IRON - Trace Mineral

- **It is the oldest recognized trace element. Used to enrich blood in 17th century.**
- **It exists in blood protein, hemoglobin (70%). Hemoglobin is multichained protein, contains four heme groups, each of which pick up an oxygen atom. Hemoglobin carries oxygen to cells, picks up carbon dioxide that is produced as waste product.**
- **30% found in storage form, protein ferritin**
- **3% found in protein myoglobin. Myoglobin stores oxygen until needed in the muscles and helps oxygen get from hemoglobin to its needed destination in the muscles. Myoglobin is a single chain protein with only one heme group and can only bind one oxygen atom at a time.**
- **look for the word "ferrous" on the label. Ferrous compounds contain considerable more absorbable iron than ferric compounds. Two tablets of ferrous gluconate contains 70 mg iron of which about 25 mg will be utilized. That amounts to more iron than you could get from eating 14 steaks.**
- **the body is designed to strictly control iron. Iron is not as plentiful in food as other minerals like potassium, calcium and magnesium. The digestive tract only absorbs about 10% of the iron consumed. Once iron enters the blood stream, there is no real mechanism for its elimination in males except for small losses in sweat. Females eliminate through menstruation monthly and have naturally low iron levels compared to males. Once iron ions enter the blood stream they must be quickly bound to a protein or these ions can induce rusting, or oxidation, of tissues. So an iron-binding protein called ferritin is widely distributed in all tissues, esp. the liver, to hold onto the iron. If the ferritin protein comes under attack by the superoxide radical, which is produced when copper oxidizes, then it can release stored metal to promote oxidation.**

Types:

- **heme and non-heme**
- **heme iron is from hemoglobin and myoglobin in meats (about 60% of iron in meats is heme iron)**
- **non-heme is found in plant or animal foods or from synthetic supplemental**
- **use ferric or ferrous as long as iron is in water soluble form. Ferrous is most efficiently absorbed.**
- **some nutritionist say ferric must be changed to ferrous in order to be absorbed**
- **Carbonyl iron is extremely pure, fine particled it is 89% elemental iron. Just 18 m of Feronyl (carbonyl) iron is equivalent to 54.4 mg of ferrous fumarate and 150 mg of ferrous gluconate. It is safe and has a long history of usage in animals and humans in large doses (10,000mg) without adverse effects. It is also less irritating to the gastric tract.**
- **Ionic liquid iron is less than an angstrom in size and easily absorbed, no side effects as yet reported.**
- **Ferrous gluconate is next best absorbed.**
- **Next best is ferrous sulphate but sulphate forms can cause gastrointestinal problems including constipation and cramping**
- **Next is ferrous fumerate which is moderately absorbed**
- **Finally there is ferric citrate which is the least absorbable**
- **Natural sources are lower potency than synthetic but include factors useful in assimilation**

Sources:

- **Best: desiccated liver, nutritional yeast, molasses, kelp**
- **Next best is organ meats, liver, kidney, prune juice, dried apricots, lima beans, chickpeas, duck, shellfish, wheat bran, apricots, prunes, soybeans, molasses, whole wheat bread, oysters, green leafy veggies, tofu, beans, wheat germ, spinach**
- **Best herb: yellow dock**
- **If iron deficiency can also try having for breakfast a raw egg yolk with port wine every day for a few months. To make it more paliable can mix it with milk or juice. Dosage is 1 egg yolk, and if a child give 1 tsp port wine; if it is an adult, increase the port to 1 Tbsp. Give at breakfast.**

Some Principal Containing Foods (parts per 1000 parts of food)

Sorrel 9	**Onions 1**
Lettuce 9	**Artichoke 1**
Leeks 7	**Watermelon 1**
Spinach 6	**Cucumber 1**
Radish 3	**Tomato 1**
Strawberry 3	

It is important to take Vit. C with the iron rich foods to help them to be better absorbed.

