

April, 2010

Volume 2, Issue 4

# Austin Quan Yin Newsletter

The Better Health News

## Special Interest Articles:

- Foods lower blood sugar
- Walnuts and diabetes
- Iodine and the thyroid
- Hypothyroidism is often missed
- Vitamin D and HIV
- Thyroid and the environment
- Selenium and the thyroid

## Cranberries and Cancer

Barrett's esophagus is a pre-cancerous condition arising in 10-20% of people with chronic reflux of stomach contents into the esophagus. People with Barrett's esophagus might have heartburn, indigestion, difficulty swallowing solid foods, or they may be awakened by regurgitating food at night. Patients with Barrett's esophagus have an increased risk of developing esophageal adenocarcinoma, the most rapidly increasing cancer in the United States.

A recent study, appearing in the *Journal of Agricultural and Food Chemistry* (Vol. 56, No. 3: February 13, 2008, e-published ahead of print) looked at the effect

of cranberry extract (proanthocyanidin-rich extract) on inhibiting human esophageal adenocarcinoma cells (cancer cells from the human esophagus). The extract significantly inhibited the proliferation of the cancer cells. A number of recent in vitro and limited in vivo investigations have reported that cranberry extracts affect multiple cancer-associated processes in breast, colon, prostate, and other cancer cell lines of epithelial origin.

Diets high in fruits and vegetables have generally been associated with a reduction of risk for esophageal adenocarcinoma and diets high in meat tend to increase the risk.

## Bilberry and the Kidneys

Research appearing in the *Journal of Agriculture and Food Chemistry* (Vol. 56, No. 3: February 13, 2008, e-published ahead of print) showed that bilberry extract may have a protective effect on the kidney. Mice were exposed to a chemical, potassium bromate (KBrO<sub>3</sub>), which is an additive used in bread making. It is a toxic substance that has been linked to hearing loss and kidney damage. The mice were given a dose of the chemical that was high enough to cause kidney damage. They also gave

an anthocyanin-enriched bilberry extract of 50, 100, and 200 mg/kg over five days. After receiving the bilberry extracts the mice exhibited a reversal in blood levels blood urea nitrogen (BUN) and creatinine to normal levels (these are blood markers that may indicate kidney damage). The bilberry also reduced malondialdehyde (an oxidative substance), nitric oxide and xanthine oxidase. The bilberry reduced the oxidative stress to the kidneys.

## Certain Foods Lower Blood Sugar After Meals

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The term "postprandial glycemia" refers to the increase in blood sugar after a meal. It is quite a problem for people who have insulin insensitivity. A small study appearing in the journal of the *American Dietetic Association* (2005; 105(12): 1939-42) looked at postprandial glycemia in 11 healthy subjects. Two meals were consumed by the subjects. One was a meal with a high glycemic load (81), containing 87 g of carbohydrate (bagel, butter and juice). The second meal had a low-glycemic load, containing 52 g of carbohydrate (chicken, instant rice, vegetables, butter and teriyaki sauce). The two meals were consumed by the subjects under three different sets of circumstances. First, nothing was added and no changes were made; this was the control meal. The meals were consumed another time with 20 g of apple cider vinegar.

The third change involved replacing the butter with peanut butter in the high glycemic meal and replacing the butter with roasted peanuts in the low glycemic meal. A 55% reduction in the 1-hour glucose response was found when the subjects ate the meals containing peanuts or cider vinegar. Peanuts only seemed to have this effect for the low-glycemic meal, but the vinegar created a lower glycemic response for both meals. In addition, adding the vinegar or peanuts to the meals caused the subjects to reduce caloric consumption between 200 and 275 kcal for the day. The authors pointed out that 16 out of 20 studies published between 1977 and 1999 have shown that eating foods with a low glycemic index reduces hunger and promotes satiety.

## Can Walnuts Benefit Diabetics?

A randomized, controlled, single-blind study appearing in *Diabetes Care* (2009 Oct 20; [Epub ahead of print]) looked at the relationship between walnut consumption and cardiovascular health in diabetics. The mean age of the 24 subjects was 58, and they were all type 2 diabetics. The subjects underwent testing of their vascular endothelium (cells lining the blood vessel walls) by measuring flow-mediated dilation.

