

Detoxification

As discussed in the Comprehensive Goals, environmental toxins create an additional burden on the immune system that HIV+ people just don't need. These toxins retard the body's natural ability to breathe, digest, excrete, and cleanse. Some suggest that buildup of some wastes in the colon through years of bad diet is at the root of many different diseases. In addition to eliminating as many toxins in your own environment as you can, and supporting the liver and other organs involved in detoxification through good nutrition, various self-help techniques can be used to cleanse the body of accumulated toxins.

The first task is to minimize the burden by avoiding ongoing and new exposures to toxic substances. Airborne toxins are of particular concern since, by entering through nasal passages, they can bypass the blood-brain barrier and travel through the olfactory tract directly to the brain. Reduce or, if possible, stop smoking. Avoid exposure to recreational drugs. Decrease or, preferably, eliminate alcohol. Avoid unnecessary prescription drug use, taking only those drugs that are truly needed and avoiding any that are not absolutely needed. Cut out chemically loaded junk foods and drinks. Avoid, as much as possible, any occupational exposure to chemicals. Whether in the workplace or elsewhere, try to avoid exposure to chemical fumes and vapors (such as gasoline and solvents) as well as pesticides and herbicides. At home, if you can afford it, get air and/or water purifiers.

Help your body in its natural detoxification processes by drinking lots of pure water, exercising, supplementing with nutrients that help the body remove toxic metals, and supporting the liver, the body's main detoxification organ. In addition to these fundamentals, there are also more specific physical techniques and natural products that cleanse the body and support the detoxification or biotransformation enzyme system discussed in the *Self Care Guide*. Some of these detoxification techniques have been used for thousands of years; if anything, they are all the more relevant today. By using these techniques to rid your body of toxins, you can enable your body to function at a much higher level of its total capacity, so that your overall resistance will be that much stronger.

This Guide addresses many drug toxicities more specifically, recommending particular botanicals and nutritional supplements. These will be discussed in more detail with each individual Symptom and Side Effect.

General Nutritional Support for Biotransformation (Detoxification)

An adequate diet for overall support of biotransformation and excretion needs to include both macronutrients and micronutrients that act as cofactors for the each phase. Not surprisingly, these tend to overlap with a healthy diet generally as well as one that counteracts oxidative stress. Interestingly, emerging research suggests that many phytonutrients that are associated with lower risk of cancers may exert their protective influence because they are bifunctional modulators of the detoxification system.

In terms of macronutrients, protein, fat and fiber are especially important. The protein should be a high-quality, complete protein (that is, containing all the essential amino acids with low potential for causing allergies, in order to decrease the body's burden of inflammation and potential allergen toxins. High-quality protein is a good source of methionine, cysteine, glutamine, and glycine in a form that provides high absorption; these amino acids can be used to generate sulfation, glutathione and amino acid conjugation cofactors. High-quality protein also may benefit those with toxic burdens of mercury, since mercury exposure is associated with depletion of the specific amino acids that are precursors to neurotransmitters. Cell culture studies have shown that mercury inhibits uptake and release of neurotransmitters such dopamine, norepinephrine, and serotonin. Methionine is also a component of the homocysteine cycle, which provides S-adenosylmethionine, the cofactor for Phase II methylation.

Adequate intake of healthy fats is also important for optimal detoxification. Fats containing long-chain triglycerides can be problematic, since many HIV+ people and others may have altered intestinal permeability (leaky gut) as one of the consequences of HIV and/or toxic exposure and therefore may have trouble absorbing nutrients like long-chain fats through the intestinal tract. Sources of fats that contain medium chain triglycerides (MCTs) are the most bioavailable. MCTs are not absorbed like long-chain fats, but are quickly metabolized in the small intestine and can be absorbed without the presence of bile. Moreover, the small intestine has greater capacity to absorb MCTs, and MCTs have been shown to support patients with malabsorption syndrome. MCTs have also been shown to prevent early alcohol-induced liver injury in animals, possibly due to their ability to inhibit the generation of reactive oxygen species. Healthy excretion is of course important to the removal of biotransformed toxins, decreasing the toxic burden on the body and

providing a first line of defense to the system. This means getting adequate dietary fiber, which supports intestinal mucosal cell barriers and colonic health. Intake of fiber promotes removal of the conjugated toxins that are excreted via bile, and may decrease the absorption of some toxins. Fibers in rice bran have been shown to bind mutagens even more effectively than wheat, corn, barley, or oat fibers, thereby removing the toxins before they can even interact with the body and cause damage at any level.

