

# NUTRI NEWS



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## Curbing the Toxic Onslaught

Donald E. Colbert, M.D.

Ours is a toxic world. From the moment of conception a child is exposed to a plethora of toxins in their environment; first from their mother, then from the world they're born into. There is no escape, as these toxins will affect them the rest of their lives.

The air is toxic with over 80,000 metric tons of carcinogens released in the air annually in North America;<sup>1</sup> the water is polluted with over 2100 chemicals in most municipal water supplies;<sup>2</sup> and the food supply is contaminated with over 80% of the foods having genetically modified ingredients (mainly due to the high amount of genetically modified soy used in processed foods), not to mention toxic chemicals, hormones, and is depleted of many nutrients.<sup>3</sup> Sadly, most people are never aware of how many toxins they come in contact with on a daily basis, and of the problems associated with those toxins. The consequences may include chronic fatigue, memory loss, premature aging, skin disorders, arthritis, hormone imbalances, anxiety, emotional disorders, cancers, all sorts of auto-immune diseases, and heart disease, to name but a few.

One of the first toxins a child is exposed to is mercury. In a report by the Environmental Working Group, the American Red Cross took umbilical-cord blood samples of 10 babies and tested them for contaminants. The results were astounding. The tests showed that they had an average of 287 contaminants including methylmercury; fire retardants such as polybrominated dibenzodioxins and furans; polyaromatic hydrocarbons, or PAHs; pesticides including DDT and chlordane, as well as the Teflon chemical PFOA.<sup>4</sup> Of these chemicals 180 of them are carcinogenic in humans, 217 are toxic to the brain and nervous system, and 208 are known to cause birth defects.<sup>5</sup>

Once a child is born they are immediately given a vaccine for Hepatitis B, followed by up to 32 shots and booster shots by the age of two. Although vaccines are much safer today since the removal or reduction to trace amounts of thimerosal (the mercury preservative) from most routinely recommended vaccines for ages six and under, some may still contain this known toxin. These vaccines would include the flu vaccine and the DT booster, which still contain mercury. Vaccines also may contain a myriad of other tox-

ins, heavy metals, chemicals, microbes, and animal and human by products. For example, the MMR vaccine is considered mercury free but contains chick embryonic fluid, human diploid cells from aborted fetal tissue, neomycin, and sorbitol.<sup>6</sup> Others such as DTaP-HepB-IPV do contain trace amounts of thimerosal.<sup>7</sup> Replacement preservatives include phenol, benzethonium chloride, and formaldehyde.<sup>8</sup> All of these ingredients may harm a growing child's immune system.

Vaccines aren't the only place that a child receives mercury. If a child is given amalgam (silver) fillings, (a combination of mercury, copper, and silver) for their dental cavities, then that child has been set up for a lifetime of trouble. The original fillings made from 1850 until 1974 slowly released the mercury over a 30 year period. The fillings made since 1974 release enough mercury into the body to cause trouble within 3 to 5 years of placement.<sup>9</sup> A typical filling contains 250,000 mcg of mercury and releases 10 mcg of mercury per day.<sup>10</sup> Before these fillings cause problems, they need to be removed, and should only be done by a qualified biological dentist, or even more toxic mercury can be released into the body. To obtain a listing of biological dentists and more information about removing silver amalgam fillings visit the web site of the International Academy of Oral Medicine and Toxicology at [www.iaomt.org](http://www.iaomt.org).

Even if a child is never vaccinated nor had amalgam fillings in their mouths they are still exposed to a host of toxins in the environ-

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## Curbing the Toxic Onslaught – Continued from page 1

ment. The quality of the air we breathe may be toxic, and may be worse for us than we previously thought. In the "American Lung Association State of the Air: 2005" report released in April 2005 shows that more people are at risk. Over half of the population of the US lives in counties that have unhealthful levels of either ozone or particulate pollution. At greatest risk are those with asthma, chronic bronchitis and emphysema, cardiovascular disease, and for the first time listed, diabetes.<sup>11</sup>

Smog may also speed the development of atherosclerosis. In a study from the University of Southern California's Keck School of Medicine, a team of researchers showed that as levels of pollution rose so did the thickness of plaque in the carotid arteries of the study participants.<sup>12</sup>

