

# Enhancing Liver Health

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Brighter Day Natural Foods Market

[www.brighterdayfoods.com](http://www.brighterdayfoods.com)

1102 Bull Street (Corner of Park and Bull on the south end of Forsyth Park)

10 – 7 Monday – Saturday, Sundays 12:30 – 5:30

## Liver Detoxification –

The liver is our primary organ of detoxification and living in our polluted world we need to do everything we can to enhance its ability to do its job correctly and to protect it so it can protect us. Some facts about the liver – every minute 2 quarts of blood pass through the liver for detoxification. When properly working the liver clears 99% of the bacteria and toxins in the 1<sup>st</sup> pass. The liver makes 1 quart of bile per day which is a carrier of many toxins dumped into the intestine. Fiber – especially water soluble fiber carry these toxins out of the body. The other toxins have been transformed in by the Phase 2 detoxification enzymes to a water soluble form and are excreted by the kidneys. There are 2 major phases of detoxification that the liver does.

**Phase 1** – Liver enzymes do the initial processing and transforming of toxic compounds, bacteria, drugs, alcohol or pollutants such as cigarette smoke taken in by the blood stream and transforms it so that the toxins can be handled by the phase 2 enzymes which convert them to water soluble compounds. Phase becomes less active in old age. A lack of exercise can also slow down the phase 1 enzyme system. Phase 1 is dependent on an enzyme system called the P450 which is dependent on Glutathione to make it work. Glutathione is dependent on vitamin C – about 500mg a day raises the red blood cell level of glutathione by 50%, Glycine, Cysteine, and Glutamine – adequate protein in the diet will supply these.

**Activators of phase 1 enzymes are:** Indole – 3 carbinols (Cabbage, Broccoli, Brussels sprouts,) Limonene (Oranges & Tangerines) and caraway and dill seeds. Note that Naringin a flavanoid found in (Grapefruit) slows down phase 1 detoxification about 30% and must be used carefully especially when taking pharmaceutical drugs as the level of the drugs can build up to higher levels than needed – don't take prescription drugs with grapefruit juice. Curcumin from turmeric slows down phase 1 enzymes but simultaneously speeds up phase 2 and is safe, it may be the best thing that can be taken by cigarette smokers as it can render the carcinogens in tobacco smoke more harmless. Also B-Complex vitamins – B1 and B3. Peppers, cabbage and tomatoes activate phase 1. Many people have more active phase 1 systems than phase 2 when this happens – phase 1 enzymes temporarily make more carcinogenic and inflammatory substances faster than the phase 2 enzymes can carry them out of the body. When a persons phase 1 enzymes do this they can be much more sensitive to chemicals and have more chemical allergies. Garlic, Turmeric, Cayenne & Broccoli all help this process of speeding up phase 2 enzymes and slowing down phase 1 enzymes so the body can handle detoxifying chemicals more efficiently. The flavanoid Quercetin also does this. People who are sensitive to caffeine have slower phase 1 enzymes.

**Phase 2** – Liver takes compounds converted by phase 1 enzymes and shuttles them out of the body by making the toxins water soluble or putting them into bile to be excreted.

### There are 6 different enzyme systems involved with phase 2 detoxification

1. Glutathione conjugation – Glycine, Vitamin C, Cysteine raise glutathione levels in the liver and give the liver the basic “fuel” to power detoxification. Whey protein and the essential fats EPA from fish oil and GLA from primrose, borage or black current oils help.
2. Amino Acid conjugation – Glycine, manganese, B2, B6 and folic acid helps this process.

3. Methylation – detoxifies estrogens and helps neurotransmitters and lowers homocysteine. Vitamin B-12, B-6, folic acid, magnesium and methionine support this process.
4. Sulphation – conjugates toxins with sulphur compounds such as drugs, food additives and toxins from intestinal bacteria and the environment and neurotransmitters. MSM and sulphur from garlic, onions and cabbage family vegetables are supportive of this process.
5. Acetylation – sulphur drugs and anti-biotics are detoxified with this system. Vitamin C, B1, B2, B3, B5, iron and molybdenum are supportive.
6. Glucuronidation. Apples contain calcium d-glucarate, & magnesium – this system detoxifies estrogens, and common drugs such as aspirin.

