



# The Glutathione Report

*Optimal Health With The Master Antioxidant*

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[Can Glutathione Help Lyme Disease Sufferers?](#)



*The Newtown Bee; May 6, 2004*

At an informational forum on Lyme disease keynote speaker, Dr Richard Horowitz, who has worked on the study and treatment of Lyme disease at the Hudson Valley Healing Arts Center, mentioned that for the first time in 20 years, he had seen evidence of a possible treatment solution occurring right before his eyes, "in my office during the last 30 days." The treatment involved administration of glutathione by intravenous injection to remove heavy metals stored in the brain cells of a person who suffered from Lou Gehrig's disease. After being given the IV dose, the patient showed 90 percent improvement within ten minutes. His joint pain was gone and his cognitive symptoms improved markedly with results that were encouraging and consistent. "Neurotoxins produced by the Borrelia spirochete, or Lyme disease bacterium, also interact with heavy metals in our cells," Dr Horowitz explains. "All these chemicals in our bodies cause inflammation, and glutathione seems to act like a sponge that pulls them out."

### **[Glutathione Helps Restore Blood Pressure To Normal](#)**

*J Nutr Biochem. 2004 Jun;15(6):323–7.*

Convincing evidence suggests that oxidative stress in the blood plays a role in the development of various cardiovascular disorders including hypertension. Nutritional antioxidants have been suggested to play a role in cardiovascular disease prevention. In a new Italian study, of the various antioxidants tested, glutathione was found to be the most effective in restoring blood pressure after peroxy radical generation.

### **[Glutathione Helps Teenage Author with Cystic Fibrosis](#)**

*The Parkersburg News & Sentinel; May 04, 2004*

Travis Flores, 13, has cystic fibrosis, but is already a published author. His book "The Spider Who Never Gave Up," is a children's book with a message about not giving up. Flores plans to donate \$1 from the sale of each book to Make A Wish and a percentage to cancer and cystic fibrosis (CF) research and for the research of Glutathione, a drug in experimentation to help patients with CF. Flores is taking Glutathione as part of his treatment, and has spent less time in the hospital this year. The book costs \$7.95 and can be purchased through his Web site at [www.sparkeythespider.com](http://www.sparkeythespider.com)

### **[Daily Intake of Fruits and Vegetables Boosts Glutathione](#)**

*American Journal of Clinical Nutrition, Vol. 79, No. 6, 1060–1072, June 2004*

A new "6-a-day" study has found that fruit and vegetables increase erythrocyte glutathione peroxidase activity and resistance of plasma lipoproteins to oxidation more efficiently than do the vitamins and minerals that fruit and vegetables are known to contain. The study investigated the relative influence of nutritive and non-nutritive factors in fruit and vegetables on oxidative damage and enzymatic defense. Glutathione peroxidase activity increased only in the group that received 600 g fruit and vegetables a day. The researchers concluded that fruit and vegetables contain both nutritive and nonnutritive factors that might contribute to redox (antioxidant and prooxidant) actions.



### **[Chinese Herbal Medicine, Kangen-karyu, Boosts Kidney Glutathione](#)**

*Arch Gerontol Geriatr. 2004 Jul–Aug;39(1):69–82.*

A new study has found that diets supplemented with the Chinese traditional herbal medicine, Kangen-karyu, and its crude drug component, Carthami Flos, enhanced the activities of the antioxidative enzymes superoxide dismutase in liver tissue and glutathione peroxidase in kidney tissue, and reduced levels of oxidation of fatty acids in the liver, which increase with aging. Hepatic (liver) and renal (kidney) dysfunction with aging also improved with the administration of Kangen-karyu and Carthami Flos supplements. Kangen-karyu (KGK) is a herbal formula created under the theory of traditional Chinese herbal medicine to invigorate the blood and dispel blood stasis. It contains 6 herbs: peony root, cnidium rhizome, safflower,

cyperus rhizome, saussurea root (JP XIV), and Salvia miltiorrhiza root.

