



A HAIR STYLIST WHO WORKS WITH HAIR COLORINGS was suffering daily from headaches, joint pain, allergies, and painful premenstrual symptom. Some months, she went without a period at all. She and her husband wanted to have children. But she wasn't able to conceive and she blamed her menstrual irregularities. Her OB/GYN wanted to prescribe fertility drugs. But these frightened her.



A CRITICAL CARE NURSE IN A LARGE HOSPITAL in South Florida contracted hepatitis several years ago. She had been maintaining her health quite well until her mother became ill and passed away. The stress of watching her mom's health fail and managing her final affairs had taken its toll and her health was showing signs of marked decline.

As disparate as each of these cases might seem, they bear many underlying similarities. Both involved stressors upon the liver, limiting its ability to cleanse and detoxify the body. Both women, although not suffering from obvious liver disease, needed to support their liver health.

Both women required a full healing regimen—one that included supporting their liver health.

Why Your Liver is a Key to Health

IMPORTANCE OF LIVER TO OVERALL HEALTH

There are many reasons why we feel healthier when we begin using a nutritional supplement—such as **LiverX™** from Metabolic Response Modifiers (MRM)—to support our liver health. Many people think that **LiverX** is simply for people with liver disease. But, given what we are going through now on a daily basis in terms of our ecology and environmental pollution, many health experts consider liver support formulas to be as important as, say, taking a daily multivitamin.

In short, taking care of your liver means taking care of your health. If your liver isn't functioning optimally, it cannot help the body to detoxify the many toxic chemicals to which it is exposed. Nor can it help to maintain healthy cholesterol levels. The body's balance of key cholesterol-based hormones and precursors such as pregnenolone, estrogen and testosterone might even be affected.

"The liver," says Marilyn Sterling, R.D., a practicing nutritionist in northern California, "truly is remarkable—directly affected by nearly everything a person eats, drinks and breathes, it is still durable and capable of regeneration. Tucked away on the right side of the abdomen, the liver is the human body's largest internal organ, serving as command central for a variety of vital metabolic processes.

"The liver is the body's recycling center, where thousands of compounds are

taken apart and put together again as useful and essential body chemicals. Its several detoxification techniques include filtering large toxins from the blood, synthesizing and secreting bile to carry many impurities out of the body, and neutralizing unwanted chemical compounds in a two-step enzymatic process generally referred to as Phase I and Phase II detoxification. Toxins such as alcohol, urea from amino acid breakdown and environmental invaders are turned into benign by-products that are either used or excreted. It's no surprise then that when the liver fails, the only effective treatment is a transplant."

Because of the liver's essential role, it's paramount to protect it from the numerous lifestyle, viral, medical and environmental assaults that can accumulate and destroy its ability to function, she says.

XENOESTROGENS & LIVER HEALTH—THREAT TO MEN & WOMEN

In particular, both men and women are being exposed to estrogenic compounds, which can have a significantly damaging effect on liver health. Dr. Theo Colborn is considered to be one of the key individuals today to bring to our attention this post-*Silent Spring* assault on women's health with her book *Our Stolen Future* (Plume, 1997). These chemicals are known generally as xenobiotics and, more specifically, xenoestrogens. *Xeno* literally means foreign. A xenobiotic is a chemical for-

eign to the human body. A xenoestrogen is specifically a foreign chemical that mimics the female hormone, estrogen. Xenoestrogens are responsible, Dr. Colborn tells us, for a number of men's and women's maladies.

The omnipresence of such xenoestrogens should not be underestimated. According to Dr. Colborn and other health experts, these chemicals put men and women into a state of estrogen dominance that can cause a wide range of health maladies. Among women, these include fibrocystic breast disease, endometriosis, ovarian cysts, breast and ovarian cancer, and infertility. Among men, we see increased risk of testicular cancer, undescended testicles, low sperm production and prostate disease.

Our exposure occurs not only from foods contaminated with xenoestrogenic pesticides and growth stimulating hormones, but also from a wide range of consumer products. These include some types of highly flexible plastic linings in canned foods, breakdown products of detergents, paraben preservatives in cosmetics, and even spermicides.

THE LIVER IMPAIRED...

One of our liver's most vital functions is to convert metabolic products and toxins into safe, soluble substances that can be eliminated via the urine or the gall bladder into the intestines. The liver is essential to detoxifying many xenoestrogens and reducing estrogen dominance in both men and women.

A number of biochemical pathways are involved in detoxification, says Linda Lazarides, a leading British nutritionist and director of the Society for the Promotion of Nutritional Therapy.

