Optimizing Liver Detoxification Pathways

Transcript

Hello and welcome to our detoxification module. And this is one of my favorite ones to teach because, as you guys know, I'm kind of a geek when it comes to biochemistry and I like to share that sort of stuff. And I like to share what is…what's really going on inside of us, like what does the liver really do with detox.

We're going to start this presentation with a little bit more about how the liver works, but very specifically related to phase 1 and phase 2 detoxification. I've got a lot of slides in here, and some of them I'm only putting in there for your reference, because I'm not going to go into that level of depth. I went into that level of depth and more with the practitioners, but I know that some of you who are learning this for yourself also like to know that and like to have that as reference, so we'll have some deep stuff. But no worries – what I'm really leading all this to is so that you really understand what's going on a little bit in your liver detoxification and how we can facilitate a deep tissue detox.

Before I begin, I just want to make sure that everything that I'm sharing with you is based on my experience and my expertise and it's for educational purposes only. It's not intended to replace the one-on-one relationship with a qualified healthcare professional.

So if you're under the care of a doctor, then make sure that anything that you're learning here that you want to do that you discuss with your doctor to make sure it's not going to interfere with whatever treatment he or she has got you on, especially if you're on medications.

I just want to start with the review of your body's cleanup crew - those parts of your body that are very specifically given the task of cleaning up the debris, of cleaning toxins.

And the main one, which is listed at the top, is your liver, and your liver has phases – one's phase 1 and one's phase 2. And it's got all kinds of enzymes and all kinds of mechanisms for taking toxins that you've taken in through the environment or generated in your food, through your skincare products, whatever – all of those pieces that we've talked about thus far in the module. And it takes it and it neutralizes them; it makes them water soluble and passes them into the bloodstream. And those that it can't make water soluble passes through the bile to get eliminated through the digestive tract.

So the liver is the main detoxification organ, although some of these pathways are also present in the lining of the gut and in other parts of the body. It's a main source of detoxification.

Your kidneys then eliminate the water soluble versions of the toxins that have been put into the bloodstream by the liver. Your skin sweats those out. So, again, water soluble versions can be eliminated through the skin, via your sweat.

And then, through the digestive system, we have the liver, which takes a lot of those toxins and packages it into the bile and then dumps the bile. And the bile then helps to digest fat, and it also is a carrier for the toxins to take them out via the digestive tract and the stool.

And sweat is another way – you know, it's really detoxification through the skin. It's usually through sweat.

And then lungs, of course, is when you exhale. And when you exhale, you push out any toxins that are stored and that have been like exchanged via gas exchange with the lungs. So these are your ways of eliminating toxins.

This is a pretty complicated picture, just to show you, but really the toxins come in – this picture shows it step one, step two, and then generating waste products. We generally call it phase 1 and phase 2, and I'll teach you a little bit more about those phases and what nutrients you need.

This slide lists some of those nutrients as well, and you'll see that it's a pretty hefty process. It requires good nutrition.

If you go into a really deep detoxification too soon, without making sure that you're supplying your body with the necessary nutrients, it can be one of those crash-and-burn kind of situations, where you just don't feel well. And I want you to have a really positive, positive experience with going through the detox.

Not to say there won't be some bumps along the way. I want you to have a really positive way to go through it.

So you see that you go through the step one, step two, which is really called phase 1 and phase 2 – it goes out to waste products. And then the water soluble ones are eliminated through the kidneys and urine, gall bladder out to the bowels.

So there's lots of ways to get rid of the toxins, but the liver's the one that's kind of pulling them from the bloodstream, from the outside, or releasing them from the fat stores. Because, as we've said before, one of the things that happens is if the liver can't take a toxin all the way through to the end, what it tries to do is sequester it away from the rest of your body by storing it as fat.

And this will all make sense as we go through this in a little bit more detail.

The way that this works is that there's a blood vessel from the digestive tract that goes straight to the liver. So you eat food, you…the food gets absorbed into the bloodstream. Before it goes around to the rest of your body – the brain, and to your lungs, and to all the other places – it goes to the liver. Like because stuff coming in from the digestive tract has a lot of waste in it; there's the pesticides and there's the herbicides and there's the various things from the plastics, the chemicals. There's just all kinds of stuff. There's oxidized fats; there's all sorts of things that are not good for your body get absorbed and the liver makes a first attempt at neutralizing them before they get into circulation.

In a healthy person, in a person who has really good detoxification mechanisms going on, 98 percent of those are neutralized by the liver before they get into circulation.

So let's talk about the phases and the way that the liver does this.

