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Austin Quan Yin Newsletter

The Better Health News

Special Interest Articles:

- Omega-3 fatty acids and diabetes
- Magnesium and glucose tolerance
- Fats and MS
- MS and supplementation
- Fish oil and lupus
- B vitamins and ADHD
- Thiamin and glucose tolerance

High CRP Levels can be Deadly

C-reactive protein (CRP) is a globular protein that increases in the serum as a response to injury or inflammation. It turns out to be a good predictor for cardiovascular disease. A study appearing in the *Journal of the American Nutraceutical Association* (2005;8(1):43-44), involving more than 27,000 women, found that CRP was a better predictor of cardiovascular disease than LDL (bad) cholesterol.

High CRP levels are actually associated with increased mortality from *all* causes. A CRP level greater than 3 mg/L in men was found to increase the likelihood of death by nearly two-fold, according to research appearing in *Clinical Chemistry* (2008 Feb;54(2):335-42). The high CRP levels increased the likelihood of heart attack by a factor of 2.15 and increased the likelihood of cancer by a factor of 1.65.

Antioxidants and Child Development

Damage from lipid peroxidation can be linked to many complications in the newborn, and is especially problematic in premature babies. Research appearing in the *Archives of Medical Research* (Volume 33, Issue 3, May-June 2002, Pages 276-280) found that pre term infants have lower levels of vitamins A and E than term babies.

Research appearing in the journal *Early Human Development* (Volume 85, Issue 7, July 2009, Pages 421-427) links the levels of antioxidant vitamins in newborns to improved development. Researchers measured levels of vitamins A, C and E in maternal blood and in the blood in the umbilical cord at the time of delivery in 150 sets of mothers and newborns. At age two, the children were evaluated using the Gesell Development Schedules. Children with higher levels of vitamin E at birth had better motor development, as well as language and social skills. Vitamin A levels also had a positive effect on motor development.

Omega-3 Fatty Acids and Type 1 Diabetes

The authors of the study concluded that omega-3 fatty acid consumption reduced the risk for the development of type 1 diabetes in those at risk.

Research appearing in the *Journal of the American Medical Association* (2007; 298(12): 1420-8) shows that omega 3 fatty acids may reduce the risk of type 1 diabetes in high-risk children. The definition of "at-risk" was defined as having a parent or sibling with type 1 diabetes, or having a high diabetes risk HLA genotype. One longitudinal, observational study involving 1,770 high-risk children and another case-cohort study involving 244 high-risk children looked at omega-3 fatty acid consumption and the development of islet autoimmunity; it found an inverse relationship between the two. Similarly, there was an inverse relationship between the omega-3 content of red blood cell membranes and the development of islet autoimmunity. Islet autoimmunity risk was defined as being positive for insulin, glutamic acid decarboxylase, or insulinoma-associated antigen-2 autoantibodies on two consecutive visits, and autoantibody positive or having diabetes at last follow-up visit. The authors of the study concluded that omega-3 fatty acid consumption reduced the risk for the development of type 1 diabetes in those at risk.

Magnesium and Glucose Tolerance

It is estimated that 25% of the diabetic population is magnesium deficient. Lethargy, weakness, irritability, confusion, vertigo, paresthesia, anorexia, nausea, vomiting, and tetany are possible symptoms in magnesium deficiency. Diabetic complications include high blood pressure, cardiac arrhythmias, retinopathy, mineral homeostasis, dyslipidemia, and reduced release of insulin—all of which can be the result of insufficient magnesium.

An observational study appearing in the Journal *of the American College of Nutrition* (2006; 25(6): 486-92) found that subjects who consumed more magnesium in their diets had better glucose tolerance. The subjects were 1,223 men and 1,485 women without diabetes. Food frequency questionnaires were given to participants of the Framingham Offspring Study and it was found that subjects in the highest quintile of magnesium consumption had better insulin sensitivity than those in the lowest quintile.