These foods assist in phase 2 detoxification: Asparagus, avocado, walnuts, cabbage family broccoli, broccoli sprouts & Brussels sprouts especially, orange peel oil, dill & caraway seeds, eggs & egg yolks, lecithin, green leafy vegetables, red peppers, garlic, onions, artichoke leaf, turmeric, pro-biotics i.e. acidophilus, yogurt & kefir, fresh sauerkraut, miso. Selenium (Brazil Nuts are the richest source) also helps phase 2 enzymes work better.

*Note: The chapter on detoxification in the Encyclopedia of Natural Medicine has an outstanding full explanation of phase 1 and phase 2 detoxification systems. I highly recommend that you read this.*

## Food Facts

New data using the ORAC analysis (oxygen radical absorbance capacity) is the new definitive measurement of a food's antioxidant capacity. This gives us much more accurate information about rating fruits and vegetables for anti-oxidant activity.

### Fruits:

**Apples** – Contain – Caffeic Acid, Ellagic Acid, Quercetin (*fresh apples have some of the highest levels of quercetin when compared to other fruits and vegetables*) and Chlorogenic Acid. Reduces total Cholesterol including raising HDL cholesterol due to the pectin content. Helps prevent Asthma due its high quercetin content. Helps normalize blood sugar levels and suppress the appetite. Apples are also high in calcium d' glucarate which helps the body get rid of excess estrogen.

**Avocado** – Lowers cholesterol, increase the activity of glutathione-s- transgerase and important anti-oxidant system of the body. Alleviates dry skin. One of the best food sources of potassium and vitamin E.

**Olives** – Olive fruit pulp may have one of the most potent polyphenols called hydroxytyrisol that act as a redox anti-oxidant that recycles anti-oxidants over and over again.

**Pears** – Enhance the function of the liver, lowers serum cholesterol due to pectin content.

**Tangerines** – Inhibits the growth of some types of leukemia, increases the effectiveness of tamoxifen, helps with detoxification of the liver – one of the best liver detoxification aids.

### Vegetable Facts:

**Artichokes** – Stimulate the flow of bile from the liver and gallbladder and are highly effective at lowering cholesterol levels in the body. In Europe they are sold as supplement for lowering cholesterol, improves diabetes mellitus.

**Beets** – Anemia - stimulates red blood cell production, benefits bladder and kidney function, high in betaine. Beets are considered to be a great food for helping liver function.

**Broccoli** – Helps prevent the following cancers: Breast, Colon, Lung & Ovarian. Broccoli sprouts contain a much higher amount of sulforaphane (detoxification) Sulforaphane, found in broccoli is a potent bacteriostatic agent" even killing antibiotic- resistant H.pylori. It activates liver detoxification enzymes.

**Brussels sprouts** – Breast & colon cancer protects against, kills' aflatoxin.

**Cabbage** – Peptic Ulcers, duodenal ulcers, Cancer protection same as broccoli but also liver cancer. Protects against X rays, helps lower cholesterol.

**Cauliflower** – Protects against breast, colon, lung, & stomach cancer, increases the body's excretion of estrone.

**Daikon Radish** – Helps to dissolve hard fat deposits imbedded in body tissue. Contains carbohydrate digesting enzymes. It along with Wasabi strongly activates phase 2 liver detoxification enzymes.

**Fennel** - Improves liver and spleen, suppresses appetite

**Garlic** – There are thought to be more than 2,200 credible scientific papers on all aspects of garlic. It is known to enhance the immune system, support detoxification of the liver (s-allyl cysteine), lower cholesterol and triglycerides, lower high blood pressure, have anti-biotic properties, anti- fungal properties and numerous other benefits. Recently it has been found to prevent glycation (a “caramelizing” effect on the blood vessels and skin caused by chronic sugar consumption and in diabetes). British scientist have recently found that a compound extracted from garlic is effective against even the most antibiotic-resistant strains of MRSA, the “hospital superbug” that now kills thousands of patients each year.

**Ginger** – Ginger is in the same plant family as turmeric and galangal and shares many of the same therapeutic effects of those 2. It contains many potent anti-inflammatory compounds and inhibits COX-2 inflammation in the body. It is useful for arthritis pain, & nausea

**Jerusalem Artichokes** – Stimulates Bifidobacteria in the colon because of high FOS. Helps diabetes II due to Inulin. Very good for people with syndrome X.