Phase 1 is a pretty simple process. It doesn't get…need a whole lot of nutrition to really work effectively. There's just one or two reactions in there. And the phase 1, the byproducts of phase 1, are oftentimes more toxic than what entered as phase 1.

So, if you take a chemical and you put it through phase 1, chances are it's going to come out of phase 1 a little bit more toxic than it was before, because of the way that the liver is processing it – not all, but many.

And then it goes right into phase 2 – in a healthy person. Okay? So then it goes right into phase 2 and all the complicated processes – and I'll show you six different ones that happen in phase 2, and there are amino acids that are needed to neutralize and vitamins and minerals and antioxidants.

There's a different process for hormones, heavy metals, pesticides, hydrocarbons – they all have somewhat different detoxification and there's different parts of phase 2 that they will go through or primarily will detoxify each of those types of things.

Someone is called a pathological detoxifier is the phase 1 is faster than phase 2. And I'd like to say that that's the exception rather than the rule, but in the people that I work with - who happen to be the sicker part of the population because they're seeking out my care – they have usually have a faster phase 1 than a phase 2.

And a lot of the things that we're going to be doing in order to facilitate detox is to make phase 2 faster and slow down phase 1. Okay?

So this may seem like all gobbly-gook. I want you to get the big picture and this is going to help you to make decisions about what to do for yourself.

This picture is just – we're not going to go through this in detail. This is for the geeks among you. I am one of the geeks; I love looking at stuff like this to just see what happens to the toxins when they come in and what different chemicals are put together. But I just wanted you to see the complexity of it. This is slide five.

We'll break that down into something that's a little bit more manageable and then we'll break it down into action steps.

Things that induce phase 1 – in other words, things that strengthen phase 1 and make phase 1 work even harder – are actually some of the toxins that phase 1 needs to neutralize more - so alcohol makes phase 1 work harder. Caffeine, aspirin, Tylenol, nicotine, Phenobarbital, steroids and sulfa drugs – all of these things, you know, they're mostly medications, like caffeine and alcohol and nicotine are like recreational pharmaceuticals. Right? They're things that people use that really are drugs and they really act as drugs and they are metabolized by the liver as drugs.

And so all of these things will make your phase 1 be working faster. But the fact is that they…none of them speed up phase 2 as a result. And many of them slow down phase 2. So when we look at what slows down phase 2, you're going to see some of the same things.

So this is what creates the pathological detoxifier situation – right? – where the phase 1 is really fast, phase 2 is really slow, and you get a lot of buildup of the toxic intermediates that go back into the bloodstream and they hurt. They make you have headaches or they make you feel achy or grumpy or they make your skin break out as your body's trying to deal with this.

Some of those toxic intermediates will get stored as fat. So if they've…the liver is doing a lot of phase 1 and phase 2 can't keep up, a lot of those toxins in the liver are going, 'Okay, quick! You know, make more fat – store it away.' And so if you find that you're gaining weight when you go on a quote-unquote detox or that you're gaining weight even though your diet is improving, it could be that there is a lot of toxins being released from your tissues that are being put through phase 1. They're making phase 1 work harder and then phase 2 can't keep up, so some of those just get stored back as fat again, and so you don't really seem to be making any headway.

There was somebody wrote in an article recently it's like you're not fat, you're toxic. You know, and that the toxins are what's making you fatter, not your diet – not your lack of exercise.

And if you combine a bad diet with the lack of exercise, with these toxins that induce phase 1, then it's the triple whammy. And then you just…you start to feel really ridiculously icky.

I've got some charts to just show you the nutrients that are involved in phase 1 and then the various parts of phase 2. This is for your reference just so that you understand, as I've put together a program for you to follow, what I'm really looking at. Right? Why – why are you having NAC, N-acetylcysteine, or magnesium or extra selenium?

So a lot of these things I want you to be getting through foods and concentrated food sources and the detox that I've put together is… there's concentrated food sources. Although you have the option, of course, of getting one of those what's called medical foods. We'll talk about more of that when we get there.

The things that speed up phase 1 – vitamin C, your B vitamins, especially B-2 and B-3, an antioxidant, the mother antioxidant, called glutathione, bioflavonoids, which usually packaged with vitamin C, NAC, which is also known as N-acetylcysteine - and that's a precursor to glutathione - magnesium, selenium, iron, choline, and inositol.

Choline is actually really good. You can find good sources of choline in lecithin and also like sunflower. Sunflower seeds have a lot of choline in that lecithin part of the sunflower. So one of the things you'll see that I add to people's programs is sunflower lecithin.

Then there's inositol, cysteine, and methionine, and those are sulfur amino acids.

