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ASK THE DOCTOR
*Answers to Your Health Questions*


# Liver Cleansing and Health


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Most of the time, we forget about the liver. Unless a medical condition brings it to our attention, the liver simply goes about its business with remarkable agility.

But we can't deny the central role it plays in our health. For centuries, traditional medical systems around the world have regarded the liver, even more than the heart, as the seat of physical and emotional health. Medical systems in Tibet, India and China all recognized that the health of the liver reflects the health of all body systems. And, admittedly, it has taken Western medicine some time to catch up with these ideas. One pioneer, Dr. John Harvey Kellogg (co-developer of the corn flake as breakfast cereal), gained fame for his theories on healthy living, many of which were years ahead of his time. He firmly believed in the theory of "autointoxication," in which diseases are caused by toxins from the intestines being reabsorbed rather than excreted out of the body. While this idea has been debated in conventional medicine, it has been revisited in slightly different form in recent scientific literature in connection with illnesses such as Parkinson's disease.[1-3]

In this edition of Ask the Doctor, we're going to look at how detoxification and a liver cleanse with natural ingredients can help you preserve the health of your liver for years to come.

***Q. So, what exactly is a liver cleanse? What does it do?***

**A.** A liver cleanse can prevent and repair liver damage. In short, it:

1. Supports the health of the liver
2. Supports Phase I and Phase II detoxification mechanisms
3. Increases bile production and bile flow
4. Increases gallbladder response
5. Adds fiber to absorb bile and toxins (preventing re-absorption)
6. Transports bile and thus toxins out of the body

First, let's talk about the liver and its role in our health overall.

***Q. What are the roles of the liver?***

**A.** The liver is one of the most complex organs in the body. It performs over 500 metabolic functions, which are critical for the health of the entire body; to make an analogy, think of the liver as a computer's hard drive, and the brain as a computer's processing chip. The brain processes, but doesn't necessarily do the hard work of running the body, that is left to the liver.

***Q. So what does the liver do?***

**A.** Everything we eat, drink or absorb through the skin is processed by the liver. Because of this, the liver plays a vital role in the body's detoxification process, requiring it to be constantly exposed to harmful substances.[4]

The liver detoxifies the body of these poisonous substances by transforming and removing toxins and wastes. There are five main sources of body toxins and wastes that the liver deals with:

- Toxins from food (traces of pesticides, preservative, flavoring agents, etc.)
- Toxins from alcohol
- Toxins from outside (drugs, adulterants, and environmental pollutants)
- Internally-produced substances, such as hormones, that are no longer needed
- Nitrogen-containing waste left over from protein re-use and energy production


*cont. next page*

These toxins and wastes are converted into less harmful substances by the liver and then eliminated from the body.[4]

This two step process, (called "Phase I" and "Phase II" detoxification) can require different nutrients in order to convert toxins into less harmful substances, although there is some overlap. For instance, Phase I uses oxidation as a way of breaking down toxins, so antioxidants and milk thistle are crucial. They ensure that this stage of detoxification runs smoothly and doesn't lead to damaged cells.[5,6]

Phase II detoxification is also called the conjugation pathway. Liver cells adding substances to a toxin, in order to render it less harmful. Glutathione and calcium glucarate are two nutrients that are extremely valuable to this process. Again, antioxidants are important here, as they continue to neutralize the free radicals generated by the first phase. Phase II detoxification also turns fat-soluble toxins into water-soluble material that is more easily transported by bile and excreted by the body.[7-10]

***Q. What else does the liver do?***

***A.*** The liver is responsible for many other actions, including:

- Producing compounds to keep the blood from abnormal clotting as it moves through your veins.
- Removing fructose and galactose from carbohydrates, and converting them into glucose. The glucose can be used immediately, or the liver can convert it to glycogen, storing it until the muscles need energy.
- Synthesizing proteins and cholesterol and converting carbohydrates and proteins into fats, which are stored for later use.
- Making blood protein and hundreds of enzymes needed for bodily functions.
- Producing urea, while breaking down proteins, which it synthesizes from carbon dioxide and ammonia. It is eventually excreted by the kidneys.
- Storing critical trace elements such as iron and copper, as well as vitamins A, D, and B12.

But when considering the role of the liver in ridding our bodies of toxins, one of its most important jobs is producing bile, which is then stored in the gallbladder until it is needed.[4]

***Q. Why is bile so important?***

***A.*** Bile has two main functions in the body: first, it helps to emulsify fats, and second, it helps carry toxins out of the liver and into the gastrointestinal tract. When food moves into the duodenum (small intestine) from the stomach, the gallbladder releases bile, "chasing" after the food to break down fats and fat-soluble vitamins. In addition to carrying enzymes that help digest fats, bile transports toxins from the liver to the intestines so they can be excreted as part of fecal matter when you have a bowel movement. Bile is the crucial transport vehicle, a "garbage truck," for carrying toxins from the liver into the gastrointestinal tract for excretion.[4]

***Q. What natural ingredients make a liver cleanse effective?***

***A.*** Specific herbs can enhance bile production and bile flow and because of this, are known as choleretics. Again, bile is the transport medium for toxins. So, any herb that helps stimulate bile flow is really helping the liver to "take out the trash."