Fiber is also useful for improving colonic functioning by hastening transit time. Many Americans have very slow transit times, the time it takes to go from eating to excreting a meal. Too rapid a transit time, in contrast, may cause nutrients to be swept out with the sewage.

Specific Phytochemicals and Nutritional Supplements that Enhance Biotransformation (Detoxification)

Catechins, found in green tea, are strong antioxidants and bifunctional modulators that have demonstrated anti-carcinogenic and antimutagenic potential in animal studies. (Enough to prompt the National Cancer Institute to investigate the potential of green tea extract containing catechins as a chemotherapeutic agent.) Catechins provide many beneficial activities, including induction of Phase II glucuronidation and glutathione conjugation enzymes. They have the ability to modify levels of Phase I, promoting a moderate induction and inhibiting an over-induction, but the full spectrum of catechins was necessary for this effect; otherwise different catechins provide differential Phase I antagonist and agonist functions. Green tea catechins have also been shown to promote healthy microflora, pH, and bowel function. One cup of green tea contains between 100 and 200 mg of catechins.

Chlorophyll and Wheatgrass Juice The bioavailable chlorophyll found in wheatgrass juice is highly protective. Animal studies indicate that it helps reduce absorption of a variety of seriously carcinogenic substances. It strengthens the cells, detoxifies the liver and bloodstream, and chemically neutralizes the polluting elements in our environment. Chlorophyll can also be taken in liquid form (e.g., InnerFresh Pro, Green Magma) or in other tablet forms such as spirulina, barley, various algae or chlorella.

Wheatgrass juice has a long tradition as a cleanser of blood, organs, and gastrointestinal tract. The molecular structure of chlorophyll resembles that of hemoglobin, and it appears to enhance the quantity and function of red blood cells, increasing red blood cell count and dilating the blood pathways throughout the body, thereby also reducing blood pressure. (The improvement in red blood cell counts can also benefit immune function and offset anemia associated with some chemotherapeutic drugs like AZT. In experiments on anemic animals, blood counts returned to normal after four to five days of receiving chlorophyll.) The blood enrichment also stimulates metabolism and enzyme systems. Three key compounds in chlorophyll also stimulate and regenerate the liver, cleansing it of excess fat: choline, magnesium, and potassium. It also stimulates and normalizes the thyroid gland. (NYBC anticipates locating literature to support this point and to assure the such use will not exacerbate hyperactivate thyroid conditions.) The pancreas too may benefit. A study of people using chlorophyll-a who had pancreatitis saw significant improvement and a reduced amount of pain. 34 people used 5 to 20 mg per day of whom 23 had a favorable effect and an additional 9 had some improvement. Pain subsided in one to two weeks and no adverse events were reported (Yoshida, 1980). Whether this may help for pancreatitis induced by drugs like ddI is not known but it is worth a try.

In addition to chlorophyll, the most important nutrients found in freshly squeezed wheatgrass juice are enzymes. Among the hundreds of enzymes in wheatgrass juice are cytochrome oxidase, an antioxidant required for proper cell respiration; lipase, a fat-splitting enzyme; protease, a protein digester; amylase, which facilitates starch digestion; catalase, which catalyzes the decomposition of hydrogen peroxide into water and oxygen in the blood and body tissues; peroxidase, which has an action similar to catalase on a cellular level; transhydrogenase, an enzyme which aids in keeping the muscle tissue of the heart toned; and superoxide dismutase (SOD), which lessens the effect of radiation, acts as an anti-inflammatory, and may prevent cellular damage following heart attacks or exposure to irritants. Wheatgrass also contains vitamins C, E, and beta carotene, minerals and trace elements, essential amino acids, and oxygen in bioavailable forms. Its abundance of alkaline minerals helps it to reduce over-acidity throughout the blood.