So these are things that speed up phase 1. Okay? But they also speed up phase 2 as well.

So the things that slow down phase 1 are naringin from grapefruit, turmeric, capsaicin, clove, quercetin, and calendula. So, depending on where you're at – if you are a pathological detoxifier, then we're going to want to do some things to slow down phase 1. Okay? We're going to eliminate the things that speed up phase 1 – unless they also speed up phase 2. And you're going to see that a lot of these things – a lot of the nutrients that listed to speed up phase 1 – also speed up phase 2. But some of them not. Okay? But slowing down phase 1 is going to be really important for someone who's a pathological detoxifier.

One of my favorite ways to explain this whole process of phase 1 and phase 2 and the backup that happens is this old *I Love Lucy* show. I'm dating myself back to the fifties and sixties, when the *I Love Lucy* show was on the air, but I remember watching this as a kid, and I laughed. And then, when I learned about liver detoxification, I laughed even harder. Why? Because I was like, 'Oh, my god, this is liver detoxification.'

Now, you may be thinking, 'Well, how the heck is *I Love Lucy* have anything to do with liver detoxification?'

Well, in this particular episode, Lucy and Ethel were told that their job was to take these chocolates as they came down the conveyor belt and wrap them in a piece of paper and then put it back on the conveyor belt so it could go back further down the line and be put into boxes. And they were told if any of them pass without the wrappers, they are going to be fired.

So they start doing their job and everything's going mosey along. They're just doing fine and they're looking at each other, 'Wow, this is easy.' And they're wrapping and they're putting them down and they're wrapping…and suddenly it starts to go a little faster.

So you can see their hands moving faster; they're speeding up. They're getting a little agitated. They're speeding up and then they suddenly speed it up really fast and they can't keep up.

So they're afraid those chocolates are going to go by, so they start yanking the chocolates out that they can't wrap and sticking them in their pockets and sticking them in their hat and sticking them in their mouths and sticking them down their bra. And they are just frantically….

But some of the chocolates are passing by.

This is what happens in your liver when phase 1, which is whatever's upstream on this conveyor belt putting the chocolates on the conveyor belt, is faster than phase 2 - and thinking about Lucy and Ethel being phase 2.

And so they're deciding, well, they don't want the chocolates to go downstream, so they're hiding them. They're storing them away. It's kind of what your liver does when it stores away the excess toxins generated from phase 1 that can't go through phase 2. They store it away in fatty tissue.

And, as we talked about in previous ones, that fatty tissue can be lining your myelin sheaths. It can be in your brain. And so storing it away in fat seems like a good idea – if it's just put in your subcutaneous fat. But that's not where it gets limited to most of the time. It will often get stored in the brain.

So what happens is that creates symptoms. And it creates symptoms like headaches and sluggishness and brain fog and focus problems. So if you – or someone you know – has done a detox and they feel really lousy, especially the first few days, this could be the reason – that phase 1 is faster than phase 2.

So we're going to prevent that with our program as much as possible.

I want you to understand phase 2 just a little bit. A lot of big words on this page – don't worry about it. It's not meant for you to memorize. We're not going to give you a test on it.

So your liver adds another substance to a toxin to make it water soluble and less harmful so that it can be easily and safely excreted. And they call that conjugation. There's all sorts of chemicals that go through this process – your hormones, after they've been used up, they're no longer useful to the body, they get conjugated and eliminated. Heavy metals – maybe you're…if you're drinking in or taking in or somehow exposed to – through your fillings and various things, through touch on your skin, you're taking in heavy metals – the heavy metals go through the process.

And I'll show you – I have some charts that you can look at and you can understand which chemicals go through which process.

So the different pathways in phase 2 are glutathione conjugation, where glutathione is grabbing onto these molecules to make them less problematic, amino acid conjugation – various amino acids are conjugated to that – methylation, where a methyl group is added to that, sulfation, where sulfur is added to that.

MSM is very useful for detoxification because it provides both methyl groups and sulfur groups.

And there's certain people who can't take MSM; it's beyond the scope of this to go into that. We go into that in the practitioner program, where we look at genetic defects and all that. But suffice it to say that methylation and sulfation are really important.

Acetylation – that's another chemical group that can be added on to these chemicals. Glucoronidation – okay? – glucoronic acid, and then glycation. Glycine is another amino acid.

So basically these are processes that require antioxidants and amino acids. So if you're not eating enough protein, or you are not getting enough antixoidants, or you're exposed to a lot of oxidative byproducts, or you're under a lot of stress, which produces a lot of oxidative byproducts, your detoxification is going to slow down.