**Kale** – Helps prevent macular degeneration (eyes), Breast cancer prevention due to sulforaphane it helps phase 2 enzymes in the liver.

**Leeks** – Helps prevent stomach cancer – the high sulphur content supports the liver.

**Mushrooms** – contain an anti-oxidant that cannot be cooked out, they are potent immune enhancers due to the polysaccharide content – they activate T-cell and macrophage activity. They are also potent aromatase inhibitors – so they are very protective against breast and prostate cancers. Shitake mushrooms in particular are good for the liver and are anti-viral.

**Mustard Greens** – Helps prevent age related macular degeneration. They are also helpful for phase 2 liver enzymes like broccoli.

**Onions** – Helps prevent atherosclerosis, inhibits abnormal blood clotting, and reduces risk of heart attack, lowers blood pressure in persons with hypertension, stimulates the flow of bile, lowers cholesterol, raises HDL ½ a raw onion a day raises HDL by 30%, significantly exerts blood Sugar lower in effects in type II diabetes due to allyl propyl disulfide, and alleviates asthma. Contains FOS and helps the body's level of beneficial bacteria in the intestines & colon. The stronger the onion flavor the higher amounts of polyphenols found in them – studies found that stronger onions inhibited the growth of liver and colon cancer cells.

**Radish** – Facilitates the elimination of existing gallstones & kidney stones, reduces incidence of stomach cancers. The pungency of radish activates phase 2 liver enzymes.

**Tomatoes** – Helps prevent appendicitis, protects against cancer due to its Lycopene content, lung, cancer, prostate cancer & stomach cancer. Tomato juice stimulates growth of liver tissue.

**Turnips** – May help kill the cancer cells implicated in Lung Cancer. The greens contains similar to broccoli family.

#### **Grains:**

**Oats** – Stabilizes insulin levels, helps with tobacco withdrawal, lowers hypertension and total cholesterol, and increases the production of acetic acid in the intestines which promotes healthy intestinal flora. The fiber in oats lowers the risk of obesity in children who eat oatmeal regularly 50% lower than children that don't. The study found that children and teens who consumed higher intakes of dietary fiber had lower Body Mass Index (BMI) levels or less body fat.

#### **Nuts & Seed Facts:**

**Brazil Nuts** – Highest food in selenium, helps prevent cancer and helps with liver detoxification enzymes.

**Caraway** – Alleviates Gas, helps phase 1 detoxification enzymes.

**Dill** – Helps enhance lactation, alleviates insomnia by sedating the CNS (central nervous system). Helps with phase 1 enzymes by the liver

**Flax Seeds** – Helps prevent Breast Cancer due to high lignin level, helps prevent melanoma, constipation, high cholesterol, eczema. Water soluble fibers sequester bile.

**Pecans** – Lowers total cholesterol due to Beta-Sitosterol content, rich in magnesium as are all nuts, zinc, manganese and potassium. Pecans rate higher than any other nuts on the ORAC list with a score of 5,095. Pecans contain 25% more Oleic acid than a serving of olive oil. Oleic acid has been found to be more resistant to oxidation than other oils.

**Pumpkin Seeds** – Treats parasites, high zinc levels support prostate health in males.

**Sesame Seeds** – Enhance the activity of Vitamin E contains a powerful antioxidant sesaminol. Sesame seeds help kidney function.

**Walnuts** – High in Omega-3 fatty acids (alpha linolenic like flax seeds 25% of the oil content). Walnuts lower total cholesterol levels as well as LDL or “bad” cholesterol.