These provide 75 milligrams of Vit. C or more per serving:

half cantaloupe	**1/2 cup diced peppers**
1 cup orange juice	**1 cup strawberries**
1 cup grapefruit juice	

These provide 25-75 mg Vit. C per serving:

1/2 cup cooked cabbage	**1 large tomato**
1 cup tomato juice	**1 baked sweet potato**
1/2 cup brussel sprouts	**1/2 cup cooked cauliflower**
1/2 cup cooked spinach or mustard greens	

Absorption:

- **too little iron won't support a vigorous life, too much iron is lethal.**
- **more iron is absorbed when there is a need, less is absorbed when there is an overload or inflammation or infection is present; this is the intelligence of our body.**
- **when iron absorption goes up, hemoglobin levels usually go up to and so does our energy and sense of well-being.**
- **once absorbed, utilization is efficient. Iron is recycled with only .25 mg/day lost through urine and .5 to 2 mg/day through perspiration**
- **through upper part of small intestine within 4 hr of ingestion**
- **meat, poultry and fish contain an unidentified "meat factor" that increases iron absorption heme form from animal protein is absorbed directly into intestinal lining. up to 35% of iron from meat is absorbed if iron stores are low, 25% if adequate already present. Therefore the amount of iron absorbed is regulated by the body and you cannot overdose.**
- **between 2-6.5% is absorption rate of non-animal foods.**

- ***** low stomach acid can impair conversion of iron to a more soluble absorbable form therefore supplements are often taken with glutamic acid and hydrochloride or apple cider vinegar.**
- **High levels of acidity separate ferric ions from proteins with a molecular weight larger than 10,000. Taking drugs such as cimetidine and ranitidine may reduce serum levels.**
- **balance of iron, calcium, phosphorous is essential.**
- **excessive phosphorus renders insoluble, creating iron phosphate.**
- **high calcium concentration forms calcium phosphate again, blocking the phosphate from reacting with the iron.**
- **alkalis (antacids), coffee, tea, eggs, high intake of fiber foods (wheat, bran) interferes with absorption.**
- **drinking coffee, tea and milk can affect iron absorption. Coffee and tea both have high levels of oxalates and flavonoids called tannins that bind to iron to form non-nutritious compounds, thereby limiting absorption and utilization of iron. Milk contains casein and calcium, which directly reduce iron absorption.**
- **phytates in whole cereals, oxalates in plants such as spinach and rhubarb, can form insoluble compounds with iron.**
- **vomiting and diarrhea reduces absorption**
- **women with arthritis have poor iron absorption**
- **taking vitamin C at the same time you eat the iron increases the absorption. In one study the addition of 60 mg Vit. C to a meal of rice more than tripled iron absorption. In another, adding papaya to a meal of corn boosted iron absorption by more than 500%. Some feel Iron is best taken early in the morning on an empty stomach with Vit. C or orange juice – 1-2 hours before meals, dairy, teas, coffee and calcium containing supplements. Many find taking the iron at evening meal with Vit. C works very well for them and doesn't upset the digestion that you might experience with an empty stomach.**
- **Certain medications can prevent absorption. NSAIDS, Proton pump inhibitors for acid reflux, heartburn, and stomach ulcers (esomeprazole, omeprazole, pantoprazole, and dexlansoprazole) actually suppress iron absorption so taken the medication at least two hours away from the iron intake.**
- **If you take zinc supplement, best is absorbed when taken about an hour before ingesting the iron. Suggest taking the zinc at bedtime.**

Storage:

- **iron is stored in the blood stream, bone marrow, liver, and spleen**
- **iron must be stored in the bones so it is available for the bone marrow to produce new red blood cells. Red blood cells normally die off and are replaced by new cells every 4 months. As red blood cells die, their iron is re-circulated to be incorporated into new blood cells. Humans need only to replace the small amount of iron lost in sweat or the iron lost during menstruation among females. There is a greater need for iron in the growing years because more units of blood arenbeing produced to fill the blood stream as the body expands in size.**
- **In states of chronic disease or infection the body will attempt to lock all the iron up and store it in fourteen. High fourteen levels are normally a sign of high iron stores. But high stored iron levels (fourteen) can also be a sign the body is sequestering all its iron during inflammation or infection to inhibit the growth of undesirable microorganisms or tumor cells. This is called 'anemia of inflammation' or 'anemia or chronic disease' not iron overload. If iron is chronically withheld and stored, hemoglobin can't be formed. Anemia of chronic disease may result which occurs in advanced cases of cancer.**