So that's why it's really important – and what we're going to concentrate on in this deep tissue detox is making sure that you're getting adequate protein. And I have some really great sources of it without having you go and eat a pound of steak a day.

This is a summary of the major nutrients that are required for detoxification. I just mentioned amino acids – important for that phase 2, for the conjugation processes – vitamin C, glutathione, which is an antioxidant, sulfur-containing substances, like MSM and cruciferous vegetables – a huge source of sulfur – vitamin B, Bs – all the Bs - B-1, B-2, B-5, B-6, B-12 - they're all important.

B-9 is folic acid. Folic acid got its own spot on the third column at the top. Folic acid is also B-9, but it's not folic acid that's important. It's not…don't take anything that has folic acid in it. You want to take something that has methylated folate.

Folic acid – the synthetic form of folic acid – can actually block the detoxification. So it's really important not to be taking folic acid. Make a note of this – not folic acid, but folate. Methyl folate. Okay?

Essential fatty acids – we had a whole module on essential fatty acids that you can refer back to for how to optimize your fatty acids. Really important for liver detox. Black currant oil, flax oil, EPA.

Magnesium: super important mineral that's really high in leafy greens. Why do you think I recommend leafy greens for everything? It's one of the best sources of magnesium.

Any by the way, your best food source of folate is uncooked leafy greens. Folic acid – actually folate, foliage, right? Leafy greens. When you cook it, you destroy the folic acid. So, even though it's okay to eat some cooked vegetables – I do it myself. I do probably 25 percent of my vegetables I do in a cooked form, lightly steamed. You get a lot of good nutrition, but you destroy a lot of the folic acid, the folate in there. It needs to be uncooked.

Slightly cooked, like wilted, like pouring a little bit of hot water over them really quickly, doesn't have enough time to destroy too much of the folic acid, but it's really important to get your raw leafy greens. And if you're not able to because your gut is messed up, then you need to go back and work through the gut-cleanse process, the gut-repair process, to get it to the point where you are.

And you may have to, for some time, stay off of raw vegetables and maybe just drink the juice, if you can tolerate that, while you're healing your gut. And in that case, you'll probably want to be supplementing with folate during that period of time, B vitamins.

Molybdenum is really important for copper metabolism, really super important for the methylation part of this pathway.

Manganese – super important. Works with forming good collagen and forming proteins.

Iron, selenium, zinc – all important nutrients for detox. You've seen these before, right? Selenium and zinc are especially important for your thyroid and your adrenals. So all the work we've been doing up till now has been to shore up these nutrients so that you're ready to handle a detox.

The next set of slides I'm not going to go through in excruciating detail because they're there for your reference. Okay? But I just want you to know I'll go through methylation because it's the most talked-about.

Methylation is a pathway that adds a methyl group to a particular substance. Methylation is important for neurotransmitters, immune system. It's important for DNA repair and synthesis. So methylation is a critical process and, whether you go through this detox or not, it's important to know what nutrients are important…are required for methylation, so that you can keep those running and humming.

Methylation helps get rid of used-up dopamine, histamine, heavy metals, and estrogen. If you are having symptoms of, say, menopause or PMS, you might be having difficulties getting rid of the metabolized versions – the estrogen metabolites, those are hanging around in the system, binding to receptors and causing you problems because they don't work the same as the non-metabolized versions.

Heavy metals – you know, if you have heavy metal exposure, but your methylation pathways are blocked, you can't get rid of the heavy metals.

And then dopamine is one of the neurotransmitters and when you don't get rid of these and they get stored back into fat, that's one thing. And if they go back into circulation, they can cause problems in those various areas.

So the nutrients that are required for methylation – choline, which is…you can get in avocado, soy, and sunflower. Your B vitamin, betaine, super important. That comes from beets. And that's all…. Betaine's also important, if you recall from the digestive module, for your stomach acid.

And then SAM-e. We don't necessarily give people SAM-e if we can push the pathways in other ways, but sometimes the pathways are so blocked genetically that we need to give them SAM-e while we're opening things up. SAM-e is S-adenosylmethionine. So that's a metabolite of methionine, and that contributes back methyl groups. And that's what creates a lot of the methyl groups in the methylation pathways.

Methionine, magnesium, methyl folate – right? – 5-tetra methyl… 5-methyltetrahydrofolic acid. Methyl folate – important form of folates. If you're taking a multivitamin or any kind of formula, make sure that the kind of folate it has is methyl. And if it doesn't, look for a different vitamin supplement.

