilizing nutrients, but the primary focus of treatment is on diet.  These patients benefit from six or more small meals daily with emphasis on complex carbohydrates and protein.  In essence, they poorly tolerate large meals or quick sugars.  Complex carbohydrates provide the necessary glucose in a slow, gradual manner and may be thought of as "time-release" sugar.

**Toxic Substances**

Occasionally we encounter a patient whose condition has resulted from a heavy-metal overload (lead, cadmium, mercury, etc.) or toxic levels of pesticides or other organic chemicals. Our database indicates that persons with a metallothionein disorder are especially sensitive to toxic metals, and that overmethylation is often associated with severe chemical sensitivities.  Effective treatment requires a three-part approach: (1) avoidance of additional exposures, (2) biochemical treatment to hasten the exit of the toxic from the body, and (3) correction of underlying chemical imbalances to minimize future vulnerability to the toxic.

**Malabsorption**

Although only 10% of our database case histories involve serious malabsorption, more than 90% of autistics exhibit this problem. There are three primary classes of absorption problems: (1) stomach problems, including excessive or insufficient HCl levels, (2) incomplete digestion in the small intestine, and (3) problems at the brush-border of the intestine where most nutrients are absorbed into the portal blood stream.  The consequences can include nutrient deficiencies, inflammation of the intestinal tract, candida, and mental health problems.  Incomplete breakdown of protein and fats can adversely affect brain neurotransmission and is has been associated with impulsivity and academic underachievement.  Treatment depends on the type of malabsorption present and may involve probiotics, adjustment of stomach HCl levels, gluten-free diets, and digestive enzymes.

**Essential Fatty Acids**

The brain is 20% fat (by dry weight) and these fatty substances fulfill very important functions.  Glial cells enable brain plasticity, regulate neurotransmission, nourish brain neurons, and form the myelin sheaths which surround our brain cells.  There is strong evidence of the important roles for omega-3 oils (especially EPA and DHA) and omega-6 oils (especially AA and DGLA) in ADHD, depression, and schizophrenia.  Typical diets usually result in insufficient omega-3 and excessive omega-6, and some nutritionists routinely recommend supplements of omega-3 oils.  However, biochemical individuality also exists with oils and certain persons are innately low in omega-6 oils.  A review of symptoms and specialized lab tests can identify individual needs.