



## Liver Protocol

Learn how early signs of a toxic liver could free you from excess weight, depression, skin problems and so much more.

Liver is the most underestimated organ which suffers in silence until it's too late.

Have you ever wondered what your liver would say to you if it had a voice? Most livers would have a lot to moan about given half the chance. The truth is our livers almost always suffer in silence and rarely express their stress. When they do, it often occurs in ways which we do not associate directly with this vital organ.

So, instead of making a big fuss the liver slowly starts to tire (sluggish liver) and this can have a massive affect on our overall health.

This may sound scary but the magical factor to remember is the liver has a miraculous ability to heal and regenerate when given the right conditions. The good news is that taking a few simple steps makes the world of difference and it is within your power to make your liver smile again.

Your liver does so much more than you imagined.

The liver is responsible for over 200 functions in the body and is the largest internal organ, weighing in at about 55oz (or 1.5 kg). It is central to so many of the body's functions and most people are unaware of how vital it is to good health. Some of the major functions of the liver are:

- purifying our blood (50 oz or 1.4 litres a minute),
- regulating the metabolism (through bile production),
- storing minerals and fat soluble vitamins, protein synthesis, glycogen storage and conversion (energy production),
- cholesterol production (which is a good thing! Cholesterol, contrary to Western medicine's beliefs, cholesterol necessary as it is the precursor for our steroid hormones, it manages our brain function, nerve function and hormone transportation),
- parasite protection (by filtering protazoa) and...

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- more famously... detoxification!

Although the liver is wonderful at healing and amazing at self-recovery, it does take a great deal of abuse in our Western lifestyles. Some of the choices can be fairly obvious (like eating non-organic food, living in a polluted area, drinking contaminated water) but many other choices (like skin care products, house cleaning products, drinking tap water or prescription medication) can create further load which we might not even be aware of.

According to the EWG (Environmental Working Group), studies show that an average American is daily exposed to 200 chemical toxins and carries as many as 91 of them.

## **Where is all the toxicity coming from?**

There are a lot of factors which affect whether the liver performs its critical functions effectively and often poor lifestyle choices can put too much pressure on this delicate organ. Here what contributes to our toxic load:

- non-organic food (think: mercury, lead, PCBs and over 130 pesticides)
- air pollution (a long list)
- tap water (think: fluoride, chlorine, PCBs, mercury, lead, parasites)
- skin care products (think: phthalates, BPA, triclosan, parabens)
- house hold cleaning products (think: triclosan, phthalates, parabens)
- medications; both recreational and prescription, including commonly-used ones like corticosteroids, tetracycline and aspirin
- plastics (think: BPA, PFOA)
- cookware like non-stick pans (think: PFOA)
- stress
- alcohol
- coffee

Our body is designed to excrete them. We have a few detoxification organs, namely: skin, lungs, kidneys, digestive tract and, of course, the liver. They are all capable to perform the beautiful job of freeing us from these toxins – the challenge is: when the load is



higher than what they can handle, this is when toxicity takes a toll on us.

### **Early signs of liver problems.**

So what symptoms can we expect to experience when our liver is tired? We commonly hear about cirrhosis (permanent scarring) of the liver and the increase in liver disease in the Western world. It's completely possible to determine them by doing the right blood work and testing for markers like aspartate aminotransferase (AST or SGOT) and alanine aminotransferase (ALT or SGPT). The challenge is: by the time they are raised, much of the liver damage has already been done.