Methyl B-12 – again, some people don't tolerate methyl B-12 very well because it provides too many methyl groups initially and they can't metabolize through the pathways and they can form toxic byproducts. So some people we give something called hydroxy B-12, or a combination of methyl and hydroxy. But that's way beyond this. We'll talk more about that when we do our nutrigenomics. But for now, methyl B-12 – if you're someone who gets bad symptoms when they take methyl B-12, some things happen that you don't like that creates problems, then switch to something called hydroxy B-12.

And then other methyl donors, which are TMG, DMG, MSM. And you'll see these – the reason I mention them is you might see these in some liver detox formulas.

Sulfation is another one, and that's related to sulfur groups. It gets rid of phenols, bile acids, thyroid, acetaminophen, aspartame, bacterial endotoxins, neurotransmitters that are broken down, xenoestrogens that are taken in via the environment. And then the steroid hormones like cortisol, androgens and other female hormones.

So this is what sulfation helps to get rid of. And it gets inhibited if you're taking non-steroidal anti-inflammatories. So if you've got pain and inflammation and you're taking NSAIDs for it, know that you're decreasing your ability to get rid of some of these toxins.

Excessive molybdenum – not good amounts of molybdenum, over the RDA amounts. Excessive, like two, three, four, five times the recommended amount.

And vitamin B-6, if you take more than 100 milligrams – unless you're working with a functional practitioner who's really looked at a lot of your pathways and knows that you can safely do it – avoid it. Don't take some of those…if you have one of those mega B complexes and they have 50 or 100 milligrams and you're taking two or three of those a day, watch out, because that extra B-6 can inhibit.

But B-6 is critical for the liver detoxification, especially for methylation. So you don't want to be without B-6.

And then the things that support sulfation – amino acids like methionine, cysteine, taurine, high sulfur foods, glutathione, and NAC.

So the rest of these I'm just going to leave for your reference. I'll just mention and I'll mention some of the inhibitors so that you can be careful about that. You can read these to see what they get rid of, glucaronidation – there's a list on the slide, and this is slide 13, that tells you all the different things that glucaronidation gets rid of. And then what inhibits it are aspirin and fluoride. So if you're drinking tap water that has been fluoridated, which most tap water is, then you've got to look at making sure that you go back to our hydration module and get rid of the fluoride; put in water filters.

And then support… omega-3s, limonene from citrus, and SAM-e. And you know that one of our like morning detox beverages is lemon oil in water with peppermint oil, and that…it's a gut rejuvenator, it's a daily rejuvenator, and it's a detox beverage. So that's a really important part of your detox program.

Glutathione conjugation. Well, glutathione is really super important; it's one of our most important antioxidants. It's inhibited by aspirin and fluoride as well, but it's easy to support it. Not easy-easy, but relatively – unless you have a genetic SNP.

And there are some people - probably about 35, 40 percent of the population has a particular genetic abnormality where they cannot create glutathione efficiently and they have a reduction of that enzyme from anywhere from 30 to 70 percent. So they don't make as much glutathione as they may need.

Now, a person with that genetic abnormality will do fine if they keep their environment low-toxic, if they keep their stress levels down, if they eat clean and green. But somebody who has the genetic mutation superimposed over a toxic lifestyle are the people who are going to get really sick as a result. And you can support glutathione via Brassicas, limonene, vitamin C, EFAs, some supplements, like NAC, cysteine, glycine, glutamic acid, zinc and selenium, B vitamins, and alpha-lipoic acid. Avocado supports glutathione as well.

Acetylation – again, there's a bunch of things that it gets rid of, a bunch of toxins you've got listed in the purple on slide 15. The inhibitors – cigarettes, smoke, and refined food.

So hopefully nobody here is smoking cigarettes, but think about secondhand smoke – if you have someone in your family who's smoking and you're around them or you're breathing it in off their clothing, watch out for that sort of stuff.

And of course, refined food – it specifically inhibits one of the acetylation pathways in phase 2.

You can support it, again, with your B vitamins and vitamin C and cruciferous vegetables, but also garlic and onions and grapes and berries help support that, as well as soy.

And if you're going to do soy, make sure that you're doing fermented soy. Don't get into this whole, you know, processed soy kick with a lot of tofu and soy powder and all that. If you're going to go with soy, use the fermented or the edamame, the way it comes out of the ground, the raw, green beans. You can go with tempeh or miso or natto as fermented soy.

And amino acid conjugation – well, you're going to need amino acids. So people who are on low protein diets and have high toxic exposure are going to have problems with this part. And they're going to have problems getting rid of a lot of the pollutants, so it's really important to keep your protein levels up. And not just eating a lot of protein, but making sure the digestion's working – all the things we taught you in the digestive module become really super important here.