- **By regulation iron stores, the body controls the growth of tumor cells, bacteria, viruses, protozoa and parasites and yeast's.**
- **The liver is the organ that handles excesses of iron.**
- **Puberty is a period of rapid growth. Since protein carries oxygen (called hemoglobin) requires iron, there is an increased demand for iron during periods of growth. Therefore growing children are at risk to develop iron-deficiency anemia.**
- **As long as we are healthy, our stored iron is of little concern, but when inflammation or disease is present, it is a major liability. A virus, bacteria or trauma may start disease, but iron is a CO-conspirator of disease as it waits for a virus or injury to light its fuse. The undesired release of iron from fourteen at the site of inflammation results in the arrival of millions of phagocytes, white blood cells that also carry away iron as well as digest any foreign bacteria or viruses. If too many phagocytes respond to the inflammation, it's like sending hundreds of police cars to the same intersection to investigate an accident at the same time; the cars are bound to crash into one another, resulting in a bigger crash than the original accident. The iron bound in the phagocytes is now jolted free to wreak havoc on surrounding tissues. It is thought that is what occurs in arthritic joints. Some chemicals and drugs can promote the release of iron from its storage protein, fourteen (eg. Adriamcin, Parquet insecticide, Ionizing Radiation from x-rays).**
- **Free iron and copper is at liberty to mix with oxygen, promoting the dangerous free radical called hydroxyl radical.**
- **When iron is set free, the iron transport protein transferring attempts to try and carry iron away from the area of inflammation, therefore the transferring protein becomes saturated with iron.**
- **Normal transferring is 1/3 full, but when it becomes 60% saturated with iron, it can't carry all the free iron. Albumin attempts to help out but only loosely clings to iron, so the transferring protein dumps excessive iron in the liver. Overtime the liver can become overloaded, the backup systems to control iron are overwhelmed and bacteria/viruses/and fungi can grow at will since iron is their growth booster.**
- **the liver and brain experience the greatest iron buildup with advancing age, rusting organs within the body with advancing age.**
- **alcohol consumption has been closely linked with iron overload.**
- **Numerous studies show that weekly taking iron supplementation is just as effective as daily taking them.**

Functions:

- **iron is primarily a growth factor for all living cells. Most of the iron in the body resides in the blood stream, within the red blood cells (erythrocytes). Red pigment in red blood cells is called hemoglobin. Without iron, hemoglobin can't be produced. It is the red blood cells and their hemoglobin that transport oxygen to cells through the body. Because hemoglobin carries iron, its concentration is used to measure iron levels in the blood circulation. Not all iron that enters circulation can be carried by hemoglobin. If iron ions circulate through the blood stream unattached to a protein, which is called 'free iron" they can wreak havoc, promoting a destructive process called oxidation (rusting). Iron induced oxidation occurring within fatty tissues is called lipid preordain. Nerve cells in the brain and nervous system are lined with fat called myelin and are very vulnerable to destruction by excessive levels of unbound iron.**
- **iron is essential for formation of cytochrome (pigment which functions in cell energy reactions)**
- **present in some of enzymes which are involved in protein metabolism**

- **ideal mineral for many enzyme systems because it can switch back and forth between its two states of oxidation. It can exist as the ferrous form or the ferric form, rendering it ideal for oxidation/reduction reactions useful in treating pernicious anemia (lack of Vit. B-12), diabetes, colitis, alcoholism, celiac disease (allergy to gluten in wheat), scurvy.**
- **the body tightly controls iron as it travels throughout the body. Normally any iron not bound to hemoglobin is bound to other proteins. Albumin is the most abundant protein into the blood stream that attaches to iron. Fourteen is the protein that stores excessive iron. Fourteen levels may rise or drop depending on the state of health. Iron is transported to tissues on another protein called transferring. When challenged by infection, a cousin of transferring (lactoferrin) is produced to bind up even more iron. There are some dietary components that bind to iron and help to control its availability such has bioflavonoids found in tea and extracts of bran.**

Dosage:

- **average iron intake is about 13 mg/day with min. 2 mg/day and max. 2,000 mg/day**
- **low dose iron supplements of 18-20 mg in young women age 18-48 and may actually better than high dose therapy.**
- **iron tablets may cause abdominal discomfort, constipation, diarrhea (which may reduce woman's compliance with a daily iron supplement regimen). Use Iron gluconate or a slow release wax based matrix tablet of ferrous sulfate.**

Iron Overload:

Iron overload may be heredity (1 in 200 have genetic hemochromatosis), Another cause may be another the diet: processed foods labaeled 'enriched are loaded with iron, other sources are tap water and cooking with iron cookware.