Pesticide exposure also represents an environmental toxin that's all around us and difficult to avoid. The most common in use today are organophosphates, which include diazinon, malathion, Dursban, Vapona, Orthene, and Safrotin. They are easily absorbed into the skin, breathed into the lungs, or ingested in our foods. These pesticides build up in the body over time and are stored in the fatty tissue of the body where they can be difficult to clear out. Unfortunately, the fatty tissue includes the brain, which

is high in phospholipids. Farmers who work with these chemicals are at greater risk to develop brain cancers, prostate cancer, leukemia, and lymphoma. Studies reveal that as the body is exposed to these toxins the rate of non-Hodgkin's lymphomas rise.<sup>13</sup> These toxins are sprayed on our food crops and find their way into our food supply including animal feed and our meat supply. This would mean that the fat in the meats would contain the highest amount of pesticides. Other high fat animal products such as butter, cream, cheese, and whole milk will also contain a higher amount of pesticides.

These chemicals are also extracting a toll on the wildlife, even here in Florida. In the book, *Our Stolen Future*, Theo Colborn recorded the effects of a pesticide spill on Lake Apopka, which is just outside Orlando, Florida, in 1980. Following the spill the alligator and turtle populations were deeply affected. The female alligators showed ovarian abnormalities in their eggs and egg follicles. The males showed structural abnormalities in their testes and penises and had elevated levels of estrogen and lower levels of testosterone.<sup>14</sup> After the spill there was a striking absence of male turtles. There were many female turtles in the lake and many turtles that were neither male nor female. These turtles were unable to reproduce.<sup>15</sup>

Most of these chemicals eventually find their way into the water supply. Pesticides, herbicides, fertilizers, PCBs, and even drugs have been found in water flowing out of water treatment plants. According to a study done in 2003 at Baylor University in Waco, Texas pharmaceutical contaminants were found in fish from Pecan Creek, north of Dallas, downstream from a treatment plant. These included the active ingredients for Prozac and Zoloft. All of the compounds were found in every tissue of the fish tested. Ongoing studies are planned to test more pharmaceuticals and the interaction of what may be a major "drug cocktail."<sup>16</sup> Other rivers and streams have been found to contain the active ingredients from birth control pills, heart medications, antibiotics as well as recreational drugs.

As in the above example municipal treatment plants neither detect nor detoxify the water supply of the majority of chemical pollutants.<sup>17</sup> In fact, about 50% of our underground water supply is polluted. Often municipalities make the problem worse when they try to correct the problem. Some add toxins such as aluminum to remove organic materials and chlorine to kill microorganisms. Chlorine combines with organic materials to form trihalomethanes, which increase the risk of bladder and rectal cancers. The risk increases as the exposure to chlorinated water increases.

Solvents are yet another toxin that potentially harms the body. These are used in cleaning products to dissolve dirt, grease and grime. Solvents are also used to dissolve other materials that otherwise cannot be dissolved in water. Like pesticides, solvents are fat-soluble and are stored in the fatty tissues of the body, including the brain. Some common solvents are

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formaldehyde, phenol, toluene, benzene, and vinyl chloride. Some of these are used in the manufacturing of pharmaceuticals. Long term exposure to these solvents may cause leukemia, heart arrhythmias, and nerve damage.

Plastics and phthalates are environmental endocrine disruptors (EEDs) and are another very pervasive and unavoidable toxin in the environment. They are everywhere. The most common source is in our food packaging—plastic water bottles, food containers and plastic food wrap. They are also found in I.V. bags, clothing, nail polish, toiletries, pharmaceutical capsules, coatings, pesticides, flooring materials, home furnishings, construction materials, beds and bedding, dental materials, detergents, and just about everything we touch in modern life.

Plastics and phthalates are the main pollutants in the human body. They damage numerous areas of the body including the brain and the thyroid. They also interfere with hormones, development, intelligence, trigger degenerative diseases, are potentially carcinogenic, and create enormous fatty acid metabolic interruption.<sup>18</sup> Phthalates potentially poison the peroxisome proliferator-activated receptors (PPAR). Damaged PPAR alters lipid metabolism and membrane receptors setting the stage for chronic inflammation and malfunction.<sup>19</sup>

While some toxins are unavoidable there are others, which are contained in certain foods and beverages. Many of the processed foods available to us contain chemicals including preservatives, emulsifiers, texturizers, humectants, ripening gases, and bleaching agents. Bleaching agents can be especially toxic, so toxic that Germany has banned the use of bleaching agents in flour since 1958.<sup>20</sup> There are several chemical agents used to bleach flour used in bakery goods – oxide of nitrogen, chlorine, chloride, nitrosyl, and benzyl peroxide. One of the most toxic agents used is chloride oxide, also known as chlorine dioxide. When this chemical agent combines with the proteins that are left after the bran and germ are removed from the wheat it forms a substance called alloxan. Alloxan may trigger selective destruction of beta cells in the pancreas, potentially causing type 2 diabetes.<sup>21</sup> Despite this, the FDA still allows companies to use this bleaching agent in foods.