And you can support it by giving amino acids, by taking protein powders is a really good support. Like you can get the sprouted rice protein or the hemp protein or the combination or one of my very favorites is a new one from HealthForce Nutritionals called Elite Green Protein, Elite Green Protein. It has a whole lot of different green foods combined together to make a very, very amazing – very, very amazing – green powder.

So glycine, taurine, glutamine – they're all amino acids.

An alkaline diet - super important for maintaining the amino acid conjugation pathways, as well as turmeric.

We've talked about those. You can study those if you want, then you'll understand the reasoning behind all the steps that I'm going to give you. But really, it's just I want you to get it – but you don't have to memorize it. It's just knowing that there's some real truth to this. The fact is, if I want to look up and say, 'Well, where are the heavy metals? Oh, yeah, those are methylation.' I may still have to look at some of those charts. So if you're the one that you really want to understand that, print them out and play around with them.

But otherwise, it's just there for us to really build the framework and build the justification for you getting excited about doing this detox.

So there are things that inhibit phase 2 detoxification. And I think it's really important that we talk about those so that when you're doing your detoxification – when you're living your life, you want your life, not just when you're detoxing, but you want to live your life by avoiding these things that inhibit phase 2 detoxification, especially – and we'll talk about this in a minute – if you have some of the methylation defects in your genetics.

So substances that inhibit phase 2 detoxification include – well, for glutathione conjugation, a selenium deficiency, because selenium is critical for making glutathione; vitamin B-2, which is riboflavin deficiency, because it's one of the co-factors in creating glutathione; a glutathione deficiency in and of itself - right? - and then zinc deficiency.

So these are all things that will contribute to lower phase 2. So you're making sure that these nutrients – these are easy to do, because you just have to make sure you're getting the right amount and that you're absorbing the right amount. And there are mineral testing we can do when we do our little mineral thing.

So amino acid conjugation – that's of course going to be a low-protein diet, but also low stomach acid. Right? So it's low stomach acid, like not being able to absorb your protein. Okay? Or a low protease enzymes, which would get in the way of you absorbing your proteins – so low protein, basically.

Methylation – really critical for methylation is folic acid and B-12 deficiency. If you don't have enough folate, it's methyl folate that's important for methylation, and vitamin B-12, hydroxy or methyl B-12, depending on how you tolerate things. And that depends somewhat on your genetics, so.

Sulfation – if you take non-steroidal anti-inflammatories, if you take tartrazine, yellow food dyemolybdenum deficiency, those are things that contribute to sulfation.

So this is pretty much a summary of a few of the top things from those more detailed charts that we just looked at: acetylation, B-2, B-5, or vitamin C deficiency. And glucaronidation is slowed down by aspirin and another drug called probenecid.

Here are your foods that are helpful detoxification. Hopefully the foods on this 'Foods Helpful for Detoxification' list are things that you're already including on a daily basis, especially Brassicas. Indole-3-carbinol is hugely important for this detoxification, especially found in broccoli sprouts and broccoli seeds.

Things like citrus peel, which has limonene, and limonene is what we find in our daily gut rejuvenators – that's why I recommend doing that. Caraway also has limonene. Turmeric, avocado, basil, beets, bitter leafy greens, cardamom, cayenne, chlorella, cilantro, cinnamon, dandelion, dill, fennel, garlic, ginger, grapefruit, grapefruit juices, Jerusalem artichoke, onion, peppermint, rosemary, sea vegetables, thyme, and wheatgrass.

And going back to grapefruit – grapefruit is good for increasing phase 1 and not phase 2. So you've got be careful with grapefruit that you're not going to be hurting. So I would not do grapefruit during that. I think I'm going to take that off.

A lot of these green nutrients that are listed here – they're found in that Elite Green Protein that HealthForce Nutritionals makes.

Foods that support phase 2 detoxification: We've talked about them before in the list, but this puts them all together. Again, the Brassicas – right? – so that supports phase one and two, limonene, citrus peel, fish oils, and that's the omega-3s, beets, Brassicas again. So you see that there's a repeat. There's lots of foods that I've been recommending to you all along that are really good for detoxification.

There are herbs that help support detox, that help to protect the liver and support the phase 1 and phase 2. Milk thistle – amazing antioxidant for the liver. Dandelion helps to support phase 2. Burdock – burdock is really protective as the liver as well supporting phase 2. Echinacea actually plays a role in there as a protective agent for the liver - artichoke leaf and turmeric. There are other herbs that support your liver and other herbs that support detox. These are ones that commonly available, easy to find, and that you can include safely without having to worry about going too much.