Fats and MS

Research has shown that metabolites for lipid peroxidation are high in MS patients and tend to be even higher during periods of exacerbation. The amount of fat and the type of fat in the diet may play a role. An article that appeared in *The Practitioner* (May 1994;238:358-363) recommended a diet with fats being less than 30% of the total calorie intake. A study appearing in *The Lancet* (July 7, 1990;336:37-39) looked at 144 MS patients on a low fat diet over a period of 34 years. It was a strict diet, allowing only 20g of fat per day. Those who followed the diet experienced less deterioration and lower death rates than those who did not follow the diet. There was a correlation with deviating from the diet and exacerbation of the disease. The patients who benefited the most from the diet were those with minimal symptoms at the beginning of the study. The authors go on to say that diets that omit sources of saturated animal fat (red meat and the dark meat of poultry) seem to be even more beneficial. Stricter fat restriction (allowing only 10-15g per day of fat) also seems to be more beneficial. The article also states that supplementing with omega-3 fatty acids (cod liver oil) reduces relapse rates in MS patients.

A double-blind, placebo controlled study, published in *Prostaglandins, Leukotrienes and Essential Fatty Acids* (2005; 73(5): 397-404) looked at 31 subjects with relapsing-remitting MS who were placed on either a low-fat (15%) diet, supplemented with fish oil capsules or a diet consisting of 30% fat, supplemented with olive oil capsules (control group). The subjects on the low-fat diet, receiving the omega-3 fatty acids enjoyed a better quality of life when compared to the control group. The fish oil group improved and had fewer relapses, according to the Physical Components Summary Scale of the Short Health Status Questionnaire and the Mental Health Inventory.

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Lipid peroxidation seems to be a component of MS. To a certain extent, a low-fat diet will minimize it. Supplementing with omega-3 fatty acids seems to have a protective effect on the nervous system. Other research supports the idea of supplementing with antioxidants—ostensibly to protect the nerve cells. This is a reasonable and inexpensive approach. Each ***Biomega-3***^{TM} capsule contains 1000 milligrams of natural marine lipid concentrate (sourced from Anchovies and Sardines), providing a natural source of eicosapentaenoic acid (EPA) and docosahexaeonic acid (DHA).

Multiple Sclerosis

There are approximately 350,000 people in the United States with MS. A number of studies have shown that certain nutrients, while not offering a cure, may help improve function and quality of life in MS patients. There are a number of studies that look at vitamin D levels and their relationship to the disease. A review of studies published in the *Annals of Pharmacotherapy* (Jun 2006; 40: 1158 - 1161) concluded that vitamin D supplementation may reduce the chances for developing MS and may also reduce the incidence of exacerbations in patients who already have MS.

One study published in the journal *Multiple Sclerosis* (2009; 15(1): 9-15) found that vitamin D had a protective effect in women and that higher serum vitamin D levels were associated with a reduced chance of developing the disease and reduced disability in those who already had the disease. A population-based study published in the *Journal of Neurology* (Volume 254, Number 5 / May, 2007) found an association between low serum vitamin D and the level of disability in MS patients. The authors recommend testing for vitamin D insufficiency and supplementing where needed as part of the clinical management of MS patients. Another cross-sectional study that was published in the journal, *Multiple Sclerosis* (2008 Jul 24; [Epub ahead of print]), found that serum vitamin D levels may be inversely associated with relapse rates in patients with relapsing remitting multiple sclerosis.

Antioxidants have also been studied. In the journal *Biological Trace Element Research* (1990;24:109-117) a study was published that looked at the antioxidant status of MS patients. The authors of the research state that studies have shown MS to be associated with low selenium levels and antioxidants like glutathione peroxidase (a selenium dependent enzyme) and antioxidants like vitamin C and vitamin E are of value to MS patients. Indeed, MS patients had higher levels of peroxidation metabolites (ethane and pentane) than healthy controls, according to research appearing in *The Nutrition Report* (September 1992;10(9):70). Also, during times of exacerbation, the ethane and pentane levels are higher. In another study that appeared in *Biological Trace Element Research*, 18 MS patients and 13 healthy patients (used as a control) were given 666 mg of vitamin C, 80 mg of vitamin E and 2 mg of sodium selenate, three times each day. The study found that MS patients had much lower glutathione peroxidase levels than the normal controls and that the supplementation drastically increased levels of the enzyme with no side-effects.

