

# *Research Studies and Papers*

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## Biochemical Individuality and Nutrition

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by

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### **Introduction**

Each of us has innate biochemical factors which influence personality, behavior, mental health, immune function, allergic tendencies, etc. Scientists tell us that the number of different genetic combinations possible in a child from the same two parents exceeds 42 million. It's interesting to note that we do not possess a combination of characteristics from our parents, but instead have a diverse collection of characteristics from many ancestors on both sides of the family.

Except for identical twins, each human being has unique biochemistry resulting in quite diverse nutritional needs. Shakespeare was correct when he wrote "One man's meat is another man's poison." For example, some of us are genetically suited for a vegetable-based diet and others are not. Some persons can satisfy their nutritional needs by diet alone and others must have nutritional supplements to overcome genetic aberrations.

Because of genetic differences in the way our bodies process foods, most of us are quite deficient in certain nutrients and overloaded in others. Even with an ideal diet, most of us have certain nutrients that are at very low levels with many times the RDA required to achieve a healthy balance. The nutrients in overload must be carefully avoided in vitamin supplements or serious health problems can develop. After studying the biochemistry of 10,000 persons, I've learned that the greatest mischief is usually caused by nutrients that are stored in excessive amounts, rather

than those at depleted levels. The most common nutrients in overload include copper, iron, folic acid, calcium, methionine, manganese, choline, and omega-6 fatty acids. Of course, these same nutrients may be in deficiency in other persons.

I am amused by supplement manufacturers who attempt to develop the ideal combination of vitamins, minerals, and amino acids for the general population. This is a bit like trying to determine the ideal shoe size for the population. The truth is that multiple vitamins and minerals are too indiscriminate, and may do as much harm as good.

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.

## **Nutrients and Mental Health**

As we enter the new millennium, the medical and scientific communities agree on the tremendous influence of neurotransmitters on behavior disorders, ADHD, depression, and schizophrenia. Most persons with these disorders were born with a predisposition for these problems due to genetically-aberrant levels of specific neurotransmitters. Our mental health is 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?"

The brain is a chemical factory which produces serotonin, dopamine, norepinephrine, and other brain chemicals 24 hours a day. The only raw material for these syntheses are **nutrients**, namely amino acids, vitamins, minerals, etc. If the brain receives improper amounts of these nutrient building blocks, we can expect serious problems with our neurotransmitters.

For example, some depression patients have a genetic pyrrole disorder which renders them grossly depleted in vitamin B-6. These individuals cannot efficiently create serotonin since B-6 is an important co-factor in the last step of its synthesis. Many of these persons report benefits from Prozac, Paxil, Zoloft, or other serotonin-enhancing medications. However, similar benefits may also be achieved by simply giving these patients sufficient amounts of B-6 along with augmenting nutrients.

Most neurotransmitter problems appear to be genetic in nature and involve abnormal absorption, metabolism or storage of key nutrients. As neuroscience advances, biochemical treatments to correct brain chemistry become better defined. Nutrient therapy can be very potent and does not involve side effects, since no molecules foreign to the body are needed. This therapeutic approach may eventually eliminate the need for most psychiatric medications.

## **Biochemical Factors In Behavior Disorders, ADHD and Mental Illness**

The Pfeiffer Treatment Center has amassed a large database of biochemical information from more than 10,000 patients with mental health problems. Examination of this data shows that most of these persons have striking abnormalities in specific nutrients required for neurotransmitter production. The most common chemical imbalances we encounter include the following:

### **Over-Methylation**

Many persons who suffer from anxiety and depression are over-methylated which results in excessive levels of dopamine, norepinephrine and serotonin. Typical symptoms include chemical and food sensitivities, underachievement, upper body pain, and an adverse reaction to serotonin-enhancing substances such as Prozac, Paxil, Zoloft, St. John's Wort, and SAME. They have a genetic tendency to be very depressed in folates, niacin, and Vitamin B-12, and biochemical treatment focuses on supplementation of these nutrients. These persons are also overloaded in copper and methionine and supplements of these nutrients must be strictly avoided.

## Under-Methylation

Many patients with obsessive-compulsive tendencies, oppositional-defiant disorder, or seasonal depression are under-methylated which is associated with low serotonin levels. They generally exhibit seasonal allergies, perfectionism, competitiveness, and other distinctive symptoms and traits. They have a genetic tendency to be very depressed in calcium, magnesium, methionine, and Vitamin B-6 with excessive levels of folic acid. These under-methylated persons may benefit nicely 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 methionine, calcium, magnesium, and B-6. SAME, St. John's Wort, Kava Kava, and inositol are also very useful in treating these individuals.

## Metal-Metabolism

A common problem in ADHD, behavior disorders, and hormonal depression is a genetic inability to control copper, zinc, manganese, and other trace metals in the body due to improper functioning of the metallothionein protein. These patients are often deficient in zinc, manganese, cysteine, serine, and vitamin B-6 and overloaded in copper, lead, and cadmium. They must avoid 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. Elevated copper levels are associated with hormonal imbalances and a classic symptom is intolerance to estrogen. Biochemical treatment focuses on stimulation of metallothionein using zinc, manganese, cysteine, serine, and Vitamin B-6.

## Pyrrole Disorder

A common feature of many behavior and emotional disorders is pyroluria, an inborn error of pyrrole chemistry which results in a dramatic deficiency of zinc, Vitamin B-6, and arachidonic acid. 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 kryptopyrroles in urine. Treatment centers on zinc and B-6 supplements together with omega-6 essential fatty acids.

## Glucose Dyscontrol

Our database indicates a significant number of our patients have chronic low blood glucose levels. This problem doesn't appear to be 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, manganese, 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 cannot 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 over-methylation is 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, irritation of the intestinal tract, candida, and mental health problems. Incomplete breakdown of protein and fats can adversely affect brain neurotransmission, and is associated with impulsivity and academic underachievement. Treatment depends on the type of malabsorption present and may involve adjustment of stomach HCl levels, digestive enzymes which survive stomach acid, nutrients to enhance digestion, and special diets.

## Essential Fatty Acids

The brain is 20% fat (by dry weight) and these fatty substances fulfill very important functions. The myelin sheaths which surround our brain cells contain essential fatty acids which are directly involved in receptor formation and nerve transmission. A 1998 Symposium at the National Institute of Mental Health presented 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. A recent Harvard study showed EPA and DHA supplements to be more effective than psychiatric medications in combating bipolar depression. Typical American 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 plasma and red-cell-membrane lab tests can identify individual needs.

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