Flow mediated dilation (FMD) is a method used to diagnose early stages of atherosclerosis. Problem with the

endothelium (lining of the blood vessels) is considered to be one of the early signs of atherosclerosis; and that is measured with FMD.

The subjects were placed on either an ad libitum diet or an ad libitum diet supplemented with 56 grams of walnuts per day. At the end of eight weeks, it was found that the group receiving the walnuts had improved endothelial function as measured by FMD.

## Iodine and the Thyroid

Iodine is necessary to produce thyroid hormone. A review article appearing in the *Lancet* (March 28, 1998;351:923-924) pointed out that 1.5 billion people were at risk for brain damage due to lack of iodine. An article in the *Journal of Clinical Endocrinology and Metabolism* (1993;77(3):587-591) summarized the health problems brought on by iodine deficiency. These include cretinism, goiter, intellectual disability, growth retardation, neonatal hypothyroidism, increased miscarriage, increased perinatal mortality and increased infant mortality. Too much iodine can create hyperthyroidism. There may be a connection between low birth weight and iodine deficiency, according to research appearing in *Pediatrics* (October, 1996;98(4):730-734). Research appearing in the *American Journal of Clinical Nutrition* (2009; 90(5): 1264-71) looked at iodine status and its relationship to brain development. The subjects were 184 children (between the ages of 10 and 13) with mild iodine deficiency. In the randomized, placebo-controlled study, the subjects were given either 150 mcg of iodine or a placebo each day for a period of 28 weeks. Those given the iodine had improved iodine status and improvement on two of four cognitive tests. Research appearing in the *American Journal of Clinical Nutrition* (May, 1996;63(5):782-786) found a connection between low

iodine levels in children and slow learning.

Iodine supplementation may be useful in the treatment of fibrocystic breast disease. The *Canadian Journal of Surgery* (October 1993;36:453-460) found that women supplemented with iodine had greater improvement in their symptoms when compared to controls. Earlier animal research appearing in the *Archives of Pathology and Laboratory Medicine* (November, 1979;103:631-634) looked at rats who were given sodium perchlorate. Sodium perchlorate blocks iodine and the researchers were able to mimic iodine deficiency in the rats--creating fibrocystic breast disease in the rats.

Iodine is an important nutrient. It is especially important to pregnant women and children. Iodine is classified chemically with the halogens--it is similar to fluorine, bromine and chlorine. These other halogens can displace iodine; so drinking water with fluorine and chlorine may increase the need for iodine. Bromine is used in preservatives, like brominated vegetable oil (BVO), and should be avoided. Iodine requirements are 150 mcg per day for adults and 200 mcg per day for pregnant and lactating women. Some physicians believe that these numbers are too low.

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## Hypothyroidism is Often Missed

The test commonly used to screen for hypothyroidism is TSH. Many cases of hypothyroidism are missed because screening for TSH is not always done and because TSH is an inadequate test for thyroid function. As many as 13 million Americans may have an undiagnosed thyroid problem, according to a study known as the Colorado Thyroid Disease Prevalence Study. The study was performed by Knoll Pharmaceutical (makers of Synthroid). Over 25,000 participants were studied in 1995. The researchers found that nearly 9% of the participants who were not on thyroid medication were hypothyroid and a little over 1% were hyperthyroid. If this number were extrapolated to the entire US population, the number of patients with an undiagnosed thyroid problem would number 13 million. The study also found that even "subclinical" hypothyroidism, may raise cholesterol levels.

Research appearing in *Wien Klin Wochenschr* (2006; 117(18): 636-40) looked at 85 hypothyroid patients, 114 normal subjects and the implications of merely using TSH to evaluate their thyroid status. Researchers found that T3 and sex hormone-binding globulin (SHBG) were lower in subjects with hypothyroidism than in subjects with normal thyroid function. Treating the hypothyroid subjects with T4 gave them TSH levels on a par with the subjects who had normal thyroid function. Although the TSH level was normal, they tended to have lower T3 (which is the more active form of thyroid hormone) levels. The authors concluded that measuring TSH may not be the best way to monitor hypothyroid patients.