“These are normally grouped into oxidation or reduction or hydrolysis reactions (Phase I) and conjugation reactions (Phase II). Phase I reactions are catalyzed by a group of liver enzymes scientifically known as cytochrome P450 oxidases (or P450 oxidases or cytochrome P450s). These enzymes introduce oxygen into the chemical structure of toxins or metabolites. Typically, by this process the toxins are converted into intermediate substances—alcohols and aldehydes—then into acids, which are water-soluble, and can be excreted via the urine.”

According to Lazarides, “The intermediate substances created during Phase I detoxification, which include reactive oxygen species (free radicals), can be extremely toxic—far more so than the original toxins. Their harmful effects are primarily controlled by antioxidant nutrients/enzymes: a plentiful supply of these substances is essential. Apart from free radicals, intermediate metabolites include chloral hydrate (which is identical to the knock-out drug often known as a ‘Mickey Finn’), epoxides, and endogenous benzodiazepines—substances similar to valium and other tranquilizers and sleeping pills.”



This makes it easier to understand how chronic fatigue, for instance, can develop when a toxic overload is present. This also helps us to understand why our liver demands extra nutritional support to quench and prevent the damage caused by these highly reactive and damaging intermediate compounds.

“The more P450 enzymes are induced in the liver, the more of the toxic intermediates will be present in the body,” says Lazarides.



P450 enzymes are induced by caffeine, alcohol, dioxin and other pollutants, exhaust fumes, organophosphorus pesticides, paint fumes, steroid hormones, and a variety of drugs including paracetamol (acetaminophen), diazepam tranquilizers and sleeping pills, the contraceptive pill and cortisone.

Unfortunately, many substances inhibit the action of P450 enzymes, including carbon tetrachloride and other toxins. Such blocking results in a buildup of more toxic substances. This buildup can cause estrogen dominance and even exacerbate fungal conditions such as intestinal overgrowth with *Candida albicans*. “The fatigue, foggy thinking and ‘brain fog’ linked with candidiasis may be due to an overloading of the detoxification system with aldehydes,” says Lazarides.

Other health experts report high cholesterol levels are often caused by liver dysfunction.

LIVERX FOR IDEAL SUPPORT

LiverX is one of the very best liver support formulas today. It contains powerful and safe liver support nutrients and botanicals. The formula is designed, in particular, to boost antioxidant levels within the liver, especially glutathione. To do so, however, we cannot just take straight glutathione because it is poorly absorbed. Studies have shown that supplementation with glutathione does not result in an increase of levels in the blood. Using precursors or building blocks such as **alpha-lipoic acid** and **n-acetyl cysteine (NAC)** is the approach nutritionists recommend for best results. **LiverX** contains both of these powerful antioxidant precursors.

“One of the most exciting discoveries made at the Packer Lab is that [alpha] lipoic acid supplements can significantly boost levels of glutathione in target tissues where it is needed,” says Lester Packer, Ph.D., director of the prestigious Packer Lab at UC Berkeley and author of *The Antioxidant Miracle*. “To my way of thinking the easiest and best way to maintain optimal glutathione levels is to eat foods that contain the building blocks of glutathione and to supplement with lipoic acid.”

Meanwhile, hospital emergency room staffs have long used intravenous NAC as a standard treatment for acetaminophen poisoning. Acetaminophen overdose depletes the glutathione vital to detoxification, while NAC replaces it.

Another key liver-health supplement is **milk thistle**. And with its

highly absorbable form of this herb, this is where **LiverX** really excels. According to Ralph Napolitano of LiverSupport.com, “Double blind studies on the effect of silymarin on toxic liver damage, chronic liver disease and disease caused by certain drugs have been reviewed by medical experts. They concluded that basic lab and clinical data suggests silymarin is a therapeutically useful medicinal plant product that stabilizes the cell membrane and stimulates protein synthesis, while accelerating the process of regeneration in damaged liver tissue, and that these effects are important in the therapeutic efficacy of silymarin.

“Over the past twenty-plus years, intensive chemical, pharmacological, and clinical research has confirmed

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Diet for a Healthy Liver

According to Richard N. Podell, M.D., clinical professor of family medicine at the UMDNJ-Robert Wood Johnson Medical School in New Brunswick, New Jersey and author of *Patient Power: How to Protect Yourself Against Medical Error* (Fireside, 1996), certain nutritional factors keep the liver operating smoothly and induce detoxification through enzymatic pathways:

- Garlic, legumes, onions and eggs—all sulfur-rich foods—enhance sulfation, which makes toxins easier to excrete.
- Broccoli, Brussels sprouts and cabbage enhance glutathione conjugation, a complex process of converting fat-soluble toxins to water-soluble ones for easier excretion.
- Green leafy vegetables rich in folic acid, whole grains and legumes rich in vitamin B₆, and animal products or supplements providing vitamin B₁₂ ensure adequate methylation, which inactivates estrogens and increases both bile and lipid flow.
- Nutritional yeast, whole grains, cabbage, citrus fruits and peppers provide the B vitamins and vitamin C necessary for acetylation, which helps the body eliminate sulfa drugs.
- Artichokes, beets, carrots, dandelion and herbs such as cinnamon, licorice and turmeric are also useful in maintaining liver health.

