

Special Interest Articles:

- D-Ribose
- L-carnitine and male fertility
- Cholesterol medication
- Mitochondria & chronic disease
- Liver failure
- Milk thistle
- GMOs, Roundup & chronic disease

Testosterone and Alzheimer's disease

Alzheimer's disease is characterized by amyloid protein plaques that form in the brain of the afflicted. Testosterone may have a protective effect. An animal study appeared in the *Proceedings of the National Academy of Sciences USA* (February 1, 2000;97:1202-1205), that looked at the effect testosterone may have on the development of Alzheimer's disease. Nerve

cells from mice and rats produced a harmless form of beta-amyloid protein when in the presence of testosterone. The protein produced in the presence of testosterone is a precursor protein (is turned to other products by the body). Some consider the precursor to actually be beneficial to the health of the nervous system.

Acetaminophen and Liver Damage

ALT stands for alanine aminotransferase; it is a substance that is released into the blood when liver cells are damaged. Serum ALT levels will give you an idea if there is any liver cell damage occurring. A randomized, single-blind, placebo-controlled, 5-treatment, parallel-group, inpatient, diet-controlled (meals provided), longitudinal study of 145 healthy adults, appearing in the *Journal of the American Medical Association* (Vol. 296

No. 1, July 5, 2006) indicated that acetaminophen use, even a recommended doses, causes liver damage. The subjects were given either four grams of acetaminophen (the maximum recommended daily dose) or a placebo for 14 days. The use of the acetaminophen increased ALT levels to nearly five times normal in 19% of the participants. No such increases were noted in the placebo group.

D-Ribose

In 1973 Heinz Gerd Zimmer conducted research at the University of Munich and found that D-Ribose helped energy-starved hearts recover from ischemia.

D-Ribose is a naturally occurring monosaccharide, which was once thought to be important only as a structural component of DNA and RNA. Research has shown it to be valuable for energy production in cells. In 1973 Heinz Gerd Zimmer conducted research at the University of Munich and found that D-Ribose helped energy-starved hearts recover from ischemia. Subsequent research went on to show that D-Ribose was the limiting element in energy recovery in ischemic tissue and that it was necessary for energy production in the cell.

D-Ribose improves ventilatory efficiency in patients with heart failure. Ventilatory efficiency is an important predictor of survival and disease progression in patients with congestive heart failure. As stated, D-Ribose plays a vital role in cellular energy production, so it is reasonable to assume that it can improve function in patients with congestive heart failure (CHF).

A research report presented at the American College of Cardiology's Annual Scientific Session in 2005 indicates that D-Ribose can improve ventilatory efficiency in class II and Class III CHF patients. Over a period of eight weeks, 15 CHF patients were given the supplement. The patients showed significant improvement in ventilatory efficiency, oxygen uptake efficiency and myocardial performance. Mark A. Munger, Pharm D., Professor of Pharmacotherapy and Associate Dean of the College of Pharmacy at the University of Utah stated, "Beyond the previously known benefits of ribose in enhancing myocardial energy levels and improving diastolic function parameters following ischemia, the study demonstrated a benefit in ventilatory efficiency, one of the most powerful predictors of survival in congestive heart failure patients."

L-Carnitine and Male Fertility

Researchers in China performed a meta analysis of nine randomized, controlled clinical studies, looking at the possible effect L-carnitine (LC) and L-acetyl-carnitine (LAC) may have on male fertility. The study, published in the *Asia Pacific Journal of Clinical Nutrition* (2007; 16 Suppl: 383-90), found that supplementation with LC or LAC improved pregnancy rate, and sperm motility.

There even seems to be some evidence to support the idea that Acetyl-L-carnitine and Propionyl-L-carnitine (PLC) may be of some benefit to men with erectile dysfunction. A placebo controlled study, published in the journal *Urology* (2005; 66(5): 1080-5) found that PLC and ALC improve the effects of sildenafil (erectile dysfunction drug) on patients with erectile dysfunction.

