

Please encourage everyone to join & read the Human Health chapters for theirs & their country's benefit.

Iron deficiency symptoms are shortness of breathe, fatigue, anaemia, reduced resistance to infections and poor appetite.

Don't take iron supplements unless you need iron and be sure that anaemia you may have, is not from low vitamin B12 or something else. See Vitamins, especially Vit B2.

A diet that is too high in iron can contribute to the release of free radicals which can accelerate the degeneration of brain cells and result in Parkinson's disease, especially if manganese is also consumed in any way, for example, water with a high iron and high manganese content, which is common in many parts of New Zealand, but often deficient in parts of USA and UK.

Measuring iron levels is important for optimising health, especially for men and post-menopausal women because excess iron is most common among these groups. However, simply measuring serum (blood) iron is **NOT ADVISABLE** as serum iron frequently gives a normal reading. The most useful of the indirect measures of iron status in the body is through a measure of the serum ferritin (the body's iron stores) level in conjunction with a total iron binding level.

Dr Joel A. Simon and colleagues found that, "Serum ascorbic acid levels were not associated with decreased serum vitamin B12 levels or the prevalence of kidney stones." They also found that, "Serum ascorbic acid levels were associated with the prevalence of elevated serum ferritin levels among women." Therefore, the researchers suggested that women who have a genetic disposition to iron overload may consider lowering their ascorbic acid intake.

### Deficiency Symptoms

Shortness of breathe, fatigue, anaemia, reduced resistance to infections, poor appetite.

### Dr Mercola

Iron is essential for virtually every life form, including humans, where it is a key part of various proteins and enzymes, involved in the transport of oxygen and the regulation of cell growth and differentiation, among other uses.

One of the most important roles of iron is to provide hemoglobin (the protein in red blood cells) a mechanism through which it can bind to oxygen and carry it throughout your tissues, as without proper oxygenation your cells quickly start dying.

If you have too little iron, you may experience fatigue, decreased immunity or iron-deficiency anemia, which can be serious if left untreated.

However, if you have more iron than your body needs to satisfy your hemoglobin requirement (for cell oxygenation), the excess becomes a dangerous surplus.

Your body has a very limited capacity to excrete iron, which means it can build up in your tissues and organs, a dangerous occurrence because iron is a potent oxidizer and can damage your body tissues contributing to serious health issues, including Alzheimer's disease.

#### Reducing Iron Levels May Protect Your Brain from Alzheimer's

High iron levels in your blood can lead to the production of free radicals that can damage neurons in your brain. It's also believed that iron accumulates at high levels, and is extremely reactive in the beta-amyloid plaques found in the brains of Alzheimer's patients.

A new animal study revealed that reducing iron levels in the blood triggered levels of beta-amyloid and phosphorylated tau protein, which disrupts the ability of neurons to conduct electrical signals, to return to normal.<sup>1</sup>

Experts on metal metabolism in the body said the research highlights the role of metal ions in the development of Alzheimer's, as excess iron accumulation in the brain is a consistent observation in Alzheimer's disease.

Separate research also showed that reducing excess iron in your brain can alleviate Alzheimer's-like symptoms in mice,<sup>2</sup> while measuring brain iron has been suggested as a way to detect Alzheimer's

disease in its early stages.<sup>3</sup>

Iron is also known to accumulate specifically in brain regions associated with memory and thought processes, which are gradually lost as Alzheimer's progresses. At this time it's not entirely clear whether the excess iron is the result of external sources, such as supplements or metal pans, or due to a genetic predisposition to absorbing too much iron or biochemical changes that cause an imbalance internally -- likely it's a combination of factors.

What is known is that too much iron in the wrong places is clearly toxic, and when accumulated in neurons may be a "final end-stage event in neurodegeneration."<sup>4</sup>

#### How do You Know if Your Iron Levels are High?

Checking your iron levels is done through a simple blood test called a serum ferritin test. I believe this is one of the most important tests that everyone should have done on a regular basis as part of a preventive, proactive health screen. The test measures the carrier molecule of iron, a protein found inside cells called ferritin, which stores the iron. If your ferritin levels are low it means your iron levels are also low.