The best way to consume wheatgrass juice is in small amounts throughout the course of the day, always on an empty or nearly empty stomach. Most important, always use wheatgrass juice within minutes of when it is squeezed since, unfortunately, its many nutrients begin to diminish almost immediately after it's squeezed. Drinking one to three ounces every day or every other day is sufficient.

Many high-quality health food stores sell freshly squeezed wheatgrass juice. While this is an excellent source if you live in the vicinity of a reliable store, it is also the most expensive. It is easy to grow your own: all you need is several trays, potting soil, organically grown whole wheat berries, water, and indirect sun light. (For a complete description of how to grow your own wheatgrass and juice it, see *The Wheatgrass Book* by Ann Wigmore or inquire at your local health

food for complete instructions.) Feed it to your cats (and dogs) too - they will chew on it anyway if they can! Be sure that the grass is cleaned well before using, especially if your T-cell count is low.

Ellagic Acid is a bifunctional modulator that promotes balanced detoxification by several mechanisms: it induces production of glutathione-S-transferases and other Phase II activities at the gene level, it modulates Phase I activities so these enzymes are not over-induced, and it can bind directly to some toxic substances, rendering them non-toxic and promoting their excretion. Ellagic acid can also bind directly to DNA, protecting it from carcinogenic mutations. It may also act directly against some metal toxicity such as nickel, by chelating the metal and promoting its excretion, proving protection from liver damage and oxidative stress.

Fiber Formula is a blend of fiber from oat bran, psyllium, prune powder, several herbs, and highly concentrated plant enzymes; especially good for people with gastritis or ulcers.

Glycyrrhizin This highly-refined product of licorice root is a potent anti-inflammatory which breaks down into glucuronic acid. It is actually the treatment of choice for drug hypersensitivity and allergy in Japan and China.

Green tea contains catechins and numerous other antioxidant and other components that are protective against cancers, bacteria, and viruses. Catechins are also associated with reduced blood glucose levels, thereby reducing insulin activity. Green tea supplements are mainly for those who don't like to drink green tea. **Green Tea Phytosome** is green tea bound to lecithin to enhance absorption.

Lecithin (phosphatidylcholine) is a phospholipid, a type of fat important in the structure of all membranes. They are beneficial to myelin sheath production and, thus, nerve protection. Cell membranes are largely composed of phosphatidylcholine, as are the protective sheaths surrounding the brain. Food-grade lecithin is a substance commonly used as a food additive and nutritional supplement that contains phosphatidylcholine, as well as other phospholipids, including phosphatidylinositol and phosphatidylethanolamine. (To avoid confusion, note that to a chemist lecithin *is* phosphatidylcholine; we are using the term here to refer to the food-grade lecithin granules available in health food stores as a supplement.). It consists mostly of the B-vitamins choline and inositol along with linoleic acid and other fatty acids, glycerin, and phosphorus.

Although lecithin is a lipid, it is partly water-soluble and thus acts as an emulsifying agent. It has a pleasant (although perhaps bland) flavor and can be added to shakes and smoothies for a creamy effect. Most lecithin is derived from soybeans, but egg lecithin (from egg yolks) is also available; some studies show that this form is more beneficial for HIV+ people. Other sources of lecithin include brewer's yeast, grains, legumes, fish, and wheat germ.

MSM (methyl sulfonyl methane) is a sulfur donor that, in addition to its role in supporting sulfation, is an important component of protein and, thus, of muscle tissue. Researchers have reported that HIV+ people lose much more sulfur daily than is normal (possibly losing up to 10,000 mg daily, when 850 mg is thought to be normal) This high sulfur loss may mean inadequate amounts for conversion to proper maintenance levels of the sulfur amino acids methionine, cysteine, taurine and glutathione, as well as repair of muscle tissue, resulting in joint and muscle pain often experienced by HIV+ people. Some naturopathic physicians report very good results with aches and pains using 3 to 6 grams per day (3,000 to 6,000 mg) of MSM, taken in divided doses.

N-acetyl-cysteine is a glutathione precursor and has been shown to increase the level of glutathione (GSH) produced in the body; GSH is not only the cofactor for glutathione conjugation, but also supports sulfation: it is a major route for detoxification of heavy metals due to the ability of metals to bind to the sulfur in glutathione. Due to its support for glutathione production, cysteine becomes depleted in the presence of a toxic load of metals, and it is a principal support factor in combating metal toxicity.