There is a test called the % of Transferritin Saturation which detects and gives a warning sign for iron overload. Dr. Harry Eidinier emphatically states "Iron overload is often silent, meaning no symptoms, and can result in liver cirrhosis, bacterial infections, dementia, arteriosclerosis, diabetes, bronzing of the skin, arthritis, and stroke". The test multiplies the total serum iron by 100, then divides the result by the Total Iron Binding Capacity. If the number is greater than 50, Iron Overload or hemochromatosis should be ruled out. If the serum ferritin, which is the second most abundant iron bearing protein in the body, is elevated, the chances of iron overload is increased. Leslie N. Johnston, author of 'Iron Overload' suggests serum iron over 100mcg per liter, transferrin over 25% saturation and ferritin levels above 50mcg per liter may indicate iron overload.

In terms of numbers, if the serum ferritin levels are above 200, an aggressive program can be employed to reduce levels. Excess iron means excess free radical production. You have four channels of elimination: bowels, kidneys, lungs and skin. You want the excess iron to leave via the bowel, so you want to make sure you have nice quick transit times for bowel movements and a high fiber diet will help this.

Other facts about Iron Overload:

- **Most likely overload if:**
  *** male over age 18**
  *** female has undergone early hysterectomy**
- *** postmenopausal female- overload of iron may show as yellow-brown spots in vision.**

- **Overload puts you at risk for joint pain, liver damage, cancer, heart disease, diabetes.**
- **hemachromtosis is a genetic disorder allowing the body to absorb too much iron and is probably more common than a genetic form of the disease. Tribes in Africa cooking in iron kettles experienced early death due to iron overload.**
- **one of the body's ways of adapting to iron overload is to grow intestinal bacteria and parasites that impair the absorption of iron.**
- **you may take rice bran extract to remove excessive iron and calcium from a body. Can also help with diet of fresh juices from dandelion, parsley and watercress**
- **the liver is known to store iron when it overloads in the blood circulation. In Sweden when food was fortified with iron (1948), there began an increase in liver cancer among the women by 1977, so we know toxic build up takes time.**
- **for the most part, iron overload is believed to be confined to a small percentage of adults, mostly of European heritage, who have a genetic disease called hemochromatosis, health experts are changing their estimate as to how many adults have the gene for hemochromatosis and it is estimated at 7%.**
- **there is also evidence of long term consumption of excessive iron in the diet, particularly readily absorbed hemo iron from meat when combined with alcohol, promotes aging and disease.**
- **areas that consume high amounts of iron from plant matter do not experience iron overload.**

HEART. Evidence suggests that those with higher levels of stored iron are more than twice as likely to have heart attacks. High iron levels exceeded high cholesterol, high blood pressure and diabetes as a risk factor for heart attacks. It is iron's interaction with cholesterol that appears to play the primary role in blood vessel disease.

ARTHRITIS in hips, knees and wrists are the joints usually affected by iron overload. among those with rheumatoid arthritis, iron has been shown to increase in the synovial joint fluid by 3-8 times. Arthritis affects up to 80% of iron overloaded people and is often the only manifestation of the disease. Arthritis patients may appear anemia, but this is most likely the body's response to the disease, storing as much iron as possible, therefore limiting its availability to make new red blood cells. Anemic patients seem to have a more severe form of arthritis compared to non-anemic patients. Those with rheumatoid arthritis poorly tolerate oral iron supplements and experience flareups of joint inflammation if given intravenously. Copper and zinc help produce the antioxidant enzyme superoxide dismutase which can reduce joint damage caused by oxidation. Injecting copper into joints has been used to induce remission.

CANCER. Iron rich liver is a frequent site of new cancer colonies (metastasis). High iron stores increase the risk of disease. Blood donors have significantly lower risk of developing cancer than on-donors.

1988 Cancer Research 48 revealed iron oversupply in cancer patients might enhance tumor growth and adversely affect cancer therapy. Blood transfusion increases risk of cancer because of the iron overload. The risk of liver cancer increases by 400% if high iron stores in the liver.