So let's take a look at the foods that disrupt detox. We've talked about them before in other parts of this detoxification and in other places where we're talking about your glands and your organs. Alcohol, artificial colors and flavorings, caffeine, processed meats and nonorganic meats – you know, the pesticides and all the herbicides and the hormones that are put in the nonorganic meats - trans fats, refined foods, allergy-producing foods, the top six allergens – I'm listing them again: gluten, dairy, corn, soy, eggs, and peanuts.

If you've already eliminated these, then you carefully put them back, or you determined that some of these are not an issue for you, you can use them during this – with the exception of I think the dairy and the gluten, because they're so inflammatory, and when we're doing a detox geared towards helping your body to eliminate more toxins, you don't want add to the burden by giving inflammation to the picture.

So I recommend that, you know, if you've tested soy and corn and you're fine with them, fine. Peanuts I don't recommend at all because of the aflat oxin and they're very high in omega-6s fats. Eggs are controversial – you know, some people do okay if they do the organic, pasture-fed and raised chicken eggs and unfertilized, but I personally am not a fan of eggs and think that you'll do better on your detox if you avoid them.

So I think, during the elimination phase, you phase these things out and then you'll go another four weeks without them after the liver cleanse, and then you can reintroduce them and find out which ones your body handles okay.

Steps to optimizing your detoxification – we went over this when we did skin. We've gone through this a number of times, but.

Of course you have to avoid exposures, so that's why we went through, in the earlier phases of the detoxification module, we talked about the environment and getting rid of the things in the environment.

High nutrient-dense diet – we've been talking about that all along.

A high fiber diet – it's really important because fiber binds to the toxins and carries them out of your system. And then, if you don't have enough fiber, and you have sluggish digestion, the toxins can be reabsorbed and re-circulated and have to go through the process all over again.

Optimizing your digestion, so you get enough protein so you absorb all your essential fats and so you have less toxic waste being generated.

Exercise and anything that causes you to sweat – saunas, steam rooms: anything that causes you to sweat will help you to sweat away toxins.

Pure water – absolutely has to be pure water during a detox. It should be pure water all the time. You want to be optimizing your detoxification on an everyday basis.

Pure air and of course reducing stress, because cortisol aggravates the system. The byproducts of adrenal output due to stress are very toxic, creates a lot of antioxidant – a lot of oxidants, which suck away the need…your body's own antioxidants.

Well, let's talk a little bit about the factors that contribute to your own detoxification ability. Hugely important is genetics, but genetics is only part of the picture.

A lot of people want to blame genetics on everything. ‘I have bad genetics, therefore I am this.’ ‘My mother had this, therefore I have it.’ Genetics is just part of the picture, and, yes, there are definite genetics that contribute to the methylation and sulfation and all of those pathways – the phase 2 pathways being problematic. But we’re not going to blame our genetics on everything because you can overcome your genetics via having good environment, decreasing your exposure.

So if you’re exposed to a lot of chemicals in the environment – if you’re exposed industrially, if you live in a polluted area – that’s going to affect your detoxification ability.

Your nutritional status, the strength of your liver, and of course stress – we’ve mentioned all of these before, but I just wanted to put it together. The detoxification ability is based on all of these factors and we want to optimize all of these factors so that you can create an environment where your everyday detox is working well and then when you take time out, say, once a year to do a tissue detox, that everything works really well.

And let’s just briefly mention glutathione. I call it the goddess of detox. Glutathione is the primary antioxidant in the body, and it’s also subject to the most problems of being depleted by lifestyle and exposure. It’s produced in the liver, but it can also be produced in other tissues. The primary methylation pathways can happen in just about every tissue in the body. Some of other parts of the methylation pathway only occur in the liver. It’s produced in the liver, but it can also be produced in other cells. But it’s depleted by diet, poor diet, pollution, trauma, infection, radiation, stress, medication, aging, and it’s super-affected by your genetics - not only the specific GSTM gene that controls glutathione S-transferase, but also the methylation.

In order to make glutathione, you need vitamin B-6, methylated forms of B-12 and folate, and also some other B vitamins – in particular, B-2. It’s created from the amino acids glycine, glutamine, and cysteine. So, again, you have to have enough of those in your body. So even if you have a perfectly functioning GSTM gene, and you don’t have those amino acids, it’s not going to work. So these are really, really important amino acids.

Glutathione supports your immune system, your brain, as well as detoxification. It protects your brain from oxidative damage. It protects your immune system from oxidative damage.