Phytoflavonoid Complex Ultra-Antioxidant is a potent and broad array of standardized extracts including grape skin and grape seed extract, green tea extract, curcumin, milk thistle, hawthorn and ginger. See the individual entries on each of these. Grape seed extract is the preferred source of the flavonoid molecules known as OPCs. These compounds are among the most potent antioxidants known. One of the advantageous features of OPCs' free radical-scavenging activity is that it's incorporated within cell membranes, with the ability to protect against both water and fat soluble free radicals. Recent studies indicate the antioxidant activity of OPCs may be as much as 50 times stronger than Vitamin E and 20 times stronger than Vitamin C. The substantial amount (750 mg) of Green Tea extract in this Ultra-Antioxidant is the most potent form available. Phytoflavonoid Complex Ultra-Antioxidant is an "all-in-one" formula that may be good for those

who wish to use all of the spectrum of antioxidants for their distinctive benefits (e.g., curcumin as an anti-inflammatory, milk thistle for the liver, hawthorn for the heart, ginger for the digestive processes).

Vitamin B12 and folate provide support for the homocysteine cycle, which allows for remethylation of SAM. The biologically-active, natural form of folate is 5-methyltetrahydrofolate. **Choline** is also particularly important; choline deficiency has been shown to result in fatty liver and other liver diseases.

Watercress, like other crucifers, contains high levels of glucosinolates, precursors to several bioactive isothiocyanates, including phenylethyl isothiocyanate (PEITC). PEITC from watercress has been shown to inhibit chemically-induced lung and colon carcinogenesis in rats, and promote excretion of carcinogens in humans.

NYBC supplements for supporting detoxification:

| | |
|---|--|
| B-50 complex x 250 | 1-2/d (0-1B, 1D) |
| B-12 1000mcg x 250 | chew 1 per day |
| Fiber Formula x 90 | 1-2 (1-2B, 1-2L, 1-2D) at beginning of each meal |
| Folic Acid 800mcg x 250 | 1/d |
| Glycyrrhizin 300mg x 100 | 3/d (1B, 1L, 1D) |
| Green Tea 60% 400mg x 100 | 3-6/d (1-2B, 1-2L, 1-2D) |
| Lecithin, triple strength 1200mg x 200 | 3-6/d (1-2B, 1-2L, 1-2D) |
| MSM 1000mg x 180 (Part of ThiolNAC) | 3-10+/d (1-3B, 1-3L, 1-4D) |
| N-acetyl-cysteine 500mg x 200 | 3-6/d (1-2B, 1-2L, 1-2D) |
| Phytoflavonoid Complex UltraAntioxidant x 120 | 4/d (1B, 1L, 2D) |

Detoxification Techniques - General Whole Body Internal Cleansing

Detoxification techniques are processes that facilitate the neutralization and elimination of toxins from the body along with excess mucus and congestion. All systems of traditional medicine include such techniques. Since there are a wide variety of such techniques, please note that great care should be taken in choosing a safe and effective program for you. It is critical that you evaluate your condition and determine whether a rapid or slow approach is most advisable. Since the stresses on immune and endocrine systems for people with HIV are already profound, you don't want to subject your system to additional shocks. If your body weight is low, you have hypoglycemia or are otherwise feeling below par, only the most gentle techniques may be appropriate.

Any detoxification program should be overseen by a qualified health professional. Even diet change or eliminating recreational drugs from your life can be problematic, if not just in the way your body responds but also in managing and sustaining these life style changes. So approach these ideas with respect, and when you are ready, undertake them with commitment and appropriate help. In this section, we will discuss some of the most basic approaches.

Concerns regarding fasting. Although fasting has been in use for thousands of years as a successful detoxification technique in many cultures, we have not as yet found any fasting technique which we feel can be recommended with unquestionable safety for HIV positive people. Several studies have shown that water or juice fasting can be detrimental to the body's ability to support detoxification and excretion of toxins. Detoxification is an energy-requiring process that puts a metabolic burden on the body, so instead of decreasing nutrient support, a focused, high-impact source of nutrients is essential. HIV infection is a catabolic, not an anabolic, disease. - the HIV disease process already has HIV positive people in effect on a forced fast. Fasting results in increased catabolism of muscle over fat: since the body needs a

continual source of amino acids for production of new enzymes and proteins, when amino acids are not available from the diet, the body starts breaking down its own protein reserves – muscle.