Anemia is common among cancer patients and as a result iron is often prescribed which feeds any existing tumors. In cancer, slow loss of blood, rather than low iron consumption or absorption may induce anemia. Anemia (low ferritin) and low hemoglobin is the body's way of depriving iron from the tumor cells. In true anemia (lack of red blood cells) related to cancer,

the administration of hormone erythropoietin improves about 60% of the cases of cancer related anemia. Cancer does not occur in bloodless iron free tissues.

Iron and saturated fat appear to work together to promote colon cancer. Iron levels are 10 times greater in feces than other tissues and therefore can expose the colon and rectal tissues to more iron induced oxidation.
Rectal bleeding leads to iron deficiency anemia because of the iron lost in the blood, however feeding iron to the 'anemia' caused by rectal bleeding may add fuel to tumor growth therefore slight anemia would be desirable with cancer.

SARCOMA caused by iron is possible. Mostly found from metal parts introduced into the body, such as with amputees. The sarcoma cells accelerate in an iron rich medium, but growth is also inhibited by iron chelating drugs.

BREAST CANCER. Studies have injected iron into breast tissue and observed the frequency of tumors doubling. Japanese found progesterone helped transport iron away from tumor site. Dietary iron (meat) increased incidence and severity of estrogen-induced tumors.

KIDNEY TUMORS - about 80% of iron circulates in the blood. Kidneys filter blood thus are exposed to the high levels of iron. The higher serum ferritin levels, the larger the tumor. Iron levels help predict recurrence of kidney cancer. The body responds to iron overload with inflammation, infection and disease by binding iron to a storage protein called ferritin. One study showed using magnesium reduced the incidence of tumors significantly.

Some guidelines to follow if your iron levels are too high:

- **adhere to a low fat, low iron diet**
- **avoid alcohol consumption**
- **avoid cooking with any iron pots, pans**
- **drink a little tea, coffee with meals**
- **avoid iron in food supplements, as in a multi vitamin/mineral**
- **Eat foods that ininhibit iron absorption: foods high in oxalic acid (except spinach), and foods that contain phytates (except wheat).**
- **You want to avoid cooking with iron utensils and drink pure water.**
- **You will also want to avoid sources of naturally occuring iron such as red meat, organ meats, spinach, soybeans, wheat, corn and leaf lettuce.**
- **increase the minerals that are antagonistic to iron, especially if you find you are deficient in these: Zinc Manganese Molybdenum Copper**
- **eat more of a vegetarian type diet, very little meat and especially no red meat.**
- **you may donate blood**
- **include small amount of chromium in your vitamin regime (200-400mcg is safe)**
- **take Bioflavonoids (they are good metal chelators). You can take capsules, or foods: bilberry, blueberry, grapeseed, pinebark, elderberry, cranberry, green tea.**
- **drink green tea with your foods, it inhibits the absorption of iron (doesn't inhibit absorption from supplements though).**
- **you can take Quercetin, it chelates iron. Milk thistle is also good. they attach to iron and copper ions.**
- **if your bowel movements are even slightly sluggish, take magnesium or bowel tonics so they are free flowing.**
- **eat whole brown rice. Rice bran and wheat bran binds to minerals.**

- **Don't have foods with vitamin C at the same time (which would improve iron absorption), or fermented foods such as tofu, sauerkraut. This is also called phytic acid, myo-inositol or inositol hexaphosphate IP6. You can also get this as a supplement IP6, or Rice Bran Extract. Don't take if pregnant or breast feeding. If you feel weak after taking phytic acid, it may be an indication you are anemic. If you have dark black stool after taking phytic acid, it may indicate blood in the digestive tract perhaps from taking aspirin daily or a bleeding ulcer or from tumor.**
- **vitamin E protects iron overloaded liver tissue. Both Vitamin E and Beta carotene protect tissues from destruction during iron overload. Magnesium deficiency also creates iron overload.**
- **Vitamin A may also play a role in iron overload in the liver.**
- **Porphyra-Zyme by Biotics can help reduce the amount (4 taken 3 times a day).**
- **Do a heavy metal detox, homeopathically.**
- **Donating blood or doing oral chelation may help bring the iron levels down. Safest method for oral chelation is taking sodium succinate caps 200-250mg twice daily for 2 weeks twice yearly, depending on blood test results.**
- **Take a good antioxidant.**

