HALPERIN CHIROPRACTIC
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B12 and Folate

More of my patients, especially those who are gluten intolerant, have Crohn's disease or suffer from irritable bowel disease, are now presenting with symptoms related to deficiencies in B vitamins, especially folic acid and B12. B12 is necessary for the normal metabolism and function of nerve tissue, red blood cells, and immunity. B12 is a cofactor in the production of metabolic enzymes that regulate body function. It helps to produce DNA, which serves as the genetic template for life and normal growth. It is needed, along with folic acid, for increased fertility and the normal growth of the baby during pregnancy. A lack of B12 may mimic Alzheimer's disease, Parkinson's, and Multiple sclerosis. Diabetic neuropathy, involving numbness and tingling of the extremities, is often related to B12 deficiency. Muscle weakness, pain and/or numbness and some mental disorders are also related to B12 deficiency.

B vitamins include some of the water-soluble vitamins—B1 (thiamin), B2 (riboflavin), B3 (niacin), B5 (pantothenic acid), B6 (pyroxidine), B12 (cobalamin), folic acid and biotin. Vitamin C is also water-soluble. Water-soluble vitamins do not need fat for digestion and carry a much smaller risk of toxicity. B12 is produced in the gut by the beneficial microflora. It is the only vitamin that you cannot digest directly from plants. Sources include meat, poultry, clams, eggs, dairy, seafood, brewers yeast, and kefir.

Patients with chronic fatigue, brain fog, mental fatigue, and low energy due to stress are often in need of B12. Depression, paranoia, and panic attacks may be symptoms related to B12 deficiency. B12 is a cofactor in the production of energy within the mitochondria of living cells. Mitochondria are the energy power packs that produce ATP, the energy used by muscle cells. Without B12, mitochondria are unable to produce energy, resulting in fatigue. In my practice nearly 60% of the patients I see have a need for increased intake of B12. **Those of us with celiac disease and gluten sensitivities are almost 30% more likely to be low in B12 and folic acid.**

Many individuals with gluten sensitivities do not easily digest B12. This may be due, in part, to the inability to produce a protein called intrinsic factor in the cells of the stomach. Intrinsic factor binds to B12, allowing its absorption in the small intestine. This is common in people over fifty because the ability to produce intrinsic factor declines with age.

Hypochlohydria, the underproduction of normal HCl, (hydrochloric acid), which is responsible for the normal low pH of the stomach and is needed to initiate the production of intrinsic factor, is common in gluten-intolerant patients and in the aging population in general. Medications, NSAIDS such as ibuprofen, and especially antacids (Tums, Rolaids) and proton pump inhibitors (Prilosec, Zantac) also commonly contribute to low stomach acid and the inability to use B12.

Destruction of the cells of the small intestine (where B12 is absorbed) from IBD (irritable bowel disease), Crohn's disease, or celiac disease is another reason for B12 deficiency. Normal beneficial probiotic microflora help to produce and facilitate the absorption of B12. Therefore,

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any dysbiosis, the imbalance or lack of beneficial microflora in the gut, will also contribute to the inability to assimilate B12.

B12 works with folic acid, another B vitamin, in making choline, a nutrient that plays an important role in fat and cholesterol metabolism. Choline helps to regulate kidney, liver and gall bladder function. It is especially good at preventing gallstones.

B12, B6, and folic acid combine to convert the amino acid homocysteine, a marker of heart disease and inflammation, into harmless methionine, an amino acid found in the food you eat. High homocysteine levels put individuals at risk for stroke, heart attacks, and other deadly vascular problems, as well as osteoporosis. Homocysteine may damage DNA and cause damage to the lining of blood vessels. It may also diminish oxygen and nutrient transport to the heart and brain. It may increase blood pressure and narrow the blood vessels due to a decrease in nitric oxide (NO), which relaxes the lining of the blood vessels. B12 deficiency interferes with the conversion of homocysteine.

Likewise, a lack of folic acid will increase homocysteine, along with its related risk factors. Genetic variation may prevent some of us from producing the enzymes to activate folic acid in our bodies, resulting in much higher levels of homocysteine, including its associated risks. **These genetic changes occur in up to 50% of Caucasians, 42% of Hispanics, and up to 47% of Asians! The incidence seems to be even higher in those with celiac disease.**

Folic acid is found in green leafy vegetables, grains, beans and seeds, lentils and broccoli. Causes of folic acid anemia, referred to as megaloblastic anemia, include genetic variation, alcohol abuse, impaired absorption due to celiac disease, IBD, and some drug therapies. Folic acid is absorbed in the upper small intestine and does not need intrinsic factor for absorption.

We now have tests to determine the incidence of genetic variations of folic acid metabolism. In many instances, the inability to use these nutrients can be overcome by higher doses of B12, B6, and folic acid. Through the use of highly absorbable forms of these vitamins or else **L-5MTHF** in the case of folic acid and **Methylcobalamin** in the case of B12, these deficiencies may be corrected.

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