Water fasting is of particular concern since it also means a decreased intake of the nutrients containing the necessary Phase II cofactors, which may lead to unbalanced detoxification. This has been demonstrated in animal models, in which water fasting results in decreased glutathione levels, and animals on water fasting programs have been shown to have an enhanced susceptibility to toxicity symptoms after a toxin exposure. Fasting also leads to an over-induction of some Phase I enzymes, promoting even more unbalanced detoxification. For these reasons, in most cases of HIV infection, it is inadvisable to fast or diet with the intention of losing weight except under the strict supervision of a knowledgeable physician.

Exercise regularly to support ongoing detoxification: Walking aids detoxification in the lungs and muscles. Many yoga postures are designed to help in detoxification of particular organs of the body, especially the twisting postures. Tai Chi and chi-kung (Qigong) are also beneficial in this regard.

Body Work. Various methods exist to remove strain and pain from various parts of the body where toxins may find a preferential home. Chiropractic techniques can help work out the kinks and improve spinal function. Various types of massage and touch therapy can further help, improving the flow of lymph and blood and nerve signals. (And they may also help to release bottled up emotions that are a more ethereal but just as powerful "toxin" in the body.) See *the Health-Enhancing Body Work and Energetic Therapies* section below for more specifics.

Skin - Sweating and Dry Brush Massage. The skin is the body 's largest organ of excretion. Increased perspiration resulting from strenuous exercise or taking steam can help rid the skin of toxins. In addition, dry brushing before bathing helps to remove dead skin and other unwanted bacteria and toxins. Such brushing has been used in a variety of traditions, including by the Finns, Russians, Turks and other traditions. Turks use coarse towels to rub the skin while Russians and Finns use birch twigs to open pores.

The only detoxification program that has proven successful in removing fat-stored toxins from the body is hyperthermia, or heat stress detoxification. The steam room aids in detoxification by creating artificial fever. it speeds up circulation and body cell metabolism thereby causing toxic wastes to be expelled through the skin. Heat stress can also remove calcium deposits from the blood vessels and break down scar tissue from their walls. Hyperthermia can also remove chemicals such as DDE (a metabolite of DDT), PCBs (polychlorinated biphenyls), and dioxin from fat cells.

Hyperthermia or heat stress detoxification can have a beneficial effect on numerous body systems, including the cardiovascular, endocrine, neurological, neuromuscular, bronchopulmonary (lungs), blood, skin, and immune. (Don't confuse this with the controversial and costly procedure of removing blood, heating it and returning it to the body. This procedure does not seem very useful.) This process may be combined with other programs but should be medically supervised; removal of certain toxins can result in potentially adverse effects, especially to the liver or kidneys.

For best results, wrap yourself in a clean towel and sit or recline in a hot, but not painfully hot, steam room. Gently massage any painful areas. Cool gradually after leaving the steam room. To close your pores after a steam room visit, shower with cold water. Drink plenty of purified water while in the steam room. A typical stay should not exceed from 5 to 10 minutes. (Optional: Take 500-1000 mg of niacin to dilate your capillaries, if you choose.)

CAUTION: Numerous germs can be spread in the steam room. Therefore, avoid going into crowded steam rooms. Further, the steam room can have deleterious side effects for people with cardiac or respiratory problems. If you have health problems, do not use the steam room without the express consent of your doctor.

A simple at-home procedure is to take a very warm (not hot) bath with salt and soda. Put one half cup of each into the water and soak for 10-30 minutes. Herbs and aromatherapy essential oils can also be added if desired. (See the *Baths section of Muscle Aches and Pains* below.)

Intestinal Cleansing. Discuss with your doctor ordering tests from a reliable lab for Cryptococcal infection, Cryptosporidium, Entamoeba histolytica, and Giardia lamblia. These common parasitic infections of the GI tract may be spread by ingesting undercooked meat or raw vegetables, sex, and unsanitary food handling. Though they pose little or no problem in most otherwise healthy individuals, they can spread voraciously and seriously weaken the bodies of immune-compromised individuals. Once detected by a reliable lab, your doctor can prescribe any of a variety of medicines that can eliminate these parasitic infections from your body. Please see the *Parasites section of Diarrhea* below for less toxic and more effective prescription medications for parasites.