Vitamin B_{12} and its role in MS have been researched. A review article appearing in the *Journal of Neurology, Neurosurgery and Psychiatry* (1992;55:339-340) looked at MS and B_{12} deficiency. While MS is clinically different from a B_{12} deficiency, both conditions are involved with demyelination. The article notes research that shows MS patients to have macrocytosis (a condition found with B_{12} deficency). While not a cause, B12 deficiency may be an aggravating factor. A study appearing in the *Archives of Neurology* (August 1991;48:808- 811) found low levels of vitamin B_{12} in MS patients. *The Journal of Neuroimmunology* (1992;40:225-230) notes that MS patients seem to suffer from macrocytosis and high homocysteine. The author believes that there is more than a casual link between vitamin B_{12} deficiency and MS.

Fish Oil and Lupus

A randomized, double-blind, placebo-controlled study appearing in *Annals of the Rheumatic Diseases* (2008;67:841-848) looked at the effect omega-3 fatty acids had on disease activity in systemic lupus erythematosus (SLE). The study lasted 24 weeks and the 60 SLE patients were given either omega-3 fatty acid supplement (3g per day) or a placebo. Disease activity was measured using the revised Systemic Lupus Activity Measure (SLAM-R) and the British Isles Lupus Assessment Group index of disease activity SLE (BILAG). Endothelial function was measured using flow-mediated dilation (FMD) of the brachial artery; in other words, the health and suppleness of the cells lining the artery was measured. The level of oxidative stress was also measured. Measurements were taken at baseline, 12 weeks and at 24 weeks.

Supplementation with omega-3 fatty acids improved SLAM-R and BILAG scores, as well as improving oxidative stress measurements. Researchers concluded that low dose supplementation with fish oil has a therapeutic effect on SLE patients.

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B Vitamins and ADHD

A study published in the *Journal of Learning Disabilites* (May, 1982;15(5):258-264) looked at B vitamin supplementation and hyperactivity. The subjects of the study were 100 children who were either hyperactive or had cerebral dysfunction. The were given 100 mg of thiamin qid, calcium pantothenate (source of B5) twice daily, 50 mg of b6 twice daily or a placebo for three days. If the subjects responded to the vitamin therapy, they were given the supplements a second time, this time for a week, then alternating between supplementation and placebo. Those who did not respond well to the initial vitamin therapy were given large doses of B complex, niacinamide or elimination diets.

Hyperkinetic cerebral dysfunction exists for many and varied reasons, and different subjects responded to different aspects of the therapy. Eight of the children in the initial sampling responded to the high-dose thiamin, with four of them needing continued doses of thiamin. Nine of the children responded to the B6, with five more responding to an even higher dose of the vitamin. Eight of the children responded to a hypoallergenic diet (the Feingold diet). The point is that different children respond to different therapies and there is no “one size fits all” solution for this particular health issue.

“Every patient carries her or his own doctor inside.”

Albert Schweitzer

Thiamin and Glucose Tolerance

There are three enzymes involved in glucose metabolism that are thiamin dependent, a-ketoglutarate dehydrogenase, pyruvate dehydrogenase, and transketolase. So it stands to reason that thiamin may help with glucose tolerance. A number of studies have shown fiber to help with glucose tolerance (*Archives of Internal Medicine* [*2007; 167(21): 2304-9*], to name one of many). A study published in *Diabeologia* (1998;41:1168-1175) looked at glucose tolerance in nearly 2200 non-diabetic men and women between the ages of 50 and 75. Researchers noted that there was an inverse association between fiber intake and fasting glucose. Fiber intake was also associated with lower glucose two hours into a glucose tolerance test. Adjusting for the lower fasting glucose level existing with high fiber intake negated the glucose lowering effect at two hours post prandial. Thiamin intake was associated with lower glucose at two hours; this lowering effect was independent of fiber intake or fasting glucose levels.

Another study published in the *Journal of Gastroenterology and Hepatology* (1991;6:59-60), demonstrated that thiamin helped the glucose tolerance curves in patients with cirrhosis. Thiamin is stored, to a certain extent, in the liver and is also metabolized there.

Thiamin also improves the function of the vascular endothelium. A study published in the *Annals of Vascular Surgery* (2006; 20(5): 653-8) looked at 10 patients with diabetes, 10 patients with impaired glucose tolerance and 10 healthy patients. It found that giving 100 mg of thiamin intravenously improved vessel elasticity and that thiamin may be useful in improving atherosclerosis in patients with type 2 diabetes.