

## Special Interest Articles:

- Parkinson's and antioxidants
- Carnitine and cognition
- Alzheimer's and diet
- Antioxidants
- Bowel flora and antioxidants
- Olive extract protects the brain
- Name that food

Name that food: a chocolate flavored cereal straw

## Still Eating Junk Food? Take Fish Oil

Eating junk food has an immediate effect on the blood supply to the heart. Heart attacks commonly happen after high-fat meals because of the negative effect such a meal has on the vascular system. There is one way to help protect yourself. Research appearing in the *Journal of Nutrition* (February 2008, Volume 138, Pages 287-291) showed that EPA from fish oil may be able to affect vascular function after a fatty meal and improve blood supply to the heart. It was a small study, with 17 healthy men as volunteers.

They were given two test meals (51 g fat), 1 wk apart, in random order. They were supplemented with 5 g EPA plus high-oleic sunflower oil (HOS) vs. HOS only. A second high-fat meal (44 g fat), the same on both study days, was provided 4 hours later. Blood pressure and arterial function were measured using digital volume pulse to derive as "stiffness index". This was measured in fasting subjects at three and six hours following the test meal. They found that taking the EPA improved vascular tone following a high-fat meal.

## B12 and Dementia

Homocysteine, an amino acid that is linked to inflammation, heart disease, osteoporosis and other health problems, is also linked to dementia. Researchers at the University of Oxford found that high homocysteine levels doubled the risk of cognitive impairment and dementia. Vitamins B<sub>12</sub>, B<sub>6</sub> and folic acid are nutrients that are necessary for the body to convert homocysteine into a less noxious substance.

A recent study, appearing in the *American Journal of Clinical Nutrition* (Nov. 2007, Vol 86, Number 5, pp. 1384-1391)

followed over 1600 subjects for 10 years and found that high levels of Vitamin B<sub>12</sub> (measured as holotranscobalamin) reduced homocysteine. The researchers measured Vitamin B<sub>12</sub> levels (by testing methylmalonic acid and holotranscobalamin—both are indicators of Vitamin B<sub>12</sub> status). They measured cognitive function three times over the ten year course of the study. Doubling the holotranscobalamin levels resulted in a reduction in the rate of cognitive decline of 30%. Folic acid levels did not seem to affect cognitive decline.

## Parkinson's and Green Tea Antioxidants

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There are antioxidant substances (chemicals called polyphenols) found in green tea.

The nervous system may be protected by polyphenols found in green tea. Research published in the journal *Biological Psychiatry* (Vol. 62, Issue 12; Dec. 15, 2007), rats given a toxic substance (6-OHDA) were protected by substances found in green tea. There are antioxidant substances (chemicals called polyphenols) found in green tea. Four such substances are epigallocatechin gallate (EGCG), Epicatechin (EC), epicatechin gallate (ECG), and epigallocatechin (EGC). In the study, rats were divided into six groups. Four groups were given 6-ODHA and a combination of the polyphenols found in green tea, in

varying doses. One group was given the green tea polyphenols only and another group, used as a control, received neither substance. The polyphenols acted to protect neurons from the damage caused by 6-OHDA. The highest dose of polyphenols had the greatest protective effect, with 3.7 times as many neurons surviving in that group, compared to controls.

Of course this does not establish that drinking green tea protects humans from Parkinson's disease. Human studies need to occur to prove this connection. It does, however, show that antioxidants found in green tea have a protective effect on the nervous system.

## Carnitine and Cognition in the Elderly

According to research appearing in the *American Journal of Clinical Nutrition* (December 2007; Vol 86 pp 1738-44) supplementation with L-carnitine improved cognition, as well as muscle mass in a group of subjects over the age of 100. The subjects of the study were 66 men and women averaging 101 years. They were randomly assigned to receive either a placebo or two grams of L-carnitine for six months.

At the end of the study, the group that received the L-carnitine had an average loss of 1.6 kilograms of fat, compared to a .6 kilogram gain of fat for

the placebo group. Muscle mass also increased in the group receiving the carnitine with an average gain of 3 kilograms more than the placebo group. The Mini-Mental State Examination was used to measure cognitive performance; the group receiving the supplement had an average increase of 4.1 points at the end of the study. The placebo group only had a 0.6 point gain. The group receiving the carnitine also experienced less fatigue after physical activity.

## Alzheimer's Disease and Diet

Eat your vegetables and protect yourself from dementia. Vegetables are high in folic acid; the word "folic" comes from the word "foliage". Adequate folic acid levels may protect you from dementia. The most common form of dementia is Alzheimer's disease, affecting about 13 million people worldwide. By mid century the prevalence of Alzheimer's disease is expected to quadruple.