Another way to clean out the intestinal tract is to use a fiber product such as Wachter's Sea Klenz Intestinal Cleanser, a specifically formulated, all natural, non-habit forming sea vegetation used as a fiber supplement. The original formula contained sodium alginate, psyllium husks, dehydrated lemon powder, cereal salads and a Wachter's blend of sea plants. Other fiber products may work as well; look for one containing both water soluble and insoluble forms of fiber. Insoluble fiber is found in wheat bran, whole-wheat products, popcorn, nuts, seeds, corn, and raw fruits and vegetables; soluble fiber is found in oat bran, apples or applesauce, oatmeal, citrus fruits, beans, apricots, pears or peaches without the skin, and many other vegetables and fruits. Those currently suffering from diarrhea should emphasize soluble fiber and avoid insoluble fiber, which can be too irritating and may worsen the diarrhea.

Lymphatic Cleansing.

* **ARM SWINGS:** To aid in lymphatic cleansing, swing both arms from above the head to behind the back, like downhill skiing 200 times per day.

* **DEEP DIAPHRAGMATIC BREATHING** (such as that taught in most Yoga classes) stimulates the cleansing of the lymph system by creating a vacuum effect which sucks the lymph through the blood stream. This can increase the rate of toxic elimination by as much as 15 times the normal pace.

* **LYMPHATIC MASSAGE** as well as osteopathic and chiropractic lymphatic drainage techniques can enhance lymphatic drainage and aid in detoxification.

Chelation Therapy. Heavy metals such as lead and mercury and other toxins can depress body temperature, suppress activity of the glandular system and slow down the immune system, making people susceptible to chronic infections, yeast overgrowth and even cancer. To determine whether you have an excess of heavy metals, have your physician test for the level of lead, mercury, and other heavy metals. Hair analysis can be helpful in making such a determination. If a hair analysis performed by your doctor reveals high levels of mercury, consider having your dentist remove mercury amalgam fillings from your teeth and replace them with composite plastic fillings. Also, avoid eating tuna fish, which is usually high in mercury content.

In chelation therapy, a synthetic amino acid known as EDTA (ethylenediaminetetraacetic acid) is administered intravenously and binds to various toxic metals in the blood, such as lead, cadmium, and aluminum. The toxins are then flushed from the body through the kidneys. EDTA chelation therapy has been reported to reduce susceptibility to certain cancers. A lot of people have chosen EDTA chelation therapy over bypass surgery to remove calcium plaque from the arteries and improve blood circulation to the heart.

Garlic and buckthorn can also remove metals from the body. Another substance that can remove metals from the body is pectin. Pectin is found in apples and in the rinds of lemons, oranges and grapefruit. Apple pectin and citrus pectin are sold in health food stores in both tablet and powder form. N-acetyl-cysteine (NAC) also acts as a potent chelator of some toxic metals. Please review the Treatment Information Sheets in TIP on NAC and Glutathione.

Organ-specific Detoxification

THE LUNGS HIV disease itself appears to cause damage to the lungs through overactive immunological mechanisms. Increasing the glutathione content of the body's cells may help improve lung function. Please review the Information Sheets on NAC and Glutathione in TIP for more information.

Not smoking is of course the first best way to protect lungs. Increased respiration resulting from strenuous exercise can help rid the lungs of toxins. See the section on Exercise for specifics. Blowing into a balloon strengthens and tonifies the lungs, helping to expel mucous.

If you have a lung infection, "steam-cleaning" the lungs with white oil vapor can help. White oil may be available at your local health food store; it is an Ayurvedic formula that is an infection-fighting combination of plant oils see Scott Gregory's book.) Bring 4-5 cups of distilled water to boil in a non-metallic pan with a lid. Place the pan between your legs, remove the lid and . Put two drops of white oil into the boiling water and breathe the vapor for 10 minutes. It is an expectorant so mucous will leave the body. Then, go to bed.

