Liver support and cleansing are popular topics in alternative medicine. Liver support is perhaps one of the most widely employed therapeutic options in standard-of-care naturopathic medicine. It would seem that treating the liver is an integral step in the journey from disease to wellness for a huge range of medical complaints to the naturopathic physician. Liver cleansing has a rich historical background based in eclectic medicine and provides a foundation on which general health restoration may be founded. Despite this, liver cleansing remains a little-researched area of modern medicine. Scientific study of botanical medicines and a handful of nutraceuticals have provided sound evidence of liver condition-specific efficacy, yet no studies exist in which liver cleansing as a whole has been explored. The therapeutic success of liver cleansing at this time is mainly anecdotal; to bring this therapy into greater focus requires a case series or clinical study. What we do have is an increasingly growing field of research that is defining how liver-specific nutrients work as protective and restorative medicine.

Liver Cleansing Defined
Liver cleansing can be loosely defined as process in which items with liver-specific restorative benefits are taken orally by the patient, in order to assist with removal of stored chemicals that create negative health effects from within the liver, and to improve liver function so that the body as a whole can better utilize the organ for its physiologic purposes. Liver-cleansing protocols may also involve other therapies such as colonics, saunas, or dry skin brushing, all of which are integrated for a systems approach to treating liver conditions. The liver, being the primary organ of detox for both exogenous and endogenous chemicals, is itself affected by the toxicity and overall load of the compounds to which it is exposed, which is also affected by its immediate supply of nutrients and molecules needed for Phase I and II reactions.

Liver cleansing may be indicated as a result of environmental exposures, such as excessive prescription medications and other drugs (cigarettes, caffeine, alcohol, etc.), heavy metals, food additives, pesticides, herbicides, solvents, and any other chemicals for that matter. Liver cleansing is also indicated in chronic disease and other states of inadequate health, depending on the condition.

What are we talking about when we refer to a liver cleanse? What are we trying to accomplish, and which tools have the greatest efficacy? Liver cleansing is big business outside the clinician's office. A brief Internet search using one popular search engine and the term "liver cleanse" resulted in 2,130,000 results. A large number of these results - the first ten or so pages, anyway - refer to the infamous "gallbladder flush." The gallbladder flush carries a seemingly mystical notoriety on the multiple Internet pages professing its wonders, with many patients enthusiastically recommending the procedure after having experienced it themselves.

The gallbladder flush to which I am referring will produce multiple greenish "stones" after the person consumes varying combinations of olive oil, apple or grapefruit juice, water, and Epsom salts. Indeed, each Internet resource providing information also insists on selling its own special liver cleanse supplement that users are instructed to use along with the liver flush. While these sites are rampant, there are no studies that show any clear benefit from these cleanses. However, it is well-known among the scientific medical community that the "stones" produced from the infamous gallbladder flush are not cholesterol gallstones. It appears that there are only two case reports investigating the utility of the gallbladder flush; these were briefly discussed in this journal (November 2005). In short, one report reiterated the theory that the "gallstones" produced by the flush are merely an amalgam of the ingredients ingested to instigate the flush - in other words, no true gallstones were produced after the stones produced from the flush were
dissected. The second report verified passage of gallstones by comparing before and after ultrasound analysis of one patient’s gallbladder contents.\(^3\) It would appear the jury is out on the efficacy of the gallbladder flush using the aforementioned ingredients until more rigorous study can be undertaken.

**Liver-Cleansing Nutrients**

Fortunately, there is much more to liver cleansing than the general liver flush, although “flushing” the liver seems to be, in theory, an important step in maintaining and regaining liver health. If we are to accept the liver flush as a useful tool, the only benefit it does provide is the expelling of bile (and stones?) from the liver and gallbladder. It does not provide any direct benefit for the individual cellular mechanisms of the liver, other than possibly ridding the liver of bile (which is continuously manufactured), and the gallbladder also releases bile any time fats are consumed in the diet, regardless of plant or animal origin.

What works for “cleansing” the liver, and how can we describe it in more exacting words? The following are some of the more widely employed agents for use in liver health, be it for “cleansing” or “support.”

**Methionine:** This essential amino acid is often found in liver formulations. It can be considered a liver-defense nutrient, as its main role is to promote synthesis of the powerful antioxidant glutathione. In turn, glutathione can be used to prevent toxic liver damage from the drug acetaminophen. However, as an individual supplement, it can be cost-prohibitive. Another one of the metabolic end-products of methionine metabolism is the amino acid taurine, which is a major contributor to bile acid conjugation. Conjugation is the marriage of taurine to bile salts, which then allows bile to act as a detergent in fat absorption. Methionine has been linked to liver toxicity in those with severe liver disease, as well as in those undergoing long-term parenteral nutrition.\(^4\) However, these problems are seen with the use of excessively high doses of methionine that are far beyond those found in liver-supportive products.

**Choline:** Choline is a nutrient that is involved in liver fat metabolism. Choline can be synthesized in the body. Its main action in the liver is in fat transport; the action of choline is often referred to as “lipotropic,” meaning it assists with fat removal. Deficiency of choline contributes to liver disease in the form of fatty liver and resulting damage. While choline deficiency and resulting disease is rare, it is available in protein-rich foods such as meats, eggs, beans, and legumes, among others.