<u>Iron Deficiency Symptoms:</u>

- **only about 50% of people with iron deficiency develop true anemia. After iron stores are**
- **depleted, it takes about 4 months of iron deficiency for hemoglobin levels to drop in adult women**
- **iron deficiency anemia (more common in women)**
- **children and infants esp. at risk**
- **more needed when healing wounds**
- **anemia symptoms: fatigue, paleness, constipation, brittle nails, skin problems, difficult**
- **breathing, smaller red blood cells, lowered resistance to disease, smooth and sore tongue**
- **anemia, easily fatigued**
- **low blood pressure**
- **heart palpitations**
- **headache**
- **restless legs**
- **poor appetite, urge to eat unusual foods**
- **cold feet, sometimes cold hands**
- **crying involuntarily**
- **dizziness**
- **difficulty in breathing, painful breathing**
- **dull hearing**
- **fault finding tendency**
- **flattened fingernails**
- **fissured tongue**
- **cracks at corner of mouth (can also indicate Vit B2 deficiency.**
- **Pale skin**
- **Brittle nails**
- **short of breath**
- **headache**
- **mentally hard to please**

- **pains in head (stinging)**
- **pains in heels, pains in sole of feet, pains in fingertips**
- **pains in shoulder joints**
- **poor equilibrium**
- **sleepless at night, sleepy in daytime**
- **Serum ferritin level. Ferritin is an iron carrying protein, when levels drop below 20, it is a sign of iron deficiency. Occasionally it can be greater than 20 and the person still may need iron. If inflammatory conditions like rheum. arthritis, test will show falsely elevated ferritin levels. If test shows over 100, too much iron. Level should be between 20-80.**

Most Common Causes of Iron Deficiency Anemia

1. **Increased rate of body growth**
2. **Excessive menstrual blood loss**
3. **Pregnant or lactating**
4. **Regular blood donation**
5. **Intensive endurance training**
6. **Taking an aspirin daily**
7. **Vegetarian diet**
8. **Doing kidney dialysis**
9. **Long term blood loss eg. from ulcers, hemorrhoids, nose bleeds**
10. **You area growing child**

Similarities between Anemia and Iron Overload:

Anemia	Iron Overload
Tiredness	Tiredness
Mental fatigue	Physical fatigue
Fainting	Shortness of breath
Breath holding	Heart flutters
Coldness of extremities	Joint pain
Resistant to infections	Frequent infections
Pica	Tattoo-like burst blood vessels
Restless leg syndrome	Heavy leg syndrome
Blue sclera(eyes)	Elevated liver enzymes
Meat craving	Loss of hair (alopecia)
	Symptoms worsen with supplemental iron

- **Synergists that Enhance Iron Absorption and Assimilation:**
- **Vit. C enhances conversion of ferric form to ferrous form**
- **Vit. C renders iron 2 1/2 times more absorbable in some tests, in other tests absorption of iron from the diet was the same compared to women who did not take Vit. C.**
- **Vit. E helps in absorption however if taken at the same time, renders both ineffective. Vit E protects red blood cells and renders iron assimilation more effective when ingested at a time separate from iron - at least 2 hours apart**
- **Calcium must be present for absorption as it is required for iron to be incorporated into hemoglobin**
- **Vit B12 aids in iron function in red blood cells**
- **B complex, esp. folic acid is necessary for formation of heme group of hemoglobin**
- **B2 (riboflavin)**
- **B12 and folic acid helps iron function in the body**

- **adequate dietary copper helps**
- **eating red meat increases absorption of iron.**
- **Vitamin A and beta carotene increase absorption of iron form grains like rice, wheat, corn by 40-200% thus helping to counter the inhibiting effects of phytates and polyphenols on iron absorption. Vit. A and beta carotene keep iron in a soluble state in the intestine,**
  preventing iron binding effects of bioflavonoids (polyphenols like green tea, bilberry, cranberry, etc) and phytates from bran. This may help to explain why beta carotee slightly increased the risk of lung cancer among Finnish men.
- **Alcohol enhances iron absorption eg. a glass of wine or beer before a meal of red meat. If you have iron overload, avoid alcohol.**

Iron Inhibitors:

- **Tea (bioflavonoids found in tea)**
- **EDTA (common food preservative)**
- **Advancing age**
- **Phosphate additives in food**
- **Extracts of bran**
- **Antacids, esp. when taken in large quantities**
- **Copper deficiency**
- **Coffee, tea (when combined with hamburger meal, coffee reduced iron absorption by 39%, tea by 64%)**
- **Tobacco**
- **Phytic acid, carbonates, oxalates impair iron absorption from plant foods, but heme iron from meat is unaffected.**
- **Red wine inhibits iron absorption by about 28% over white wine.**
- **Dairy Products unless Vit. C is taken at same time.**
- **Green Tea inhibits absorption of iron from food but not from food supplements. However regular consumers of green tea did not develop anemia.**
- **Aluminum (antacids)**
- **Bran, soy products, cow's milk and eggs tend to decrease the availability of non-heme iron from plant foods.**
- **Iron chelating drug deferoxamine and activated charcoal together inhibit iron absorption.**
- **Deferoxamine taken orally is not a problem, it must be taken by slow infusion through the skin.**
- **If you take magnesium within an hour of iron intake.**
- **Calcium may reduce absorption of iron from both meat and plants, suggest taking calcium at bedtime away from meals that provide iron.**

IF YOU ARE ANEMIC OR HAVE LOW IRON:

- **Avoid drinking coffee, black tea, green tea**
- **Avoid tobacco, long term use of aspirin, antacids, alcohol, dairy products.**
- **Take iron supplementation: either carbonyl iron (aka Ferronyl) duck, shellfish, wheat bran, soybean, whole wheat bread, oysters green leafy veggies tofu, beans, spinach, onions, artichokes, watermelon, cucumber, tomato.**
- **Eat foods rich in vitamin C with your iron rich foods to help absorption: cantaloupe, orange juice, grapefruit juice, bell peppers, strawberries, cabbage, tomato juice,**

brussel sprouts, sweet potato, cauliflower.

- **For breakfast mix a raw egg yolk with port wine every day for a few months. To make it more paliable you can mix it with milk or juice. Dosage is 1 egg yolk, and if a child give 1 tsp port wine; if it is an adult, increase the port to 1 Tbsp. Give at breakfast.**
- **Herbs to include: dandelion, meadowsweet, strawberry leaves, yellowdock, irish moss sheep sorrel**
- **Spices to use: anise, mint, cumin, licorice, caraway**
- **Vitamin A contributes to the production of red blood cells and helps the release of iron from storage in the liver. Include it daily.**
- **Do regular parasite cleansing to eliminate hookworm and other parasites that consume blood.**

Toxicity:

- **body is quite efficient holding on to iron, excretion is limited**
- **hemochromotosis, hereditary disease, result in gradual accumulation of iron in body. Becomes apparent 40-60 yrs old**
- **in 1980 22% of US. adults were using iron supplements. About 10% of patients taking iron supplements experienced iron toxicity and gastro symptoms. They were recommending doing weekly supplementing instead of daily, or using a time released. The trouble with time released supplements is their failure to breakdown unless sufficient enzymes are present, which happens in an aging population.**
- **Dr. Crosby was the first to use carbonyl iron in food supplements because it has very low toxicity. It is very pure and the particles are very fine. These days ionic liquid is also available, very tiny molecular structure.**
- **1986-1997 poison control centers in US received reports of more than 110,000 incidents of children under age 6 accidentally swallowing iron tablets. Some were hospitalized; 35 died Death occurred with as little as 200-5850 mg.**
- **potential danger of self medication for iron anemia with iron and iron containing tonics, used a lot by middle aged people. Cause number of deaths from intestinal and stomach cancers.**
- **Iron can cover up symptoms until cancer has grown to inoperable size.**
- **anemia can result from bleeding peptic ulcers or other internal bleeding**
- **High levels of iron have been found in the brains of Parkinson's disease patients. It is thought thatexcess iron leads to increased free radical pathology and accelerated cell death in Parkinson's.**
- **Both Vit. C and E as well as the amino acid derivative N-acetyl-cysteine are free radical scavengers and can remove excess iron from the body, as can intravenous chelation therapy.**

Absorption of iron from:

Spinach 2% (spinach is high in iron, also oxalic acid which some say forms a strong chelate with iron so is a poor source of iron)
Carrots 9%
Tomatoes 21%
Orange Juice 24%
Eggs: 2.2% if normal 5.6% if you are iron deficient
Chicken meat: 6.9% if normal; 17% if you are iron deficient

The body controls iron levels very tightly. When diet is fortified with iron and when red meat intake is high, the body limits iron absorption.