THE LIVER Virtually every detoxification protocol listed in this chapter will help with liver detoxification. However, alpha lipoic (Thioctic) acid, NAC, glutathione and silymarin are especially noteworthy for their liver detoxification benefits. Herbs such as dandelion root, the Chinese blend Ecliptex and the Western herbal Yerba Prima product, Liv-Cleanse, are also useful interventions. (See the NYBC catalogue and specific Treatment Information Sheets on Alpha Lipoic Acid, NAC, glutathione and Silymarin for more information on these products.)

Silymarin has been shown to increase serum glutathione and glutathione peroxidase in patients with liver disease, and induce glutathione transferase activity in animals. It has also been shown to improve liver function in patients with liver disease from various causes, including those exposed to toxic levels of industrial phenolics such as toluene. Silymarin glycosides also support strong antioxidant activities.

Citrus fruits contain a phytochemical called *limonene* that boost the liver's detoxification ability. Eating oranges and tangerines and drinking orange juice (preferably fresh-squeezed and containing the pulp) regularly may increase your intake of limonene sufficiently to provide this help to your liver. Compounds called *indoles* found in cruciferous vegetables, such as cauliflower, broccoli, cabbage, Brussel sprouts, collard greens, and kale, also appear to stimulate detoxifying enzymes in the liver. Traditional medicine has long used **artichoke** extracts as a liver protector, and several bioactive elements in artichoke extract have been identified, including chlorogenic acid, cynarin, caffeic acid, luteolin, and Ferulic acid.

Especially for people who already have liver damage, be aware that certain herbs can cause liver injury.

These include amanita mushroom, chaparral (creosote bush, greasewood), comfrey, crotalaria (Ye Bai He), eupatorium, germander (this toxic herb is often substituted for skullcap so although skullcap itself is not toxic, it would be important to ascertain that any ingredient so identified be the real skullcap and not germander; if this is not possible, it is best to avoid either), groundsel (senecio longilobus), heliotropium, Jin Bu Huan (Lycopodium serratum), kava, ma huang, mentha pulegium, mistletoe, pennyroyal (squawmint) oil (hedeoma pulegoides), sassafras, senecio species, senna, and sophora.

In addition, Chinese herbal patent medicines, tonics, elixirs and prepackaged solutions are considered quite risky. Ingredient labels may be inaccurate, incomplete, or mistranslated, and dangerous herbs may be contained in the mixtures. The Oriental Herbal Association lists the following as potentially lethal ingredients in patent medicines: aconite or aconitum (causes paralysis and death if not highly processed before use), acorus (causes convulsions and death), borax (triggers severe kidney damage), borneal (triggers internal bleeding and death), cinnabar or calomel (a mercury compound), litharge and minium (contain lead oxide), myiabis (can trigger convulsions, vomiting and death), orpiment or realgar (contains arsenic), scorpion or buthus (causes paralysis of the heart and death), strychnos nux vomica or semen strychni (strychnine-containing seeds that can cause respiratory failure and death), toad secretion or bufonis (can paralyze heart muscle and lungs).

Please note that this warning does not include the homeopathic version of these herbs (e.g. aconitum, eupatorium, nux vomica). Many homeopathic remedies are made from poisons, but are so highly diluted that they pose no risk (and may be helpful if the correct prescription.) For a much more complete discussion of the possible toxicity of various herbs, including a discussion of particular formulas that may contain risky ingredients, go to www.hepcchallenge.org.

Since even normally beneficial herbs could cause liver damage in people who are allergic to or intolerant of them, it's always important to seek the advice of people trained in the use of herbs before adding them to your list of therapies. The best resources for this in the U.S. are usually naturopathic physicians since they have studied them in depth in their medical training. For Chinese herbs, practitioners of Traditional Chinese Medicine, often licensed acupuncturists, are usually best.

THE KIDNEYS Drinking lots of pure water helps the kidneys remove many of the toxins and poisons from themselves and the rest of the body as well. To keep your kidneys healthy, drink plenty of purified water throughout the day. This is particularly essential for people using the protease inhibitor indinavir (Crixivan®). It is recommended that HIV positive people drink at least 8 glasses of purified water each day. However, this standard recommendation doesn't take into account the fact that your body size affects how much liquid you need to consume for health. A better guideline for determining what quantity of water you should drink daily is to take your weight in pounds, divide it in half, and then drink at least that many ounces of water daily.