One of these herbs, milk thistle (Silybum marianum), has been a recognized remedy for liver problems since the days of ancient Rome.[11]

Milk thistle extract contains a beneficial compound known as silymarin, thought to be responsible for protecting the health of the Kupffer cells, specialized liver cells responsible for removing bacteria, old blood cells, and other toxins from the liver's blood supply. Milk thistle also acts as an antioxidant, scavenging free radicals produced during Phase I detoxification. Laboratory studies have found that it can raise the levels of glutathione-a very powerful, naturally-occurring antioxidant—by as much as 50%![6,12-13]

Milk thistle is powerful. It actually helps the regenerative abilities of the liver by assisting the organ in "rebuilding" itself. It is also a potent antidote. Early experiments with milk thistle found that it protected the liver against poisoning by known toxins, such as the death cap mushroom (Amanita phalloides). In Europe, milk thistle compounds are given intravenously in emergency rooms to fight accidental Amanita poisoning.[14-17]

But milk thistle fights against chronic, long-term poisoning, too. It displaces toxins that try to bind to the liver, and neutralizes those that have already penetrated the cells. For this reason, milk thistle is considered especially helpful in treating alcoholic liver disease, not just detoxifying the everyday stress our bodies face.[18,19]

One of the most important things to consider when using milk thistle is that it be bound to phospatidylcholine, a naturally occurring substance found in soybeans, egg yolks, and some vegetables. Research has shown that the bound complex is much more bioavailable; it can dramatically improve blood levels and efficacy of the herb.[20,21]

***Q. Do you think turmeric is beneficial for the liver?***

***A.*** Recent news headlines have been filled with reports on the benefits of turmeric. This spice, once best known for its role in flavoring curry, has now been studied for everything from Alzheimer's to pain relief.[22,23]

More recently, though, turmeric has been investigated for its ability to stimulate bile flow, and support the pancreas specifically and the gastric system in general. It may even help prevent the diet-induced condition known as "fatty liver disease."[24,25]

Other research has shown its ability to enhance the activity of glutathione S-transferase, an enzyme responsible for linking glutathione (that natural antioxidant also boosted by milk thistle) with toxins to help remove them from the body.[25,26]

***Q. What other nutrients can support healthy liver and bile production?***

***A.*** Calcium D-glucarate is a compound found naturally in many fruits and vegetables, including oranges and leafy greens.[10]

It is very important in phase II detoxification. As it does for a variety of toxins, calcium D-glucarate also helps excrete harmful "spent" estrogen, a key reason it's often included in breast-cancer preventative regimens.

Calcium D-glucarate stops an enzyme called beta-glucurodinase (a Phase II reaction) from breaking the bonds of glucuronic acid. In the liver, glucuronic acid binds toxins (including excess estrogens), neutralizing them so they can be transported by bile through the digestive system.[10,27]

The presence of beta-glucorodinase in the digestive tract reverses this process and sends the toxins back into the blood stream where they can cause harm.

Additionally, many fairly common herbs have a long history of use supporting the liver and healthy bile production and flow. Dandelion (Taraxacum offinale) root extract, also commonly used as a diuretic to help reduce fluid retention, is just one example. Burdock, (Arctium lappa) considered by many to be an all-too-common roadside weed, is actually a traditional ingredient used in many cleansing supplements and regimens.

Burdock acts as both an anti-inflammatory agent and an antioxidant, scooping up free radicals before they can damage cells, especially cells in the liver. Burdock root extract seems especially helpful in reversing, or at least stopping, the damage done to liver cells by alcohol. This hepatoprotective (liver cell protective) action also increases glutathione, a powerful natural antioxidant produced in our own bodies.[28-33]

Artichoke (Cynara scolymus) helps keep lipids, fatty substances in the blood, from accumulating in the liver, and stimulates bile flow from the gallbladder to the intestines. Artichoke leaf contains powerful plant compounds called phenolic acids. Of these phenolic acids, caffeoylquinic acid (also called chlorogenic acid) is one of the most potent-and the one most responsible for its liver-protective ability.[34-37]

Boldo, (Peumus boldus) is an evergreen native to Chile, Peru, Argentina and many of the higher elevations of South America. Traditionally, boldo was used by indigenous peoples to treat a variety of disorders, including problems with the liver, gallbladder and prostrate. Current research has mirrored much of this. Many studies within the past ten years have zeroed in on boldo's effect on gallstones, liver protection and intestinal support.[38-40]

Boldo seems to support the liver by helping it maintain proper enzyme levels, which provide protection against toxins. It also encourages the gallbladder to release bile, helping move toxins through, and then out of, the body.[38]

***Q. What are some other things to think about if I am considering a liver cleanse?***

***A.*** While we have talked about the benefits of herbs and other nutrients for liver detoxification, we should also discuss the role of phytosterols and fiber in promoting an effective cleanse.