A study appearing in the *Journal of Neurology, Neurosurgery and Psychiatry* (Published online ahead of print, doi 10.1136/jnnp.2007) found a connection between folic acid levels and the tendency for dementia. Researchers followed 518 elderly individuals (average age 73) for a 2.4 year period. At the beginning of the study, none of the subjects had dementia.

Homocysteine is an amino acid that is associated with various health problems, including osteoporosis and heart disease. The body needs folic acid and vitamin B<sub>12</sub> to convert it to more useful products. The subjects were tested at the beginning of the study and 20% had high levels of homocysteine, 17% had low vitamin B<sub>12</sub> levels and 3.5% were deficient in folic acid.

At the end of a 2.4 year period, 45 of the subjects developed dementia; 34 of those were diagnosed with Alzheimer's disease. The researchers noted that the development of dementia was much more likely in those subjects with low folate levels and high homocysteine levels. So eat your vegetables, get plenty of folic acid and protect your brain.

Vegetables are also high in antioxidants, and antioxidants can also help to protect the brain. Research appearing in the September 21, 2005

issue of the *Journal of Neuroscience* studied the effect of EGCG on the brains of mice genetically programmed to develop Alzheimer's disease. The mice were given EGCG injections every day for several months. Alzheimer's disease is characterized by the development of plaques on the brain, called amyloid plaques. They literally "clog" the brain. The mice that were injected with the EGCG had as much as a 54% reduction in the formation of amyloid plaques. It is possible that EGCG prevents the initial process that leads to amyloid formation in brain cells, according to the researchers.

Curcumin is an antioxidant found in turmeric. Turmeric is a perennial plant, botanically related to ginger that is native to India, China and Indonesia. It is a component of curry powder and prepared mustard. It is used in traditional Chinese medicine and in Indian (Ayurvedic) medicine for its anti-inflammatory properties. The lowest incidence of Alzheimer's disease in the world is in villages in India. Only about 1% of Indians over the age of 65 get the disease. Perhaps the consumption of curry may be the reason that there are so few cases of Alzheimer's disease. Curcumin, found in turmeric, has been shown to fight the build up of the amyloid plaques found in Alzheimer's disease. Dr. Sally Frautschy, of the University of California, Los Angeles, presented these findings at the 2005 annual meeting of the Society for Neuroscience in San Diego, California. Her paper was entitled: *Curcumin Reduces Oxidative Damage and Amyloid Pathology in an Alzheimer Transgenic Mouse*.

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## Antioxidants and Health

Oxidative stress is a threat to health. It can be at the root of serious diseases like heart disease, dementia and cancer, or simply make you fatigued. Oxidative stress is caused by chemicals in the diet and in the environment. Many of these chemicals produce free radicals, which are electrons that are not tightly bound to the molecule. These electrons interact with the body. Think of the chemicals as electronic “bullets”. Antioxidants are the body’s “bullet-proof vests”. Free electrons cause damage to tissue and inflammation. This can seriously undermine your health.

Antioxidants can be found in the diet. Plants are very high in antioxidants. Photosynthesis is a highly oxidative process. Free electrons could potentially cause a lot of damage to the plant during photosynthesis, so the plant produces pigments like chlorophyll and bioflavonoids. These are the dark pigments found in plants. Plant food that is dark green, blue, purple, orange or red is very high in antioxidants. We buy these pigments or flavonoids as supplements. Things like bilberry, silymarin, and quercetin are all bioflavonoids.

Similarly, eating unhealthy foods like refined white sugar, white flour, hydrogenated oils and chemical additives, create oxidative stress. These foods should be avoided.

Vitamins that are antioxidants include vitamin C, beta carotene (carotenes are also plant pigments that protect against oxidative stress), glutathione, and vitamin E. These nutrients can also be found in a healthy diet.

### Dietary / Lifestyle Guidelines:

In order to limit oxidative stress, you should eat nutritious food in its natural state. Follow the guidelines below:

**1. Drink an adequate amount of water each day:** (adults): Water is necessary to keep the cells hydrated and protected, to eliminate waste and ensure the health of mucus

membranes.

**2. Eat plenty of vegetables:** Plenty means that at least half of the food eaten (by volume). Vegetables are very high in fiber, vitamin C, folic acid and minerals.