It's key to be proactive, educated and step into a preventative mode. How often do you hear about the common symptoms which are associated with liver fatigue as a result of a toxic or stressful lifestyle? You certainly won't be hearing about them from your doctor. Here are some common symptoms which may be related to sluggish liver detoxification and function:

### **Hormonal imbalance**

- Intolerance to HRT (hormone replacement therapy)
- Severe menopausal symptoms
- PMS
- Estrogen Dominance
- Mood Swings

### **Blood Sugar Problems**

- Sugar Cravings
- Hypoglycaemia
- Type 2 Diabetes
- Energy slumps
- Waking in the night

### **Immune dysfunction**

- Allergies/ Skin rashes
- Chemical sensitivities (think: someone who can't stand fumes or perfumes)
- Chronic Fatigue/Fibromyalgia
- Frequent illness

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## **Nervous System**

- Depression
- Anger and irritability
- Foggy brain
- Overheating
- Frequent headaches

## **Digestive Problems**

- Gall stones
- Intolerance to fat
- Sensitivity to alcohol and/or caffeine
- Acid reflux
- Bloating or constipation
- Irritable bowel syndrome

## **External signs**

- Furry tongue
- Bad breath
- Acne and rosacea
- Yellow, red or itchy eyes
- Rashes
- Easy bruising
- Brown spot on hands, back and face

## **Abnormal metabolism of fats (lipids)**

- Abnormal level of fats in the blood, e.g. high LDL (“bad cholesterol”) and reduced HDL (“good cholesterol”)
- Elevated triglycerides
- Blocked arteries leading to hypertension, heart attacks and strokes
- Fatty liver
- Obesity

## **The job of the liver.**

Most of us know that our liver is responsible for processing alcohol, but the liver is also in charge of detoxifying all waste

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materials in the body, both those from our environment (exogenous) and those that are made through everyday bodily processes (endogenous). If the liver is too overburdened to process them all effectively, our blood remains high in toxic waste materials and our whole body is fuelled by waste – no wonder we start to feel unwell.

## **Phase One and Phase Two of liver detoxification.**

The liver's detoxification method includes two phases which are referred to as Phase One and Phase Two.

Phase One is known as oxidation and Phase Two as conjugation. In Phase One, the liver uses oxygen and enzymes to burn toxins. This process is called oxidation as it makes the toxins more soluble in water so they can be more easily excreted from the body by the kidneys and the liver. Most environmental toxins are fat-soluble to start with, and therefore difficult or impossible to eliminate without the liver's help. Did you know that the chemicals produced in Phase One are more toxic than those which originally entered the body?!

This phase of liver detoxification is inhibited by nutritional deficiency, toxic exposure and medications such as acetaminophen (brand name Tylenol), alcohol consumption, and low protein intake that deplete glutathione which is needed for acetaminophen detoxification.

To free itself of toxins produced by Phase One detoxification, the liver performs a Phase Two called conjugation. In this phase, oxidized chemicals are combined with sulphur, specific amino acids or organic acids, and then excreted in bile and urine.

Both phases are dependant on vital substances which are required to activate the catalyst for toxin conversion and they must work in balance so that no harmful toxins are left to circulate.

There are six pathways in Phase Two and each one is responsible for converting a different set of substances (e.g. estrogen, thyroid hormones, heavy metals, histamine, phenol, salicylates, bilirubin, nicotine, bacterial toxins, caffeine). The six pathways are called:

1. Amino Acid Conjugation pathway
2. The Glutathione pathway
3. The Sulphation (sulfation) pathway

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4. The Methylation pathway
5. The Glucoronidation pathway
6. The Acetylation pathway.

## **Methylation and sulphatation pathways explained.**

For an example of how these pathways work let's look at the **methylation pathway** in more detail. This allows methyl groups to pass through the liver and out of the body safely. This pathway detoxifies estrogen, dopamine, histamine and heavy metals. To support this pathway we can increase our intake of choline (avocados/eggs/non-GM soy lecithin) and B vitamins.

The **sulphation pathway** detoxifies excess neurotransmitters, steroids, thyroid hormones, phenol and excess bile acids. This pathway is often burdened by frequent use of non steroidal anti inflammatory drugs (NSAIDS). We can support this pathway through an increase in high sulphur foods (e.g. egg yolk, broccoli, onion or MSM).