In the process of making flour white the wheat germ and bran are removed and more than half of the nutrients are lost. In addition to wheat most of the crops grown today are grown using artificial fertilizers and are grown in nutrient poor soils. According to the 1992 Earth Summit, the US has the worst soil in the world. Unfortunately the US is not the only country with poor soil. Mineral depletion by continent is as follows:<sup>22</sup>

- North America – 85%
- South America – 76%
- Asia – 76%
- Africa – 74%

- Europe – 72%
- Australia – 55%

Other food toxins continue to make the news. In 2004 it was found that perchlorate (rocket fuel) was found in organic milk in Maryland, green leaf lettuce in Arizona and bottled spring water in Texas and California.<sup>23</sup> Perchlorate has been found in drinking water in more than 20 states. The chemical has also been detected in the Colorado River – the major source of drinking and irrigation water for Southern California and Arizona.<sup>24</sup> Perchlorate ingestion may trigger thyroid disorders.

Rice grown in the US has been shown to have 1.4 to 5 times the amount of arsenic in it than rice from Europe, India, or Bangladesh. This rather disturbing trend happened, as rice crops were grown in soils previously used to grow cotton, where arsenic was used to kill boll weevils. Arsenic resistant rice was developed to prevent the rice crops from dying from an arsenic induced disease called “straighthead.” As such the “healthy” grains accumulate more arsenic.<sup>25</sup> Even as the food itself was being poisoned or depleted of nutrients, Americans still chose to make poor food choices. In 2003, the average American consumed about 142 pounds of sugar per year, plus 61 pounds per year of high fructose corn syrup, (for a total of 203 pounds per year) as compared with 114 pounds of sugars and sweeteners per year in 1967.<sup>26</sup> Even milk is being turned into a flavored, sugary, carbonated drink to appease a nation of sugar addicts’ taste buds.<sup>27</sup>

Finally, we abuse our bodies by filling them with fast foods, processed foods, poor quality meats, fried foods, white breads, and other non-nourishing foods while not eating nearly enough whole grains, fresh fruits, and vegetables. It is now recommended that everyone consume 5 to 13 servings of fresh fruits and vegetables per day, which most people don’t even begin to consume on a daily basis. Instead, the typical American now consumes 3 hamburgers and 4 orders of fries every week.<sup>28</sup>

Americans have become processed and fast food addicts, picking up food on the go and not thinking of the consequences. Most fast foods are highly processed foods that have bulk but have no genuine nutritional value and are very high in calories. These foods are commonly purchased from the grocery store – chips, sodas, white bread, white rice, French fries, crackers, cookies, high sugar cereals, and margarine. This type of diet is usually high in sugar, salt, partially hydrogenated fats, hydrogenated fats, and saturated fats as well as excessive in food additives. In short, processed and fast foods are for the most part full of non-nutritive toxins!

Americans not only eat the wrong foods they also drink the wrong beverages – sodas, diet sodas, juices, excessive amounts of coffee, and sweetened tea. One regular, non-diet soda contains approximately 10 teaspoons of sugar (usually in the form of high fructose corn syrup), phosphoric acid, and often caffeine. Diet

sodas contain artificial sweeteners as well as phosphoric acid. Phosphoric acid leaches calcium out of the bones, while high fructose corn syrup raises LDL levels, and artificial sweeteners such as aspartame (NutraSweet®) and sucralose (Splenda®) come with their own set of problems. For example, aspartame breaks down into aspartic acid, phenylalanine, and methanol (wood alcohol); methanol in turn breaks down into formic acid and formaldehyde in the body. Common side effects include headaches, memory loss, vision disturbances, irritability, and gastrointestinal problems. Sucralose is now a popular sweetener and is made by turning sugar into a chlorocarbon by substituting three chlorine atoms for three hydroxyl groups. Chlorinated molecules (like the one in sucralose) are the basis for chlorinated pesticides such as DDT, Lindane, and Chlordane and accumulate in body tissues and fat. Chlorocarbons have been known to cause cancer and birth defects. A few of the side effects of sucralose in animal studies include shrunken thymus glands (up to 40%), enlarged liver and kidneys, reduction in the growth rate, a decrease in the red blood cell count, and diarrhea. Unfortunately, no long term studies have been completed in humans concerning the effects of sucralose.