**Greater Celandine (Chelidonium majus):** This herb has a strong traditional use in liver disease. However, it is now more commonly used for cases of “indigestion” than for liver disease; it has recently been implicated as a causative factor in cases of hepatotoxicity.\(^5,6\) Older studies on Greater Celandine have shown it to be a potent producer of bile and pancreatic digestive enzymes.\(^7\) Proponents of its use have claimed the herb has two opposing actions: it is thought to relieve gallbladder spasms\(^8\) and to stimulate a hypo-functioning gallbladder.\(^9\) Other effects of Greater Celandine qualify as liver-protective; animal studies showed a protective effect of the herb when exposed to hepatotoxic agents.\(^10,11\) Use of this herb as part of a liver protective/cleansing plan should be undertaken by those with a thorough understanding of its safe-dosing use in liver-supportive protocols.

**Fringe Tree (Chionanthus virginicus):** This herb also has a strong history for treatment of liver conditions and was used as a choleretic, or bile flow stimulant. There are no modern studies looking at the physiologic basis for its use.

**Black Radish (Raphanus sativus):** The root of this plant will stimulate upper gastrointestinal tract secretions as well as bile flow. It is indicated in conditions of sluggish flow and generalized liver disease.\(^12\) Because it is a choleretic, it should be used with caution in gallbladder disease where stones are present. There are no clinical studies looking at the clinical efficacy of this herb.

**Burdock (Arctium lappa):** Burdock is thought to have strong antioxidative properties that lend to its hepatoprotective properties. Clinically, burdock has been shown to improve the biochemical and pathological markers (decreased cytochrome P-450, increased serum triglycerides, lipid peroxidation, elevated serum transaminase, and reduced NADPH-cytochrome C reductase) of liver damage induced by experimental exposure to ethanol and carbon tetrachloride.\(^13\) In a similar study looking at the hepatoprotective effects, burdock was also shown to protect the liver from the toxic metabolites of acetaminophen as well.\(^14\)

**Dandelion Root (Taraxacum officinale):** Considered an overall digestive tonic, dandelion is found incorporated in many liver-specific products. The use of this particular herb is heavily influenced more so historical use rather than the findings of modern study. Yet, this is another plant with emerging details that validate its historical use as a liver herb. Dandelion has been employed as a digestive tract herb, used for treating indigestion, gas, and anorexia. For liver-specific complaints, it is used for treating gallstones and as a bile flow stimulant. One constituent of the root, taraxacin, is thought to increase bile flow in laboratory studies.\(^15\)

**Milk Thistle (Silybum marianum):** Perhaps the most well-known and researched liver herb (also one of the top-selling herbs year after year in the US and elsewhere), milk thistle provides the foundation of all liver-specific treatment. The properties of this herb are best expressed as liver-protective; an oft-repeated benefit is the ability to prevent cellular damage from toxins by inducing changes in liver cell membranes. Milk thistle is also widely reputed as a
Liver cell regenerator, an exclusive property limited to this herb only. Silymarin, the active constituent in milk thistle, has the ability to inhibit the enzyme beta-glucuronidase, which prevents hepatic cellular injury by reducing this enzyme’s ability to convert glucuronide conjugates into toxic metabolites in the liver and intestine.16

Turmeric (Curcuma longa): Turmeric is a traditional Ayurvedic liver herb that purportedly stimulates the gallbladder and has antioxidative, anti-inflammatory, antifungal, and antibacterial properties. The main active constituent of turmeric is curcumin, a yellow-colored pigment. The anti-inflammatory, immunostimulatory, and anticancer effects of this herb are well-known and make it the subject of ongoing research.17-19 Turmeric is also the subject of much investigation into its liver-protective qualities. Curcumin is showing promise as a preventive agent in alcohol-induced liver enzyme elevation20 and in experimentally induced liver cirrhosis.21 Investigators conclude that curcumin exerts its protective effects by improving antioxidant status and decreasing oxidation of fats in the liver.

Artichoke (Cynara scolymus): Artichoke is a potent herb in the realm of cholesterol metabolism and liver health. The main active constituents of artichoke, cynarin, chlorogenic acid, caffeic acid, and polyphenol and flavonoid compounds are thought to contribute to the plant’s ability to regenerate liver cells, lower serum cholesterol and triglycerides, and act a digestive tonic.22 And the prior reference claims that artichoke is an effective choleretic as well. Artichoke is seemingly incorporated in relatively few liver products; however, from the data revealing its effect on overall cholesterol metabolism and choleretic effects, it may make a useful addition to any liver protocol.

Liver Cleansing

Indications for a liver cleansing protocol are varied. However, as stated earlier, addressing the liver is part of a foundational approach to overall health and thus should be considered by clinicians as part of a treatment plan. An important aspect of preparing for a liver cleanse is to address the purpose(s) behind it. Liver protocols result in the most success when lifestyle alterations (diet) are continued beyond the period of treatment. Simply following a liver-specific protocol for a week or two will provide no real long-term relief if permanent changes are not made.

There are numerous, high-quality, liver-specific products available today. This author advises that liver-supportive protocols only be undertaken under the care of a clinician with an understanding of the objectives behind liver support. Adequate preparation for a liver protocol should be undertaken. A shift in dietary habits should precede the cleanse by one to two weeks. The cleanse itself will be rigorous enough, without the added “shock” of sudden discontinuation of habitual foods rich in fats, sugar, and caffeine. Other important aspects of a liver cleanse include a fiber supplement, colonic, saunas, and exercise. Each of these are important contributors to assisting the body with elimination, which is an integral part of any liver protocol. Frequency of said protocols will vary on a person’s state of health. Typically a period of several months in between each cleanse is advised. These protocols are typically rigorous, and those undergoing them may be more compliant and derive the greatest benefit.

Notes