### **Glutathione Diet Tips**

- According to the National Cancer Institute, asparagus is the highest-tested food containing glutathione, one of the body's most potent cancer fighters. Delicious and healthy, asparagus contains glutathione and folacin, a B-vitamin that helps with cell repair and reproduction of blood cells. [Click here for more tips on buying, storing and cooking this super-food.](#) (Source: *Lexington Herald-Leader*; 9 May 2004)
- [Brazil nuts are an excellent source of the mineral selenium](#), crucial for making the antioxidant glutathione peroxidase. This enzyme helps to protect the skin from the sun's ageing ultraviolet rays. Selenium also zaps free radicals inhaled via pollution, especially those inhaled directly or passively via cigarette smoke. (Source: *Times Online – Health*; May 16, 2004)

## **Feature Article**

### **Glutathione – Your Brain's Master Antioxidant Defense**

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Free radicals and oxyradicals play an important role in the development and progression of many brain disorders such as brain injury, neurodegenerative disease, schizophrenia and Down syndrome.

Glutathione is the brain's master antioxidant and plays an important protective role in the brain.

According to Dr. Jimmy Gutman, "The brain is particularly susceptible to free radical attack because it generates more oxidative by-products per gram of tissue than any other organ.

Many neurological and psychiatric disease processes are characterized by... abnormalities in glutathione metabolism and antioxidant defenses."

Generation of reactive oxygen species (free radicals) and oxidative damage are an important cause of neuron (brain cell) death from brain injury.

Chemicals that cause toxicity to certain brain cells are known to decrease cerebral glutathione (GSH), making the cells more vulnerable to reactive oxygen species (ROS). (1)

On the other hand, over-expression of the glutathione peroxidase (GPX) enzyme potentially decreases cell death from brain injury. (2)

### ***Brain Injury and Glutathione – The Gender Difference***

Researchers at Children's Hospital of Pittsburgh have found that males and females respond differently to brain injury. In animal models, levels of glutathione remain constant in females who have suffered a brain injury, but drop by as much as 80 percent in males with the same injury. (3)



When glutathione levels drop, brain cells die much more quickly. This suggests that boys with brain injuries may require different life-saving treatments than girls.

N-acetyl-cysteine (NAC), a precursor of glutathione, already approved for use by the U.S. Food and Drug Administration to treat people who have overdosed on acetaminophen, may be an effective treatment for brain injury in boys whose brains are deprived of oxygen.

### ***Brain Disorders and Glutathione – A Genetic Cause?***

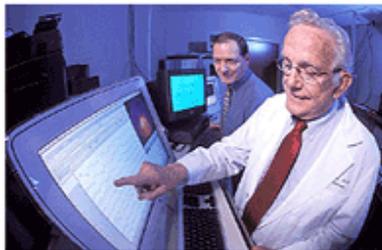
Genetics researchers have found that the glutathione S-transferase gene controls the onset of Alzheimer's, Parkinson's disease and determines, not if we get these diseases, but when. (4)

The glutathione S-transferase gene has previously been linked to the risk for Parkinson's disease among people who used pesticides.

A previous article covered the importance of [glutathione in Parkinson's Disease](#).

### ***Alzheimer's Disease and Glutathione***

Free radicals and oxidative damage in neurons is known to be a primary cause of degenerative diseases like Alzheimer's disease.



Amyloid- $\beta$  peptide (A $\beta$ ) accumulation in senile plaques, a pathological hallmark of Alzheimer's disease (AD), has been implicated in neuronal degeneration.

Amyloid plaques encroaching on the brain increase the production of free radicals, or oxidative stress. Antioxidants, such as vitamin C and E "mop up" the damaging free radicals.

Glutathione (GSH) precursors can prevent death of brain cells induced by amyloid plaques in Alzheimer's disease, while substances that deplete GSH increase cell death. (5)

Evidence has been piling up over the link between the amount of an amino acid called homocysteine in the blood and the chance of developing Alzheimer's.