With all the toxins in the food, water, and air, what do I do to help my patients achieve lasting good health? As a physician I have my patients undergo a complete nutritional lifestyle change and then also undergo a series of steps to help them detoxify their bodies.

The first step to detoxification is adequate filtered water. The most important ingredient in detoxifying the body is to drink plenty of filtered, clean water. The body is approximately 60 percent water and as such needs at least eight glasses (8 ounces each) of filtered water daily. Water from the tap will probably contain some toxic chemicals. Unless you live near an uncontaminated source of water and get your water from that source you need to filter the water you drink. Filters attached to the tap and pitcher-type filters remove chlorine but leave fluoride, as do carbon block filters. The only way to filter out fluoride is by using a reverse osmosis water filter or a water distiller. If you choose to use a reverse osmosis filter then you need to purchase a multi-stage filter system that removes chlorine first and then removes other contaminants. If this is not possible then drinking bottled (in glass containers when possible) reverse osmosis water would be a good choice. For more information on water filter systems I'd like to refer you to my upcoming book *The 7 Pillars of Health*.

Alkalinizing the tissues is another step I use to detoxify the body. Therefore, I have my patients switch to an alkalinizing diet rich in fresh organic fruits and vegetables. Alkalinizing foods help to raise the pH of the tissues enabling the body to release more toxins whereas acidic foods cause the body to slow down this process.<sup>29</sup> I have my patients test their first morning urine pH. The morning pH is a good indicator of the pH of the tissues and should be 6.5 to 7.5. The majority of my patients usually have a urine pH of 5.0,

which is approximately 100 times more acidic than it should be. I often recommend drinking green foods which are "super foods" to help cleanse and alkalinize the body, as well as taking lead-free calcium and other supplements to aid in this process.

I always emphasize organic produce since they are grown without pesticides and because they are grown in soils that haven't been totally stripped of its nutrients. In a report released in 2003 it was shown that organic fruits and vegetables had 50 percent more antioxidants than those grown conventionally with pesticides and herbicides.<sup>30</sup> The nutritive content is usually higher in organically grown foods also.<sup>31</sup> Organic oranges, although smaller in size, have 30 percent more vitamin C than conventionally grown oranges.<sup>32</sup>

Wild Pacific or Alaskan salmon as well as free-range organic chicken and turkey, and on occasion grass fed organic beef may also be eaten. These meats are for the most part pesticide and hormone free and leaner; therefore, they have less fat and significantly fewer toxins in their bodies. Thus, eating these meats will lower the toxic burden better than farm raised fish and meats from feed-lot raised animals. I instruct my patients to trim off any visible fat to avoid consuming any added toxins stored in the fats. I also strongly advise my patients to consume less meat which generally means no more than 4 ounces once or twice a day.

The far infrared (FIR) sauna is very effective in reducing the toxins in the body. In fact, the FIR is the only way to release phthalates from the cells of the body. Phthalates cannot be chelated out of the body and no drugs can remove them. Sweat is the only way to remove organ damaging, carcinogenic PCBs, dioxins, phthalates, and volatile organic hydrocarbons (VOHs).<sup>33</sup> The FIR sauna is also effective in removing heavy metals such as mercury, arsenic, cadmium, lead, and aluminum. It will also aid in removing pesticides, solvents, as well as other chemicals.

The FIR works by using radiant heat. Radiant heat warms objects and people without having to warm the air around them. The infrared segment of the electromagnetic spectrum is the band just below the red band of light. We cannot see this but can feel this as heat. The sun's energy is mostly produced in the infrared segment of the spectrum. In A FIR sauna less than 20% of the energy heats the air allowing 80% to be directly converted to heat within the body. As these rays penetrate the body at depth of 1.5 inches they cause a molecular dance to occur with water and chemical molecules beneath the surface of the skin, extracting them as sweat. In this way the patient is not exposed to dangerously high temperatures to induce sweating, nor does it cause the toxins to be mobilized through the bloodstream. The FIR is well tolerated by most people due to the lower air temperatures in the sauna.<sup>34</sup>

Fasting is another method of detoxification that I recommend frequently. Fasting allows the body to heal by giving it a rest. Fasting gives the digestive tract a much-needed rest, which in turn allows the overburdened liver to "catch up" on its detoxification

work. The fast I recommend most often is a fresh juiced organic vegetable and fruit fast as opposed to a water-only fast.