**3. Avoid deep fried food, partially hydrogenated oil and hydrogenated oil:**

As time passes, we keep finding out more and more bad things about hydrogenated oil and fried foods. Cell membranes are partially composed of fat, and the fats that you eat will eventually find their way into your cell membranes. Hydrogenated oils are pro-inflammatory and can be incorporated into membranes, weakening them and making them more prone to microbial and chemical invasion. They are linked to cancer, heart disease and many other disease processes.

**4. Avoid refined sugar:** Eating refined sugar increases oxidative stress. It also increases insulin and adrenal hormone production and can cause the body to excrete essential minerals and increases the body’s need for vitamins B & C.

**5. Avoid refined carbohydrates:** They create all of the same health problems created by refined sugar.

**6. Avoid chemical additives:** Avoid processed foods and chemicals. The average American consumes 10 pounds of chemical additives every year. Many of these chemicals create free radicals and oxidative stress. This has had a devastating effect on our health.

**7. Eat slowly, chew your food thoroughly:** Ideally, you should chew food until it is liquid.

**8. Exercise regularly:** Your health care practitioner will discuss exercise with you.

**9. Never skip meals:**

## Bowel Flora can Improve Antioxidant Status

According to research appearing in the *Proceedings of the Nutrition Society* (2007, Volume 66) supplementing with prebiotics and probiotics can improve antioxidant status. Prebiotics are supplements that feed normal bowel flora, like fructo-oligosaccharides. Probiotics are supplements that actually contain the desirable flora.

Improving antioxidant status protects the body against oxidative stress. Oxidative stress is a threat to health. It can be at the root of serious diseases like heart disease and cancer, or simply make you fatigued. Oxidative stress is caused by chemicals in the diet and in the environment. Many of these chemicals produce free radicals, which are electrons that are not tightly

bound to the molecule. These electrons interact with the body. Think of the chemicals as electronic “bullets”. Antioxidants are the body’s “bullet-proof vests”. Free electrons cause damage to tissue and inflammation. This can seriously undermine your health. Oxidative stress can be measured by looking at certain biomarkers

This was a double-blind, placebo controlled study. One group received maltodextrin as a placebo. The other group received a combination of probiotics and prebiotics for three weeks. The group receiving the supplements enjoyed improvement in the biomarkers or oxidative stress.

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## Extract from Olives Protects the Brain

Hydroxytyrosol is an extract from olives that is a powerful antioxidant. Earlier research, published in the journal *Circulation* (2000;102:2169-2171) has shown it to protect from the oxidative stress found in second hand smoke. In that study, rats were exposed to smoke. Urine samples were taken and tested for 8-iso-PGF2 (alpha), which is a chemical that indicates oxidative stress. The smoke increased the level of the chemical; giving the rats hydroxytyrosol prevented the increase in 8-iso-PGF2 (alpha).

In a recent study, published in the *Journal of Agricultural and*

*Food Chemistry* (Vol. 55, No. 13, pp 5043 -5049) looked at the ability of hydroxytyrosol to protect nerve tissue. The researchers report that a 45% hydroxytyrosol extract increased resistance to oxidative stress in brain cells. Malondialdehyde is an end product of lipid oxidation—noxious to cells. The level of malonaldehyde was 25% lower when it was were administered in the presence of the olive extract. This indicates that hydroxytyrosol may be protective of nerve tissue.

My doctor told me to stop having intimate dinners for four. Unless there are three other people.—  
*Orson Welles*

## Name that "Food"

Diet and lifestyle play a large role in health and disease. Many of the things that pass for food in our society act to undermine our health.

Dietary indiscretion can cause health problems. Look at the information taken from the label of a commonly consumed "food" and see if you can guess what it is:

WHEAT FLOUR, SUGAR, VEGETABLE OIL (PALM, SHEANUT AND COTTONSEED OILS), MALTODEXTRIN, COCOA PROCESSED WITH ALKALI, FRUCTOSE,

CONTAINS TWO PERCENT OR LESS OF: GLUCOSE SYRUP, NONFAT MILK, EGGS, SOY LECITHIN, ARTIFICIAL FLAVOR, SALT, PGPR (POLYGLYCEROL POLYRICINOLEIC ACID), NIACINAMIDE, VITAMIN A PALMITATE, PYRIDOXINE HYDROCHLORIDE (B<sub>6</sub>), TOCOPHEROLS FOR FRESHNESS, RIBOFLAVIN (VITAMIN B<sub>2</sub>), THIAMIN (VITAMIN B<sub>1</sub>), SESAME FLOUR, VITAMIN B<sub>12</sub>, VITAMIN D.

**Answer on page 1**