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mechanisms of action and therapeutic value of silymarin in a wide range of human liver disease, including toxic metabolic liver damage (such as fatty degeneration of the liver) and supportive treatment of chronic hepatitis and cirrhosis.

Silymarin, derived from the seeds of the plant (and most specifically, its main constituent, silybin) has shown both protective and restorative effects in liver disease.”

Unfortunately, the body’s absorption of milk thistle is usually very poor. The type of milk thistle used in **LiverX** is highly absorbable, which is important for optimal results. In fact, BioSorb™ is fivefold more well absorbed than typical milk thistle-based supplements. In fact, one study has shown that the specially processed milk thistle extract used in **LiverX** has even greater beneficial impact on liver enzyme functions in both experimental and clinical models.

“Literally hundreds of research studies, mostly in Europe, have confirmed the remarkable ability of milk thistle to protect the liver against virtually all types of damage: from accidental exposure to chemical pollutants, toxic side effects of medications, liver diseases like hepatitis and even the self-inflicted damage from overindulgence of rich food and alcohol,” says Napolitano. “The United States National Library of Medicine has catalogued more than 300 scientific studies of milk thistle and its active compounds in their medicine database.”

Milk thistle’s active ingredients can even stimulate liver cell regeneration after exposure to high levels of radiation.

HELP FROM AYURVEDA

The bitter rhizomes of *Picrorhiza kurroa* have been used for thousands of years in Ayurvedic medicine.

The major constituents in picrorhiza are glycosides. According to



milk thistle



Andrographis paniculata

experimental studies, picrorhiza has antioxidant actions, particularly in the liver. Picrorhiza increases bile production in the liver and has also been shown to protect animals from damage by several potent liver toxins, offering protection as good as or better than silymarin (the flavonoids found in milk thistle). Picrorhiza has also been shown to reduce formation of liver cancer due to chemical exposures.

Andrographis paniculata is used extensively in the Indian traditional system of medicine as a hepatoprotective and hepatostimulative agent. The aqueous extract of the leaves of this plant has traditionally been used for treatment of various liver disorders and jaundice.

CHOLINE REDEEMED

Only 15 years ago, nutritionists called lecithin and choline “health food supplements” with no clear nutritional purpose, reports David Canty, Ph.D., an assistant adjunct professor in the department of nutrition and food studies at New York University, reporting in the December 1997 issue of *Health & Nutrition Breakthroughs*. “This was because it was believed that people made adequate amounts of them in their own bodies, and no

diseases could be attributed to their deficiencies.”

Now we know that choline is not only an essential nutrient but that it is deficient in the diets of many people. Choline is necessary for cardiovascular health and memory, as well as liver function. Lecithin (which provides the body with choline) and choline itself “are important to liver function in humans as well,” he says. “Healthy adults fed a semisynthetic diet devoid of choline for a few weeks showed early signs of liver dysfunction. Individuals fed intravenously for long periods of time developed a fatty liver and liver cell damage. Supplemental lecithin reversed liver fat in these patients.

“Research by Charles Lieber, M.D., and colleagues at the Alcohol Research and Treatment Center, V.A. Medical Center, Bronx, N.Y., suggests lecithin may protect the liver in other ways besides providing choline. In two studies, baboons were fed diets high in alcohol with or without added lecithin for up to eight years. None of the supplemented animals developed liver fibrosis or cirrhosis, but about 80 percent of those not given lecithin did. An earlier study showed that supplemental choline did not protect the liver against alcohol. Test-tube studies showed lecithin increased the breakdown of collagen, which builds up in alcohol-induced fibrosis and cirrhosis. Lieber’s group is currently conducting a multicenter clinical trial of lecithin supplements in alcoholic patients.” ■

HEALTHY LIVING, HEALTHY LIVER

Don’t take your liver health for granted. If you use over-the-counter painkillers or prescription medications, use hormonal birth control, regularly consume alcohol, smoke or live in an urban area, your liver is especially at risk. Taking a good liver care support formula is essential. **LiverX**, with all of the nutrients and botanicals detailed in this article (plus additional vitamins), is certainly one of the best.

Dosage—Take two capsules daily with meals.

Availability—**LiverX** from MRM is available nationwide at natural health centers and from health professionals. Contact MRM directly to find a store near you. The toll-free number is (800) 948-6296.