The healthy range of serum ferritin lies between 20 and 80 ng/ml. Below 20 is a strong indicator that you are iron deficient, and above 80 suggests you have an iron surplus. The ideal range is between 40-60 ng/ml. The higher the number over 100 the worse the iron overload, with levels over 300 being particularly toxic and will eventually cause serious damage in nearly everyone that sustains those levels long term.

Fortunately most premenopausal women lose iron every month when they menstruate. As a result, menstruating women rarely suffer from iron overload syndromes, as removing blood from your body is the most effective way to lower iron levels. However, most adult men and postmenopausal women tend to be at a high risk for iron overload and all of its toxicity, as they don't have this monthly blood loss.

Additionally, some people also have a genetic predisposition to absorbing too much iron, which is called either hemochromatosis or hemosiderosis. Interestingly, one of the most common causes of excess iron is the regular consumption of alcohol. Alcohol consumed on a regular basis will increase the absorption of any iron in your diet. For instance, if you drink some wine with your steak, you will likely be absorbing more iron than you need. Other potential causes of high iron levels include:

Cooking in iron pots or pans. Cooking acidic foods in these types of pots or pans will cause even higher levels of iron absorption.

Eating processed food products like cereals and white breads that are "fortified" with iron. The iron they use in these products is inorganic iron not much different than rust and it is far more dangerous than the iron in meat.

Drinking well water that is high in iron. The key here is to make sure you have some type of iron precipitator and/or a reverse osmosis water filter.

Taking multiple vitamins and mineral supplements, as both of these frequently have iron in them.

#### What to Do if You Have High Iron Levels

Some people advise using iron chelators like phytic acid or IP6, but I don't think that is a wise approach as donating your blood is a far safer and more effective and inexpensive approach for this problem. If, for some reason, a blood donor centre is unable to accept your blood for donation you can obtain a prescription for therapeutic phlebotomy. At the same time, you will want to be sure to avoid consuming excess iron in the form of supplements, in your drinking water (well water), from iron cookware, or in fortified processed foods.

Certain phenolic-rich herbs and spices can reduce iron absorption, such as green tea and rosemary.<sup>5</sup> Curcumin actually acts as an iron chelator, and in mice studies, diets supplemented with this spice extract exhibited a decline in levels of ferritin in the liver.<sup>6</sup> Lastly, astaxanthin, which has been researched to have over 100 potential health benefits,<sup>7</sup> has been shown to reduce iron-induced oxidative damage.<sup>8</sup>

Keep in mind, however, that iron is only one problematic metal for your brain. Others, including zinc, aluminium and copper, are also known to accumulate in your brain and are similarly linked to Alzheimer's disease.

#### Tips for Preventing Alzheimer's Disease

Alzheimer's disease is currently at epidemic proportions, with 5.4 million Americans -- including

one in eight people aged 65 and over -- living with Alzheimer's disease, according to the Alzheimer's Association's 2011 Alzheimer's Disease Facts and Figures.<sup>9</sup> By 2050, this is expected to jump to 16 million, and in the next 20 years it is projected that Alzheimer's will affect one in four Americans.

You do not, however, have to feel powerless against this disease, as although there is no known cure as of yet, there are simple strategies available to significantly lower your risk. Some of the best strategies for Alzheimer's prevention, aside from avoiding excess iron, include:

**Fructose.** Most everyone benefits from keeping their total fructose consumed to below 25 grams per day. Fructose has several modes of neurotoxicity, including causing damage to the circulatory system upon which the health of nervous system depends, as well as changing the brain's craving mechanism. Since the average person is exceeding this recommendation by 300% this is a pervasive and serious issue. I view this as the MOST important step you can take.

Additionally, when your liver is busy processing fructose (which your liver turns into fat), it severely hampers its ability to make cholesterol, an essential building block of the brain crucial to its health. This is yet another important facet that explains how and why excessive fructose consumption is so detrimental to your health.

**Improve Magnesium Levels.** There is some exciting preliminary research strongly suggesting a decrease in Alzheimer symptoms with increase levels of magnesium in the brain. Unfortunately most magnesium supplements do not pass the blood brain levels, but a new one magnesium threonate appears to do and holds some promise for the future for treating this condition.

