

Liver Toxicity 101 & the P450 Pathway

Just the Basics

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The liver is the second largest organ in the body (skin is the first largest). Surprising, few people know about the liver and its importance to health and well-being. This article will discuss the functions of the liver, the challenges it faces, and what can be done when something goes awry with this very important organ.

The Liver

The liver is the second largest organ in the human body, and it is one of the five vital organs—meaning the body cannot survive without it. Situated below the lower part of the right ribcage, the liver is about 8 ½ inches in diameter, boomerang shaped, with the adult liver weighing about 3 ½ pounds. The liver conducts several hundreds of functions every second; it metabolizes nutrients and substances, helps with food digestion, and cleans the blood. It also stores many vitamins and minerals and helps to regulate the body's sexual hormones. Its biggest function, however, is to clean the blood.

The condition of the liver is often ignored until something is discovered to be wrong with the liver. The most common “condition” to affect the liver is TOXICITY, as defined in the *Taber’s Medical Dictionary* as “being poisoned.”

All blood that circulates throughout the body passes through the liver for cleansing. The liver is one big cleaning organ, among other things. Whenever there are substances that may be harmful to the body, the liver takes them out of the blood. The liver then takes these harmful substances and tries to convert them into a substance that is less toxic or acceptable to the body. If the harmful substance cannot be converted, the liver either puts it into the digestive system for flushing out of the body through stool, or puts it back into the blood stream to be flushed out of the body through urine (most often). On occasion, the liver stores the substance to keep it from damaging the other vital organs (brain, heart, lungs, and kidneys). Stored substances either stay in the liver (in fat deposits) or are put into fatty deposits in the body (such as the fat around a person’s waist).

Challenges of the Liver

As the liver cleans all the blood, when a person takes in chemicals that can harm the body, the liver must take them out. **One of the chief offenders to the body is medical drugs.** All medical drugs that are put on the skin, inhaled, injected or

swallowed find their way to the liver for processing. The most common liver pathway that breaks down drugs is P450.

When a toxin enters the pathway, the liver analyzes its composition and determines how much of that toxin the body can keep without it causing damage to some vital organ. The pathway then releases that amount of the toxin unchanged. With the balance of the toxin, the pathway tries to reshape it so it'll be less toxic. It is then put back into the bloodstream and sent to the kidneys where it is taken out of the blood and put into urine for excretion from the body.

The majority of medical drugs are processed through the P450 pathway prior to entering the bloodstream for use. Some common exceptions are aspirin, narcotic medication and injected insulin.

What Toxins Does the P450 Pathway Convert?

The P450 pathway has quite the task ahead of it on a daily basis because chemicals and toxins are ingested in food, the air a person breathes, the water a person bathes in, and in the medications and supplements taken. Consider anything that does not occur naturally (or in its natural form) as something that needs to be broken down. As the P450 pathway is the most common pathway, nearly every toxin sees that pathway.

Diet: Pick up any processed food jar, can or box and read the label. How many substances are you able to pronounce? Nearly every processed food contains substances to increase shelf life, enhance flavor, or make the item quicker for preparation. Every non-natural substance must be processed by the liver. It takes a lot of effort for the liver to process a lot of substances, only some of which are allowed into the body. Remember, some substances that cannot be broken down easily are placed in fat to await a day when the liver doesn't have so much work; then the substances will be taken out of the fat and returned to the liver for processing (often the liver never gets the chance to process them).

NOTE: Everything unnatural gets sent to the liver, this includes MSG and non-sugar sweeteners. Many people have the misconception that MSG (monosodium glutamate), sucralose (Splenda), aspartame (NutraSweet) and the like are safe to consume and don't lead weight increase. However, these three items listed are very difficult for the liver to process, and are most likely to find their way into fat storage, even more-so than some medical drugs.

Air: The air a person breathes contains many toxic chemicals that find their way into the bloodstream through the lungs. Smog, ozone and chlorine (from showering) are all toxic to the body, especially to the brain; therefore, the P450

pathway computer cannot allow them to float freely in the bloodstream. If you live in a city and/or take a lot of showers, your liver has a lot of extra work ahead. If you are a smoker or are exposed to second-hand smoke, your liver will have a lot of work as well.

Water: Water quality has been an issue in many industrialized cities for many years. Tap water contains many substances toxic to the body, including fluoride, chlorine, ammonia and medical drugs. All of these substances must be processed by the liver to make them safe for the body or to be flushed from the body.

Medical Drugs: Only aspirin and true narcotic drugs (morphine and those derived from morphine) are not processed right away by the liver (that comes later). Every other medical drug that enters the bloodstream must be processed by the liver before it can be sent to the body for use. Sometimes the liver allows a little; sometimes it allows a lot. For those taking drugs daily, the liver becomes so busy processing these drugs that it doesn't have time to do its daily tasks, so some of the drugs slip through unprocessed; sometimes the toxins from other sources get put into fat instead of being processed. Medical drugs are the number one non-natural toxin for the liver to process.

The majority of medical drugs are flushed from the body in its unchanged form; it is estimated that 70 to 90% of medical drugs are not used by the body but are flushed away when the liver cannot alter them.

Natural Supplements: Although natural supplements are “natural,” most supplements contain either synthetic components or substances in greater amounts than exist in nature; therefore, they are often sent to the liver for processing just as if they were medical drugs. The most common pathway for natural supplements to be processed is P450, the same as medical drugs. Many people feel that “mega-dosing” or taking a handful of supplements several times each day isn’t harmful to the body because the supplements are natural. This is FALSE. Herbal supplements and vitamins and minerals (in excess of what occurs in nature or in an unnatural form) need to be processed by the liver just as if they were medical drugs. Taking a handful of supplements can harm the liver as much as taking medical drugs.