*The British Medical Journal* [BMJ 2000;320:1332-1334 (13 May)] published research examining the flaws in diagnosing hypothyroidism. The authors concluded that there are indeed flaws with the way that we diagnose hypothyroidism. First of all, the research is lacking that shows us the relative importance of lab tests and symptomatology in diagnosing the thyroid. TSH production is affected by the level of thyroid hormone, but it is also affected by other things. We don't fully understand how various illnesses affect TSH and the thyroid hormones. There is also a need to consider the possibilities of false positive and false negative results when looking at lab tests related to the thyroid.

There are a lot of patients exhibiting the symptoms of hypothyroidism, but are told that their TSH is normal and that there is no problem with the thyroid. Symptoms of hypothyroidism include: fatigue (and lack of motivation), feeling cold when others do not, dry skin, constipation, depression, difficulty losing weight, brittle hair and nails that break easily, poor memory, muscle cramps, sadness or crying for no reason, high cholesterol, and frequent colds. (The patient does not necessarily have all of the symptoms). In most medical offices, a TSH value of 6 is considered normal. The reality is that many people with a TSH higher than 3 (or even 2) exhibit many symptoms of hypothyroidism. The symptoms are the key. The lab results help, but are not a perfect way to diagnose.

## Vitamin D and HIV

Vitamin D is common in HIV positive individuals, and adequate vitamin D may be important for their health and well-being. Research appearing in the *Scandinavian Journal of Infectious Disease* (2010 Jan 19; [Epub ahead of print]) found that in 115 men who were HIV positive, 20% had insufficient vitamin D, 36% were deficient in vitamin D and 4% were severely deficient. Such deficiency may affect the health of these patients. A study involving 884 pregnant women infected with HIV was

published in PLoS One (2010; 5(1): e8770) looked at vitamin D status and the progression of their disease. The women were monitored for 69.5 months and was found that vitamin D status was inversely associated with disease progression. Poor vitamin D status was associated with anemia as well. The subjects with poor vitamin D status had a 46% increase in the risk of developing anemia. Those in the highest quintile of vitamin D status had a 42% reduced risk of mortality.

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## Thyroid, the Brain and the Environment

An article in *Environmental Health Perspective* (June 2000;108(Suppl 3):433-438) reviewed the importance of the thyroid for brain function and the effect environmental chemicals have on both the thyroid and the nervous system. Proper thyroid function is especially important for brain development in the fetus and during the first two months after birth.

Animal studies have shown that exposure to PCBs and dioxins create abnormal neurologic function and impaired thyroid function. Chemical exposure can enlarge the thyroid, and decrease T4 levels. Many environmental toxins mimic thyroid hormones and bind to proteins used to transport thyroid hormone, competing with thyroid hormone and altering function.

## Selenium and the Thyroid

The road to good health is always under repair.

An article reviewing the relationship between selenium and thyroid function appeared in *Endocrine Reviews* (1992;13(2):207-220). The thyroid gland produces T4, or thyroxine, which is converted to the more active form of the hormone, T3. Rats fed a selenium-deficient diet over a period of four to six weeks had high levels of T4 and low levels of T3. The difference between the two levels of hormone increased as time progressed on the selenium-deficient diet. This indicates that selenium is necessary to convert thyroxine to a more active form.

Thyroid stimulating hormone (TSH) is produced by the pituitary gland to get the thyroid gland to produce its hormones. TSH levels become elevated in hypothyroidism. TSH

levels doubled on the selenium deficient diet. Pituitary growth hormone decreased as well.

Cretinism is due to hypothyroidism in the newborn. One of the implications is mental retardation. The thyroid gland is very important for early brain and nervous system development. Studies have shown that pregnant women with low thyroid function tend to have children with lower IQs than children born of women with normal thyroid function. When children diagnosed with cretinism are supplemented with selenium, T3 and T4 levels actually decrease, but iodine supplementation helps prevent this. The authors recommend supplementing with iodine before introducing selenium in this instance.