If Phase Two is not working effectively then the highly toxic chemicals formed in Phase One cannot be converted and this can cause a lot of toxicity issues in the body such as tissue damage or disease. It may also cause excess hormones to circulate through the bloodstream instead of being excreted and this can lead to hormonal imbalances which may affect the thyroid gland or our estrogen levels.

## **Healing Powers of the Liver and Diet.**

The most magical point to remember when we learn about the liver, is how effectively it can rebuild itself. By giving it the right tools nutritionally and following a lifestyle plan that avoids nasty environmental toxins (which confuse and hinder the liver), we can literally regenerate this wonderful organ.

By detoxifying the body and giving it the right nutritional tools, your liver's functions may be restored to full health. Foods and herbs which support liver healing and detoxification can be used to make dramatic changes to symptoms associated with a sluggish liver and give long lasting healing effects. Below is a to-do list on how to do it.



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## Dietary changes:

1. Improve the level of your stomach acid level by drinking 1 tablespoon of apple cider vinegar or 1/2 lemon in a glass of warm/lukewarm water upon rising. Do not eat till 30 minutes later. You can have it with you thyroid medication.
2. Do at least 2-3 tablespoons of insoluble fiber per day; my favorite is ground flax seed as it helps estrogen metabolism as well. If you can't tolerate flax seed, substitute with chia seeds or psyllium husk.
3. Do not eat fried food.
4. Incorporate plenty of bitter greens: dandelion and mustard greens - juicing and steaming them are both great. I add dandelion to my morning berry smoothies every other day.
5. Add cruciferous vegetables (don't worry about the thyroid for now) like spinach, broccoli, kale, chard – but only in steamed and cooked form. They are rich in diindolylmethane (DIM) which promotes a beneficial estrogen metabolism in both women and men.
6. Add lemon peel –it is an excellent detoxifying agent for the methylation pathway– add to salads, soups, stews or just add to your lemon juice.
7. Add choline-rich foods such as avocados and eggs (if you can tolerate eggs) to support the methylation pathway.
8. Add high sulphur foods such as egg yolk, broccoli, onion, garlic or MSM – they all support the sulphation pathway.
9. Add medicinal mushrooms like shitake or makame.
10. Add vitamin C-rich superfoods like camu camu or goji berries (aka wolfberry) – my favorite is to add them to morning smoothies.
11. Add selenium – 2 brazil nuts per day. If you can't tolerate brazil nuts, look into supplementation.

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12. Magnesium promotes liver detoxification. Millet and cashews are great sources.
13. Add beets and beet greens – the latter are often overlooked. You can juice them, steam them or add them raw to your salads.
14. Add turmeric (if used in food, need to add pepper) to soups and stews (especially Indian lentil curry – dhal is great)
15. Add more superfoods: spirulina (if you can handle it), chlorella, green matcha tea (I'm a huge fan of DoMatcha brand) and chlorophyll.
16. Add seaweed like kombu and nori unless you have a sensitivity to iodine.
17. Add milk thistle powder – the easiest way is to add it to smoothies.

## **Supplements:**

1. Add vitamin B complex (this means all the vitamins Bs) - this is big in opening up the liver detoxification pathways. I recommend using Max-B-ND (sold online).
2. Passionflower tincture – you can purchase it in most health stores – follow recommended dose.

## **Lifestyle changes:**

1. Castor oil pack – apply castor oil on your liver area and cover for 30min – 1 hour with a hot water bottle and a towel underneath it so you don't get burned.
2. Always avoid late-night snacking (liver regenerates from 11pm to 3am).
3. Do hot baths in Epsom salts - excellent for detoxing the liver.
4. Spend time in sauna. My favorite is the Russian banya where you spend the whole day going in and out of the banya – short



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time in the hot room but repeated many times (over 5-8 hrs) produces best results.

5. Try dry skin brushing.
6. Book an appointment to get a lymphatic massage – it is also very beneficial for the liver.