**Rosemary** – Rosemary, with its pleasant camphor-like scent possesses some of the most powerful antioxidant activities of any agent studied. Rosemary traditionally was used to increase overall vitality and to improve circulation and mental outlook. Rosemary is often referred to as the “Herb of Remembrance.” The antioxidant capability of rosemary is unique for a number of reasons. In rosemary there exists at least six phenolic diterpenoids with antioxidant activity. The most powerful of these diterpenoids appears to be carnosic acid. As a carnosic acid molecule does its job of quenching a free radical, it transforms into another antioxidant compound called carnosol. The transformation of one antioxidant to another repeats itself 3X. The cascade of antioxidant activity is quite uncommon and may explain its positive results in certain studies. Carnosic acid also supports T3 thyroid hormone. Rosemary also contains significant amounts of the phenolic acid, rosmarinic acid. Unlike carnosic acid, rosmarinic acid is a water-soluble antioxidant and extracts containing rosmarinic acid score extremely high on the ORAC (Oxygen Radical Scavenging Activity) analyses. Phenolic acids also delay vitamin E depletion. Some of rosemary’s other known anti-oxidant compounds include carvacrol, carvone, cymene, cineole, fenchone, limonene, terpinene, and thymol. Many of these compounds have shown to inhibit aging of the brain, and act through a mechanism referred to as acetyl cholinesterase inhibition. Rosemary inhibits the metabolic activation of procarcinogens catalyzed by the phase I cytochrome P450 enzymes, and the induction of phase II detoxification activation for these reasons it is considered to be excellent for enhancing liver detoxification. Rosemary also promotes normal mammary cell growth and prevents disruption of DNA caused by chemical carcinogens. Rosemary potentiates chemotherapy and helps prevent Multi Drug Resistance of chemotherapy to cancer cells. In cancer research it specifically reduces Bcl-2 expression, inhibits NF-kB, and inhibits Cox-2. It has been shown to inhibit mammary tumors in mice. Carnosol and ursolic acid are the major constituents both of these inhibit tyrosine protein kinase (TPA), ornithine decarboxylase activity, and tumor promotion. A potent tea blend would be putting rosemary into green tea along with hibiscus. \*\*\*

#### **Best time of day to support the liver**

Bedtime – this is the best time to help the liver’s detoxification system – using supplements such as Milk Thistle, Artichoke extract, Alpha Lipoic Acid, Vitamin C.

#### **Specific Nutritional and Botanical Support for the Liver:**

Take a good multiple vitamin with good levels of B-complex vitamins, Vitamin C, Magnesium, Molybdenum, Zinc – this will give great general support for the liver.

#### **Specific Supplements:**

**Alpha Lipoic Acid** – is a dual purpose anti-oxidant that recharges anti-oxidants to work over and over again it is both water soluble and fat soluble and has an affinity for supporting the liver. It compliments Milk Thistle extract and when paired together it is one of the most restoring nutrients for elevated liver enzymes.

**NAC – N-Acetyl Cysteine** – This is a stabilized form of L-Cysteine a sulphur containing amino acid that supports the liver in detoxification ( increases glutathione ) and helps detoxify heavy metals from the body such as mercury, lead, cadmium. It is very synergistic with vitamin C. It is also a great mucous dissolver used for sinus and lung mucus

### **Specific Botanicals:**

**Schisandra Berries** and seeds are one of the most liver supporting botanicals in Chinese medicine – they are very protective and supportive of liver function. They have been used to help the liver recover from viral hepatitis and cirrhosis – can be energizing so use it during the day

**Artichoke extracts** – Artichoke contains compounds that stimulate bile flow and protect the liver. Excellent for lowering cholesterol it also supports phase 2 enzymes in liver detoxification

**Milk Thistle extract – 80% silimarin** – The best known botanical for supporting liver function. Helps stimulate the production of healthy new liver cells and increases glutathione levels in the liver.

**Herbal Bitters** – are very supportive of activating bile flow also eating bitter tasting foods such as dandelion leaf, pickled ginger and dark greens such as mustard or collard greens.

### **Specific Foods:**

**Sulphur containing foods** – eggs with the yolk, garlic, leeks, onions and cabbage family are great for supporting liver detoxification

**Fish Oils and omega 3 fats** for lowering inflammation and supporting phase 2 detoxification

**Spirulina** – is a blue green algae that is very high in protein and one of the richest sources of GLA an essential fat. Spirulina is incredibly high in carotenes and a plant form of B12. Studies have shown it to enhance the immune response and may support the function of the liver

**Lecithin Granules** – Lecithin is a rich source of phosphatidyl choline and inositol which support reducing fatty liver and lowering of cholesterol.

### **Foods to avoid:**

High Fructose Corn Syrup – contributes to fatty liver

Partially Hydrogenated Oils, Chemical preservatives, Artificial Colorings

Anything more than 1 glass of wine or beer a day