A juice fast creates an alkaline environment for your body's cells and tissues so they can begin to release toxins through the body's channels of elimination – the kidneys, the colon, the lungs, and the skin. Even the blood and lymphatic system can be cleansed of toxic buildup through fasting. Fasting can eliminate accumulated waste products of cellular metabolism, chemicals, and other toxins.

Finally, the last major step to detoxify is by regular exercise! Exercise not only helps the body by decreasing the risk of cardiovascular disease, type 2 diabetes, insulin resistance, and helps control weight, but also helps the lymphatic system remove cellular waste. Because the lymph system is dependent upon muscle contractions to move lymphatic fluid through the body, we need adequate exercise to keep the lymphatic flow moving. In fact, aerobic exercise can increase lymphatic flow threefold, which means that the body can release three times the amount of toxins with regular aerobic exercise. The best exercise for this is jumping rope or bouncing on a mini trampoline, however, any aerobic exercise is very beneficial. Exercise also increases perspiration and causes the release of additional toxins.

In Florida we have many slimy, swampy, polluted lakes and ponds and also many beautiful, clean lakes and ponds. I have found that lakes that are spring fed practically never contain slimy water. Also, many neighborhoods have ponds with fountains in the center that prevents the water from becoming murky. The spring fed lakes as well as ponds with fountains are constantly having their water stirred by the flowing water, which prevents a buildup of slime. Similarly, our bodies need regular exercise to stir our waters and stimulate lymphatic flow. Remember our body is 60% water.


In addition to all the above steps to detoxification, nutritional supplementation is also important in the detox process. A few of the nutrient rich foods and supplements include wasabi, other cruciferous vegetables, green foods, and milk thistle extract. Each of these foods have excellent abilities in aiding the liver in the process of detoxification.

In order to understand the role of nutritional supplementation in the detoxification process one first needs to understand the two phases of liver detoxification. Phase I detoxification involves thousands of chemical reactions, during which enzymes begin the process of breaking down toxins. When this occurs several different things can happen to the toxins:

1. They may become neutralized.
2. They may be changed into less toxic forms.
3. They may become more water soluble and then eliminated through the bile or urine.
4. They may be transformed into even more toxic substances

## Highlight on:

# *Wasabia japonica*

While most people associate wasabi with sushi, it turns out that in most Japanese restaurants in the U.S. what is being served is not true wasabi. Instead, you are most likely eating a combination of American horseradish, starch and food coloring. Authentic wasabi is made from the rhizome of *Wasabia japonica* and can be found in Japan and at some upscale restaurants in the U.S. *Wasabia japonica* is a member of the Brassica family and is a perennial herb that has been cultivated in Japan since the 10th century. It has been described as one of the world's rarest herbs, with cultivation methods that are difficult and are closely guarded. Wasabia has numerous health benefits associated with it including possessing anti-microbial and anti-fungal properties as well as having anti-inflammatory properties. However, most interesting might be its ability to act as a potent detoxifying agent. Like many members of the Brassica family (including broccoli, cauliflower, cabbage, horseradish, and watercress) *Wasabia japonica* contains compounds called glucosinolates. When these glucosinolates are exposed to the enzyme myrosinase, (also found within the plant), they are converted to isothiocyanates (ITCs). The interesting thing about Wasabia is that it contains a number of ITCs at levels not found in other members of the Brassica family. These ITCs include allyl isothiocyanate as well as a number of long chain methyl isothiocyanates. These compounds, especially the long chain methyl ITCs have been shown to increase the activity of quinone reductase and glutathione-S-transferase (the two major enzymes involved in phase II detoxification) more significantly than ITCs found in other members of the Brassica family. These unique properties of this ancient plant make it perfectly suited to help support detoxification and liver health. However, due to the difficulty in obtaining fresh wasabi, it is probably wise to use wasabi supplementation instead. – but make sure you are buying true *Wasabia japonica*. 