The recognized value of phytosterols (literally, "plant sterols" or "plant fats") is becoming more mainstream all the time, they're even showing up in margarines and other "functional foods." Getting them in a supplement is not only handy, it cuts down on the inevitable calories added to your diet by eating them in the form of foods. One of the greatest benefits offered by plant sterols is their ability to help lower cholesterol levels.

And, while we know that phytosterols can block cholesterol from the diet, there is research that suggests it can also block existing (endogenous) cholesterol from being reabsorbed as well.[41-46]

That's why the combined effect of phytosterols with a good, viscous fiber blend, provides such a winning combination. The fiber grabs that cholesterol, binds it, and transports it out of the body.[39-44]

***Q. Why should fiber be a part of a liver cleanse?***

***A.*** Fiber is one of the most underated health food supplements. It has an incredible range of health benefits – one of the most important being its role in the elimination of toxins. Toxins are carried to the gastrointestinal tract by bile. Unless soluble fiber is present in the intestines, the bile (and toxins) will be reabsorbed back into the circulation. Soluble fiber binds the bile and excretes it, along with the toxins it carries, out of the body.[47]

But fiber also appears to have very specific benefits regarding liver health. Fiber helps the liver to recover faster from fatty liver disease, and aids the rebuilding of liver tissue.[48]

Scientific and clinical studies show that fiber, specifically oat fiber, increases bile acid excretion and reduces levels of deoxycholic acid. Deoxycholic acid has been implicated in gall stone formation and lesions on the liver. In a clinical study, oat fiber increased bile acid excretion twofold and decreased levels of deoxycholic acid by 240%.[49-51]

***Q. Are some types of fiber better than others?***

***A.*** Yes. While all fiber can be beneficial, not all fiber is created equal. Some fibers are great at helping the body excrete cholesterol, but only so-so when it comes to cleaning out toxins. After all, it's not the amount of toxins that leave the liver when cleansing, but the amount that is ultimately excreted from the body. Luckily, there has been some pretty compelling research into two types of fiber with a combined effect that acts as a knockout punch to bile and cholesterol.

One of these fibers is very well known for its health benefits, oat beta-glucan. Oat beta-glucan is the soluble fiber of oat bran, and has been a staple of natural LDL cholesterol reduction for years. In fact, in one clinical study using oat beta-glucan, LDL cholesterol levels dropped 9% in just four weeks, without any drop in HDL (good) cholesterol.[52]

But oat beta-glucan isn't just a cholesterol-fighter. Research also shows that it does an excellent job increasing bile excretion, further helping to detoxify the body.[53]

Because oat beta-glucan is a soluble fiber, it increases the binding of bile acids in the intestines, which prevents bile from returning to the liver and maybe taking the toxins along as well.[54]

Another fiber, glucomannan, also has an amazing ability to lower LDL cholesterol. In fact, two clinical trials show glucomannan lowering cholesterol by 20% to 30%, in just 8 weeks.[55-56]

Glucomannan fiber comes from konjac-a tuber native to Asia that has been used to make everything from jellies to noodles. Not only is konjac an excellent fiber for reducing cholesterol, (reducing it by 20% in 8 weeks, much like oat beta-glucan) but like the best fibers, it enhances bile excretion and balances glucose levels.[55]

Recent research shows that konjac and oat beta-glucan work extremely well at supporting bile excretion. When combined, they showed stronger bile-binding effect than other soluble fibers either alone, or combined with guar gum-up to three times stronger, in fact.[57]

***Q. How long should a liver cleanse last?***

***A.*** The best liver cleansing products should only take up about 2 weeks of your life, you shouldn't feel compelled to follow a 30-day cleanse to get results. Additionally, many cleanse programs don't include fiber as part of their product. The only way to ensure liver cleanse effectiveness is to make certain that fiber is included as part of the program.

***Q. Who should not follow a liver cleanse?***

***A.*** For most people, detoxification programs are very safe. However, pregnant or nursing women should not use detoxification products. Also, because the ingredients in a liver cleanse activate the liver and gallbladder, those with known or suspected gallstone concerns should also avoid liver cleanses.

Detoxification also puts a little additional stress on all the detoxification organs, not just the liver. Because our kidneys also support detoxification, any individual with kidney disease or poor kidney function should check with their doctor before trying any cleanse, including a liver cleanse.

***Conclusion:***

The liver is indeed an amazing organ. Its ability to regenerate is matched only by that of the blood and skin.

■