For people not genetically predisposed to developing Alzheimer's, cholesterol and homocysteine, largely caused by an unhealthy lifestyle, are the core causal factors.

Welsh GP, Andrew McCaddon, showed that the more homocysteine that patients with Alzheimer's had, the worse their mental performance, and the worse their "cognitive

impairment," the less they had of the antioxidant glutathione. (6)

### ***Glutathione and Mood Disorders***

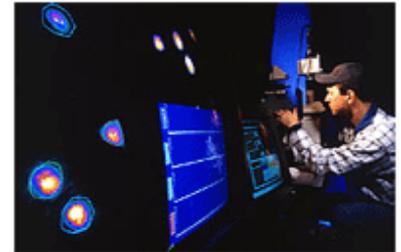
Studies have found that the mood stabilizing drug, valproate, used to treat epilepsy and bi-polar disorder, regulates expression of the genes that make glutathione-S-transferase (GST).

In addition, chronic treatment with lithium, another commonly prescribed mood stabilizer used in treating manic-depression, also increased levels of GST.

These findings led researchers to conclude that glutathione S-transferase may be a novel target for mood stabilizing drugs. (7)

### ***Alcohol Consumption and Glutathione***

Alcohol abuse is known to impair memory and other brain functions and increase brain cell death. A new study in rats has shown that alcohol consumption causes fewer new brain cells to form and results in greater cell death. (8)



But rats that were fed alcohol along with Ebselen – a glutathione peroxidase mimic that acts as a free radical scavenger – showed no similar reduction in brain-cell formation and no increase in cell death.

### ***Substances that Boost Glutathione Levels and Protect Brain Cells***

Taking glutathione itself as a supplement does not boost cellular glutathione levels, since it breaks down in the digestive tract before it reaches the cells.

However, intravenous glutathione therapy and glutathione precursors or dietary supplements are effective in boosting intracellular levels of glutathione.

*Intravenous Glutathione Injections:* Intravenous glutathione injections have been shown to produce amazing and rapid results, in patients with Parkinson's disease. Following even a single dosage of intravenous glutathione, many of the symptoms of Parkinson's disease rapidly improve, often in as little as 15 minutes.

*Glutathione Precursors:* In the Alzheimer's study conducted by Welsh GP, Andrew McCaddon, adding the glutathione precursor, N-acetyl-cysteine (NAC) to a protocol that lowered homocysteine levels by simple supplementation with B12 and folate, resulted in prompt, striking, and sustained clinical improvement in nearly all the patients. (9)

*Cucurmin (turmeric):* Studies have shown that the Indian curry spice, cucurmin, has neuroprotective effects because of its ability to induce the enzyme, hemoxygenase-1 (HO-1), which protects neurons exposed to oxidant stress. Treatment of brain cells called astrocytes, with curcumin, increases expression of HO-1 protein as well as glutathione S-transferase. (10)

*Ebselen:* Ebselen is a glutathione peroxidase mimic and potent synthetic antioxidant that acts as a neuroprotective agent and an inhibitor of free-radical induced apoptosis (cell death). It can protect brain cells from the neuro-toxic effects of alcohol consumption. (8)

*Undenatured Whey Protein:* Undenatured whey protein provides glutathione precursors, has been shown to raise intracellular glutathione levels in clinical trials, and has anecdotally been reported to improve the symptoms of Parkinson's disease.

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6. [Amyloid- \$\beta\$  peptide induces oligodendrocyte death by activating the neutral sphingomyelinase ceramide pathway](#) The Journal of Cell Biology, Volume 164, Number 1, 123–131; 5 January 2004
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10. [Can Curry Protect Against Alzheimer's?](#); American Physiological Society (APS) Press Release; 16–Apr–2004

About the Editor: Priya Shah graduated with a Master's degree in Biotechnology and worked as a molecular biologist at the Tata Memorial Hospital's Cancer Research Institute in Mumbai, India, before opting for a career in health and environmental journalism. She now works from home as an electronic publisher and a full-time mom.

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