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that will create dangerous free radicals.

Phase II kicks in when phase I has created one of the above intermediate substances. Toxic compounds need to be further broken down and bound to an amino acid or nutrient during phase II detoxification. The glutathione conjugation pathway is perhaps the most important pathway for detoxification, and involves an enzyme called glutathione-S-transferase. The glutathione pathway is responsible for 60% of the toxins excreted in the bile. This pathway detoxifies toxic metals, petroleum products, solvents, many drugs, bacterial toxins, and alcohol. If an excessive amount of drugs, chemicals, or toxins are being processed then the nutrition it takes to fuel the detoxification process rapidly gets used up, thus allowing toxins to build up to dangerous levels. This build up of toxins is why special attention needs to be paid to the nutritional needs of the body. The liver needs to be fueled properly to perform its detoxification duties and maintain levels of antioxidants including glutathione to continue the detoxification process.

One food that you probably have heard of or tried is wasabi (*Wasabia japonica*). It is the green spicy paste usually served with sushi (see "Wasabia" insert on page 5). Due to the difficulty in obtaining fresh wasabi, it is probably wise to use wasabi supplementation instead.

In addition to wasabi, other cruciferous vegetables such as broccoli, cabbage, brussel sprouts, kale, and cauliflower (as well as others) increases the capacity of the liver to detoxify harmful toxins and increase the activity of the liver's phase II detoxification enzymes. I recommend at least one serving a day of these tasty and yet powerful antioxidant filled vegetables.

Green foods are also a great detoxifier. The foods that are called "green foods" usually include cereal grasses, micro algae, plant greens, vegetables, sea vegetables/ seaweed, and aqua greens. Cereal grasses include wheat, kamut, barley, oat, rye, and alfalfa. Micro algae include blue-green algae (such as spirulina), chlorella, red algae (dunaliella), haematoccus, and aphizomenon flos-aquae (AFA). All forms are nutrient dense foods packed full of powerful antioxidants that neutralize free radicals and toxic substances by supporting the liver in its job to detoxify the body.


One supplement I often recommend in liver detoxification is milk thistle extract, also known as silymarin. It is one of the most powerful protectors of the liver from the extremely toxic chemicals produced in Phase I detoxification. Silymarin prevents the depletion of glutathione, which is the most important antioxidant the body uses in detoxification. Because not all silymarin is the same, I recommend that my patients use products where silybin, the active ingredient, is readily bio-available and easily absorbed in order to achieve maximum results in detoxification.

Other supplements that I recommend in the detoxification process includes taking a good multivitamin, multimineral supple-

ment with an array of B vitamins – specifically B1 (thiamine), B2, B3, B5, B6, B12, and folic acid; antioxidants such as vitamin C, lipoic acid, vitamin E, coenzyme Q10; other bioflavonoids such as green tea, grape seed extract, pine bark extract, and curcumin; amino acids such as NAC (N-acetyl-cysteine), glycine, and glutamine; lipotropic supplements such as lecithin and beets; and finally herbs such as dandelion root, burdock root, red clover, ginger root, and nettles. For more information on these supplements please refer to my book *Toxic Relief*.

So, yes, we do live in a toxic world. Toxins are unavoidable and are present all around us. However, we can decrease our exposure to toxins by choosing organic foods and adequate amounts of filtered water. As we establish an alkaline pH for our tissues we will begin to detox our bodies on a cellular level.

Finally, through periodic juice fasting, FIR sauna, nutritional supplementation, and a regular aerobic exercise program we will be able to mobilize and eliminate a vast array of toxins. There are many other specific detoxification measures including chelation therapy for heavy metal detox, amalgam removal by a biological dentist, specific mud packs to remove localized toxins, castor oil packs, colonics and colemas, footbaths, dry skin brushing, homeopathy, EAV, light beam generator and other lymphatic drainage techniques, and laser assisted detox as well as many other modalities.

The dirtiest self-cleaning oven can be cleaned by simply setting the control on "self clean". Our bodies also will go into a "detox mode" by following these simple measures. For more information on this extremely important subject I recommend my book *Toxic Relief*. 