Additionally, people with low rates of metabolism and low body temperature tend not to feel thirsty and drink enough, and this causes toxins to build up in the blood and in the cells. For this reason, HIV+ people should make an extra effort to consume enough water, even when they are not thirsty. Also, fresh carrot, celery and parsley juice will speed up the removal of toxins from the body and is a rich source of nutrients and electrons that will increase energy levels quickly. Two to four full glasses a day are suggested, even more if on indinavir.

Decreasing Side Effects Via Changes in Approaches to HAART

The growing concern about all the possible drug side effects has led many to consider one or more of the following options to help limit such problems:

- delaying the start of therapy

- discontinuing therapy
 - changing the drugs being used
- and/or:
- doing therapy interruptions of various kinds

We will briefly discuss each of these below. However, as with all other parts of this guide, always remember that we are only providing information here, *not* making recommendations. Every person living with HIV should make all medical decisions in consultation with their licensed physician. And remember that AIDS information changes daily. If you are reading this more than ten minutes after it was written, there may be important new information on these topics that should be considered before making any treatment decisions. We strongly recommend seeking up-to-date information from all possible sources—and especially from your physician(s), AIDS newsletters and magazines, and the host of AIDS websites that cover all the latest—before making any decisions.

Delaying or Discontinuing Therapy. Because of their fears of the side effects and toxicity that they will have to endure, many people are considering delaying starting antiretroviral medications. In addition, people who have been on the drugs for varying lengths of time are considering discontinuing them in order to get rid of toxicity and side effects. We will discuss both of these options together because your decision on either should be considered on the basis of your immune function.

In terms of starting therapy, although new treatment guidelines and the opinions of most HIV experts have shifted toward delaying the initiation of treatment because of the toxicity it can cause, how long you wait must always be decided on the basis of your own individual condition, and most importantly where you are in terms of immune function. Where are your CD4s; are they stable or, if not, how rapidly are they dropping; are they approaching a point where vulnerability to opportunistic infections might be created; and so on.

If you are considering discontinuing therapy for any extended period of time, you must also ask what level are your CD4s; how long have they been there; and would even a small drop place you at risk of infections. And you must make sure that tests to show any changes will be done frequently so that therapy could be re-started if the CD4s drop too low. (Please see the Detoxification section of the NYBC Self-Care Guide regarding discontinuing therapy.) And what is *too low* in terms of either starting therapy or re-starting it after a discontinuation? Most expert panels now recommend that treatment be started no later than a CD4 count of 200 to 350 (with the specifics depending on which country's expert panel is making the recommendation). A moderately high viral load count is also considered justification for beginning, although many would now *not* begin therapy based on viral load alone. However, in this situation, there should be close monitoring of immune cell changes, and a sharp eye on symptoms, with a leaning toward starting therapy if either worsen.

Delaying starting drugs will obviously prevent the toxicity related to them for the months or years during which you avoid therapy. You won't get drug-associated diarrhea—or a host of other unpleasant drug-related symptoms—if you're not taking drugs. And since some of the most serious toxicities and conditions caused by drugs—especially lipodystrophy and the associated insulin resistance that could lead to diabetes, and high blood fats that could lead to heart disease—appear to be the result of cumulative damage (more likely with increasing time on the drugs), such a delay seems like a simple answer for avoiding such problems.

However, it is important to remember that, as discussed above, many quite serious symptoms may develop because of the effects of HIV itself. With any symptom, you must always look at all possible causes, and address each one in the most effective way possible. In some cases, this may mean starting HAART therapy in order to counter the symptoms being caused by HIV itself. Whether it's anemia caused by HIV's effects on bone marrow, or neuropathy caused by HIV's effects on nerves, or fatigue caused by a high viral load, or skin problems caused by HIV-induced inflammation, or any of the other countless symptoms that HIV+ people not on HAART may develop, the best solution may well be initiation of HAART. So delaying treatment may seem appealing as a way of lessening the cumulative effect of the drugs and, thus, decreasing the symptoms that result from that, but there are no simple answers here and all these possibilities must be considered when making treatment decisions. Just never, ever forget that creating the type of integrated approach to the disease discussed above may greatly help to decrease symptoms and slow disease progression.