Improve Your Health if You Take Cholesterol Medication

The most common side effect of statin (cholesterol lowering) medication is muscle pain. It can make exercise difficult (just what you want in a heart patient--curtailed activity because of pain). The muscle pain can become severe; this is a condition known as rhabdomyolysis. Rhabdomyolysis can lead to liver damage, kidney failure and even death. Other side effects of statins include liver damage, and digestive problems

If You Take Statins, Certain Nutrients Help Reduce the Damage

People who are on statins can get muscle pain. **Muscle pain is a serious side effect and your doctor should be contacted IMMEDIATELY if you experience it while taking statins.** Patients who take these drugs long term tend to lose muscle mass. Many are slightly anemic. There are supplements that you can take to minimize the muscle damage done by statins. These include:

Coenzyme Q₁₀: it is necessary for energy production in the cell, and it is normally produced by cells. Statins block the production of CoQ₁₀. Studies have linked low CoQ₁₀ levels to heart failure.

Carnitine: Low carnitine levels are also linked to heart failure.

Omega-3 fatty acids: These actually have a better track record for helping to prevent heart attacks than statins do.

Statins work by suppressing an enzyme called HMG CoA reductase, which is responsible for making cholesterol. Blocking that enzyme also interferes with the production of CoQ₁₀, and the loss of CoQ₁₀ may be responsible for the destruction of muscle associated with these drugs.

Fortunately there are natural substances that interfere with the action of HMG CoA reductase, and these substances do not have the associated muscle destruction that the drugs have.

Red yeast rice should be taken in the evening, but can be taken throughout the day.

Pantethene also works on the HMG CoA reductase enzyme

Plant sterols have been shown to reduce the intestinal absorption of carbohydrate.

Tocotrienols are a part of the vitamin E complex. Vitamin E is made up of four tocopherols (alpha, beta, gamma, delta) and four tocotrienols (alpha, beta, gamma, delta). Tocotrienols can be found in certain vegetable oils, wheat germ, barley, saw palmetto, and certain types of nuts and grains. This variant of vitamin E only occur at very low levels in nature. Take at night, at least 12 hours after taking gamma tocopherol.

Probiotics have actually been shown to reduce LDL ("bad" cholesterol)

Sesame oil can reduce LDL

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Mitochondria and Chronic Illness

An article appearing in *Alternative Therapies in Health and Medicine* (2014 Winter;20 Suppl 1:18-25) talks about how proper function of the mitochondria is important to maintain good health. Loss of mitochondrial function, according to the article by Garth Nicolson, can result in excess fatigue and other symptoms that are common complaints in almost every chronic disease. At the molecular level, a reduction in mitochondrial function occurs as a result of the following changes: (1) a loss of maintenance of the electrical and chemical transmembrane potential of the inner mitochondrial membrane, (2) alterations in the function of the electron transport chain, or (3) a reduction in the transport of critical metabolites into mitochondria. In turn, these changes result in a reduced efficiency of oxidative phosphorylation and a reduction in production of adenosine-5'-triphosphate (ATP). Several components of this system require routine replacement, and this need can be facilitated with natural supplements. Clinical trials have shown the utility of using oral replacement supplements, such as L-carnitine, alpha-lipoic acid (α -lipoic acid [1,2-dithiolane-3-pentanoic acid]), coenzyme Q10 (CoQ10 [ubiquinone]), reduced nicotinamide adenine dinucleotide (NADH), membrane phospholipids, and other supplements. Combinations of these supplements can significantly reduce fatigue and other symptoms associated with chronic disease and can naturally restore mitochondrial function, even long-term in patients with intractable fatigue.

Another article, appearing in the *Journal of Cell Biochemistry* (2007 Apr 15;100(6):1352-69) links metabolic

syndrome to damage to the mitochondria. Metabolic syndrome consists of a cluster of metabolic conditions, such as hypertriglyceridemia, hyper-low-density lipoproteins, hypo-high-density lipoproteins, insulin resistance, abnormal glucose tolerance and hypertension, that combined with genetic susceptibility and abdominal obesity, are risk factors for type 2 diabetes, vascular inflammation, atherosclerosis, and renal, liver and heart disease.