**Optimize your vitamin D levels with safe sun exposure.** Strong links between low levels of vitamin D in Alzheimer's patients<sup>10</sup> and poor outcomes on cognitive tests have been revealed. Researchers believe that optimal vitamin D levels may enhance the amount of important chemicals in your brain and protect brain cells by increasing the effectiveness of the glial cells in nursing damaged neurons back to health. Vitamin D may also exert some of its beneficial effects on Alzheimer's through its anti-inflammatory and immune-boosting properties. Sufficient vitamin D is imperative for proper functioning of your immune system to combat inflammation that is also associated with Alzheimer's.

Keep your fasting insulin levels below 3. This is indirectly related to fructose, as it will clearly lead to insulin resistance. However other sugars, grains and lack of exercise are also important factors.

**Vitamin B12:** According to a small Finnish study recently published in the journal Neurology,<sup>11</sup> people who consume foods rich in B12 may reduce their risk of Alzheimer's in their later years. For each unit increase in the marker of vitamin B12 (holotranscobalamin) the risk of developing Alzheimer's was reduced by 2 percent. Very high doses of B vitamins have also been found to [treat Alzheimer's disease and reduce memory loss](#).

Eat a nutritious diet, rich in folate, such as the one described in my [nutrition plan](#). Strict vegetarian diets have been shown to increase your Alzheimer's risk,<sup>12</sup> whereas diets high in omega-3's lower your risk.<sup>13</sup> However, vegetables, without question, are your best form of folate, and we should all eat plenty of fresh raw veggies every day.

High-quality animal based omega-3 fats, such as krill oil. (I recommend avoiding most fish because although fish is naturally high in omega-3, most fish are now severely contaminated with mercury.) High intake of the omega-3 fatty acids EPA and DHA help by preventing cell damage caused by Alzheimer's disease, thereby slowing down its progression, and lowering your risk of developing the disorder. Researchers have also said DHA "dramatically reduces the impact of the Alzheimer's gene."

Avoid and remove mercury from your body. Dental amalgam fillings are one of the major sources of mercury, however you should be healthy prior to having them removed. Once you have adjusted to following the diet described in my optimized [nutrition plan](#), you can follow the [mercury detox protocol](#) and then find a biological dentist to have your amalgams removed.

Avoid aluminum, such as antiperspirants, non-stick cookware, [vaccine adjuvants](#), etc.

**Exercise regularly.** It's been suggested that exercise can trigger a change in the way the amyloid precursor protein is metabolized, thus, slowing down the onset and progression of Alzheimer's. Exercise also increases levels of the protein PGC-1alpha. Research has also shown that people with Alzheimer's have less PGC-1alpha in their brains, and cells that contain more of the protein produce less of the toxic amyloid protein associated with Alzheimer's. I would strongly recommend reviewing the [Peak Fitness Technique](#) for my specific recommendations.

Avoid flu vaccinations as most contain both mercury and aluminum!

Eat plenty of blueberries. Wild blueberries, which have high anthocyanin and antioxidant content, are known to guard against Alzheimer's and other neurological diseases.

Challenge your mind daily. Mental stimulation, especially learning something new, such as learning to play an instrument or a new language, is associated with a decreased risk of Alzheimer's. Researchers suspect that mental challenge helps to build up your brain, making it less susceptible to the lesions associated with Alzheimer's disease.

Avoid anticholinergic and [statin drugs](#). Drugs that block acetylcholine, a nervous system neurotransmitter, have been shown to increase your risk of dementia. These drugs include certain nighttime pain relievers, antihistamines, sleep aids, certain antidepressants, medications to control incontinence, and certain narcotic pain relievers.

A study found that those who took drugs classified as 'definite anticholinergics' had a four times higher incidence of cognitive impairment.<sup>16</sup> Regularly taking two of these drugs further increased the risk of cognitive impairment. Statin drugs are particularly problematic because they suppress the synthesis of cholesterol, deplete the brain of coenzyme Q10 and neurotransmitter precursors, and prevent adequate delivery of essential fatty acids and fat-soluble antioxidants to the brain by inhibiting the production of the indispensable carrier biomolecule known as low-density lipoprotein.

Enter

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