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# An Anti-Aging, Anti-Toxemia Regimen Supports Liver Health

Dr. Ronald Klatz and Dr. Bob Goldman

Thanks to today's contemporary lifestyle of fast foods, our 24/7/365 accessibility, and the growing pressures of many of us in our professional and personal lives, we have become a population of toxemics. "Toxemia" is the medical term that defines a condition in which our bodies accumulate poisonous substances to such a point that levels exceed the ability of our body systems to cleanse them away.

The liver is one of the most important components of the GI system, and may be considered as a vast metabolic factory. It processes proteins, carbohydrates, and fats, and synthesizes bile, glycogen and serum proteins that the body uses for metabolism. Most importantly, the liver is the key organ responsible for detoxification. A properly functioning liver protects the individual from both environmental and metabolic poisons.

The liver's role in detoxification is activated through the coordinated effort of two families of enzymes, known as cytochrome p450s and conjugation enzymes. Both types of enzymes require activation, and their levels must be kept in proper balance. The enzyme families work together as a team to progressively detoxify the body. The cytochromes p450s actually generate free radicals in order to accomplish their task. Left unchecked these can become harmful. The conjugation enzymes capture these free radicals, and inactivate them and prepare them for excretion.

Once a quarter (every three months), anti-aging physicians commonly recommend that their patients embark on a detoxification program. For liver purification, important nutrients include:

**Milk Thistle** (*Silybum marianum*, *Carduus marianus*): Used medicinally for more than 2,000 years, the well-known 17th century pharmacist Nicholas Culpeper recommended the plant for the treatment of jaundice as well as citing its use for opening "obstructions" of the liver and spleen. The active ingredient in milk thistle is silymarin, a mixture of bioflavonoids that is the most potent liver-protecting substance discovered to-date. On an intracellular level, silymarin inhibits liver damage in four key ways, and it stimulates the production of new liver cells. Studies demonstrate that administration of silymarin improved bilirubin levels of acute viral hepatitis patients in just five days. Studies have also shown it to benefit chronic viral hepatitis patients, reversing liver cell damage, increasing protein levels in blood and lowering liver enzymes, while ameliorating the discomfort and malaise commonly associated with hepatitis.

Studies since the 1930s, conducted mainly in Germany, confirmed that silymarin works to stabilize liver cell membranes and act as an antioxidant to protect liver cells from free radical damage. Sonnenbichler and Zetl demonstrated that it helps regenerate healthy liver cells and boosts the liver's ability to filter toxins from the blood. Results of studies by Ferenci et al and Velussi et al suggest that it may improve the quality of life, and possibly even life expectancy, of people with liver cirrhosis.

**N-Acetyl L-Cysteine (NAC)**: A modified form of cysteine, an amino acid that is manufactured in the liver. N-Acetylcysteine is a powerful antioxidant that serves three functions: (1) it helps protect the liver from free radicals, (2) it is the nutritional precursor to the body's own vital glutathione and (3) it can

act as a Phase II detoxifier. Glutathione, an important antioxidant tri-peptide, helps rid the liver of several potential toxins. As we age, eat poorly, incur stress and infection, glutathione levels decrease. NAC has been successfully utilized in treating acetaminophen-induced liver toxicity, and confers important immune-enhancing and antioxidant properties. There is also preliminary evidence to suggest that it may help to prevent colon cancer.

**Proanthocyanidins**: Bagchi et al. found that proanthocyanidins present in grape seed extract were far superior to vitamin C and beta carotene in preventing DNA damage in liver tissue (47% protection by grape seed extract, versus 10% by vitamin C and 11% by beta-carotene).

**Curcumin**: A compound found in the Indian spice turmeric, curcumin has strong Phase II conjugation activity. It is also anti-viral and a strong antioxidant. New research demonstrates that curcumin may be able to slow down and destroy the blood cancer known as multiple myeloma. Researchers at the University of Texas Cancer Center discovered that curcumin down-regulated the nuclear factor kappa-B, present in all multiple myeloma cells and suspected to be the activator of this type of cancer. The researchers suggest that curcumin may help to both prevent and treat multiple myeloma, as lead researcher Dr. Aggarwal states that that "curcumin is an agent known to have very little or no toxicity in humans."

The liver is a miraculous component of the human body. Safeguard and maintain your body's well-being, reduce your susceptibility to infectious diseases, and regain energy and stamina by employing a simple program to promote the health of these unseen and underemphasized organs. A physician-supervised program for anti-toxemia also serves as an anti-aging regimen, as caring for the liver increases the odds of living a longer and healthier life.

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