One of the defects in metabolic syndrome and its associated diseases is excess cellular oxidative stress (mediated by reactive oxygen and nitrogen species, ROS/RNS) and oxidative damage to mitochondrial components, resulting in reduced efficiency of the electron transport chain. Recent evidence indicates that reduced mitochondrial function caused by ROS/RNS membrane oxidation is related to fatigue, a common complaint of MS patients. Lipid replacement therapy (LRT) administered as a nutritional supplement with antioxidants can prevent excess oxidative membrane damage, restore mitochondrial and other cellular membrane functions and reduce fatigue. Recent clinical trials have shown the benefit of LRT plus antioxidants in restoring mitochondrial electron transport function and reducing moderate to severe chronic fatigue. Thus LRT plus antioxidant supplements should be considered for metabolic syndrome patients who suffer from various degrees of fatigue.

Liver Failure and Gluten Sensitivity

In a study published in the journal *Gastroenterology* (April 2002;122:881-888), describes case histories of four patients with liver disease who also had celiac disease (gluten allergy). Gluten free diets reversed the liver dysfunction in these cases (one patient did not adhere to a gluten-free diet and the disease progressed until he needed a liver transplant). Two of the patients who managed to stay on the gluten-free diet, maintained good liver function. The researchers then looked at the prevalence of celiac disease in patients awaiting liver

transplant and found that 4% of 185 patients had celiac disease.

Celiac disease is characterized by gluten insensitivity; it damages the small intestine and interferes with nutrient absorption. Symptoms often include abdominal pain, gas, fatigue, and diarrhea. It is associated with other immune system disorders—including autoimmune hepatitis. The authors of this study believe that celiac disease should be investigated for all cases of autoimmune hepatitis or any hepatitis of unknown origin.

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Milk Thistle and Lung Cancer

Flavonoids are plant pigments that act as antioxidants, protecting the plant from the oxidative stress of photosynthesis. They act as antioxidants for humans who eat the plants as well. Silibinin is a flavonoid found in milk thistle. Flavonoids from milk thistle, like silibinin and silymarin have been shown to protect the liver from alcohol, drugs and poisons and to promote healing and recovery in the liver. Silibinin has even shown to be of some value in protecting against liver cancer, according to a study appearing in the *World Journal of Gastroenterology* (2007 Oct 28;13(40):5299-305). Research, appearing in the *Journal of the National*

Cancer Institute (2006 Jun 21;98(12):846-55), shows that silibinin may inhibit lung cancer as well.

The researchers injected mice with an substance that causes cancer. The mice were then divided into groups and given varying amounts of silibinin in their diets. After 18 weeks mice receiving silibinin had 38% fewer tumors than those that did not receive the flavonoid. At the end of 29 weeks, the supplemented mice had 70% fewer tumors than the controls.

GMOs, Roundup and Chronic Disease

[The key to longevity:] Keep breathing—
Sophie Tucker,
newspaper
reports, Jan 13,
1964

An article appearing in *Food and Chemical Toxicology* (2012 Nov;50(11):4221-31), looked at the link to GMOs, Roundup herbicide, and disease. The health effects of a Roundup-tolerant genetically modified maize (from 11% in the diet), cultivated with or without Roundup, and Roundup alone (from 0.1 ppb in water), were studied 2 years in rats. In females, all treated groups had a 2-3 fold increase in death rate as compared to controls, and more rapidly. This difference was also visible in 3 male groups fed GMOs. Females developed large mammary tumors almost always more often than and before controls, the pituitary was the second most disabled organ; the sex hormonal balance was modified by GMO and Roundup treatments. In treated males, liver congestions and necrosis were 2.5-5.5 times higher. Marked and severe kidney nephropathies were also generally 1.3-2.3 more frequent. Males presented 4 times more large palpable tumors than controls which occurred up to 600

days earlier. Biochemistry data confirmed very significant chronic kidney deficiencies; for all treatments and both sexes. Of the altered parameters, 76% were kidney related. These results can be explained not only by the non linear endocrine-disrupting effects of Roundup, but also by the overexpression of the transgene in the GMO and its metabolic consequences.

The average American consumes 193 pounds of GMO food each year. According to research in the *Journal of Environmental and Analytical Toxicology*, "Exposure of mammals to glyphosate may cause loss of mitochondrial transmembrane potential and result in oxidative stress to liver and brain. Both apoptosis and autophagy are involved in glyphosate toxicity mechanisms. Case reports indicated that exposure to glyphosate was related to Parkinsonism." Researchers have found higher glyphosate levels in chronically ill people than in healthy subjects.