When the P450 Pathway is faced with processing a drug or a supplement at the same time, the liver usually chooses the one that’s more natural and less toxic. The toxic substance (usually the drug) gets “flushed” away or stored into fatty tissue to be altered later by the liver.

Alcohol: Most people who consume a vast amount of alcohol watch for signs of liver problems, the most common being cirrhosis (hardening of the liver). As most alcohol is not in its natural form, this too gets sent to the liver for processing.

What Common Dangers Can Occur to the Liver?

One problem that occurs is drug-drug or supplement-drug interactions. The P450 pathway is responsible for breaking down, converting, and/or sending for elimination the majority of drugs and natural supplements consumed by a person. Most interactions occur in the liver when the P450 pathway is busy processing a drug, for example, and another drug or supplement enters. As natural supplements take precedence over drugs, three things can occur: 1) the drug is rapidly moved out of the pathway, causing a drug spike in the blood; 2) the drug is rapidly moved into storage, thus causing the drug to be less effective; or 3) the liver experiences a “fight” and both substances are kicked out, causing the drug and the supplement to not find its way into the blood stream to be of use.

Liver Toxicity is very common. Toxicity occurs when the liver becomes overloaded with toxins. These toxins can come from the diet, water, air, drugs, etc. It can also occur when drugs and supplements interact and the P450 pathway

has to kick them out—they usually go into fat cells for storage until the P450 Pathway isn't busy (so they can be processed)—this very rarely happens.

When the liver is toxic, it cannot process toxins as it used to. Consider when you are tired—do you not cut corners on projects? Get fast food instead of taking the time to cut up carrots and cook chicken? Drink your coffee cold instead of warming it up?

In essence, the liver does the same thing. When it is toxic, it is tired because it has worked so hard to keep up with the demands placed upon it that it can no longer process everything. Therefore, it'll push toxic material into the bloodstream before it is converted; it will put more toxins in the body's fat storage; it'll put more toxins into the liver itself ("fatty liver"); and it'll send some unprocessed toxins to be eliminated, which may cause kidney problems and kidney stones.

If the toxic condition continues, the liver will "harden" and cirrhosis may occur.

Signs of Liver Toxicity

Some of the more common signs of liver toxicity are: general feeling of illness, flu-like symptoms and body aches, low grade fever, pain on the right side of the chest and/or abdomen, fatigue, lack of interest in food or life, headache, swelling (“edema”), and difficulty digesting foods. If you suspect you have liver toxicity, please consult your medical practitioner for evaluation and treatment.

What Can Be Done?

As most people feel they cannot survive without their medical drugs (the biggest offender to the liver), this cannot be addressed; however, if you feel you can decrease your as-needed medications, such as Tylenol ® for pain, then you may want to discuss this with your medical doctor to make sure it’s safe to do so.

If you take medical drugs, DO NOT take natural dietary supplements without first talking to someone qualified and knowledgeable in BOTH medical drugs and natural supplements. Too many interactions are causing people to seek medical care for liver pain and distresses, problems that could’ve been avoided. If you are concerned about liver toxicity, stop your natural supplements so long as they were

not prescribed by a medical doctor (MD); if they were prescribed by an MD, consult the MD before stopping the supplements.

Watch what you eat. Try to consume a diet that is more close to nature (meaning less-processed). MSG and artificial sweeteners are adding to the weight around the waist because the P450 pathway has a very difficult time processing them; if your liver is already struggling because of other toxins, even more of these substances are put into fat (therefore causing an increase in weight).

Use an air cleaner at home and in your car to decrease breathing in the toxins in the air. Limit exposure to outside air during days of “air quality alerts.” The Wisconsin DNR monitors the air quality and publishes reports at <http://dnr.wi.gov/air/aq/monitor/>

Use a water filter on your tap water and drink non-tap water (or bottled water from a reputable source). Your liver will thank you.

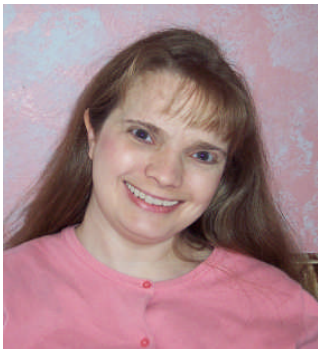
There are a number of dietary supplements that can assist your liver, but they will not be discussed here because if you are taking a medical drug, it needs to be determined if it is safe to take a dietary supplement. If you are considering taking a supplement, **FIRST** talk with someone educated in both medical drugs and

natural supplements. Don't assume that everyone working at a health food store is knowledgeable. And **don't assume just because the supplement is said to work on the liver that it is okay to take if you take medical drugs.**

Liver toxicity is reversible in most cases once the offending substance is removed. The liver is the only known organ in the body that has the ability to regenerate itself to full function again so long as 25% of the liver remains.

Best wishes,
Dr. Ronda

Disclaimer: The information provided by Dr. Ronda is for educational purposes only. It is important that you not make health decisions or stop any medication without first consulting your personal physician or health care provider.



Dr. Ronda Behnke is a distinguished practitioner of Classical Homeopathy and Natural Healing methods. Amongst her clients, she is known for her exceptional insight and non-judgmental presence. You can contact Dr. Ronda via the website www.HomeopathicCentersofAmerica.org or by calling 920-558-9806. "When it's time to heal, call me...I will listen to you." For a FREE guide to help you along your healing path, visit the HCA website as noted above.

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