How can you make more? We all want to know how to make more. Eat more broccoli sprouts and also broccoli seeds. If you don’t have the inclination to do the sprouting, you can grind up the seeds and use them in your foods. Garlic and onions help you to make more glutathione. All the cruciferous vegetables, like collards, kale, cabbage, broccoli, cauliflower, arugula, kohlrabi, mustard greens, radish, watercress, wasabi – those are all parts of the cruciferous vegetable family. And, if you go back to the basics – you go back to the greens nutritional module and we have lots of recipes and lots of ways to include more of these.

Hopefully you're already doing that. But if you're not, this is a reminder, a gentle reminder, that it's so important. Adequate amounts of vitamins B-6, methylated B-12, folic acid – you want to get them from whole foods, not processed foods. When you get folate – methyl folate is in your foliage. Folic acid is a synthetic form.

And it's just a habit for us to talk about folic acid, but folic acid really refers to the synthetic form – and it's not a good thing for detoxification. It can actually thwart detoxification.

So go and look at your vitamin supplements and make sure that, if they have folic acid, you get something new.

And of course, again, cysteine, glycine, glutamine, protein digestion, stomach acid, and enzymes – so all this stuff ties together.

Your minerals, like zinc and selenium, whole foods, green foods, and then Brazil nuts, pumpkin seeds – good sources of zinc and selenium.

Some other foods that can help assist your liver detoxification: turmeric, green tea… N-acetylcysteine is really not…it's a supplement, but it's a form of cysteine, the amino acid cysteine that's a direct precursor to glutathione. And it also, if you recall, we had that as part of our gut-repair protocol, NAC twice a day, 500 milligrams. Vitamin C was also a part of that – 1,000 milligrams twice a day or more, to bowel tolerance. And we've given you the way to test for bowel tolerance.

Omega-3 fats in proportion with your omega-6s – not where the omega-6s overrule them. So if you've kinda gotten away from paying attention to that, go revisit the fat module and look at the chart that I've given you so that you can calculate and make sure, during your detox module, that you are going through and you're getting at least three-to-one ration of omega-6 to -3. Anything more than that is going to put you into an inflammatory state and thwart your detox.

Quality amino acids should come from easily digested protein. If you make your body work too hard for it, you're not going to get that much percentage of it. So raw greens, sprouts, sprouted nuts, sprouted seeds, sprouted grains or legumes – if you tolerate them – raw protein powders, and we're going to definitely add those to your shakes and things during this process.

And I'm so excited about the new green protein powder, because some people say, 'Well, I'm sensitive to hemp and rice protein and whey protein and I can't do those things. What can I do?' Well, this new raw green protein – Elite Green Protein from HealthForce – is phenomenal and it's 16 grams of protein per serving.

During this process, when we're doing our deep tissue detox, I'm going to recommend that you do a daily activity. You don't have to do all of these every day, but at least every day you're doing something that's going to support the detox.

Skin brushing is great to do every day or every couple of days. Before you take a shower, you brush your skin down, get rid of all the extra stuff. There's a really good system that Theresa Tapp put together. If you go to www.TTapp.com, she has this whole system and she has a video to show you her way of reducing that. And it helps to reduce cellulite because it's getting rid of the toxins in the skin. So I'd encourage you to do that.

The skin brushing I don't do every day. I'm working on that, so this clear disclosure here. That's the one I'm still working on.

Tongue-cleaning I do every day, twice a day. I do it in the morning, I do it at night before I go to bed. It gets rid of the debris on your tongue and allows your tongue to breathe and cleanse.

Saunas and steam baths – I have a far infrared sauna.

Yoga and cleansing breath – there's a PDF file that goes through and give you links for how to find out more about these things.

Detox baths –apple cider vinegar and Epsom salts and Himalayan salts and there's all kinds of clays and things that you can do in the bathtub. Again, we gave you references to that. It's on the site.

Colonics and enemas – gotta keep your bowels moving. And you can do it via some of the supplements and herbs that I've got built-in, but, if not, you need to be starting to do some colonics and enemas. You can't have the toxins recycling when you're…when you're doing things to promote detoxification.

Castor oil is amazing. You can make a castor oil pack and put it over your liver. You can put it over your gut. It is amazing for stimulating detoxification as well as clay packs. And we talk more about that in the skin, part four.

And then finally, exercise – again, anything that keeps you moving, keeps the oxygen circulating through your system, which helps your body to detoxify, and then helps you to sweat.

These are all the things that we're going to include and we're going to incorporate these and I want you to get really comfortable with doing on a regular basis.

The biggest mistakes people make when detoxing – okay? I really want to go over this, because this is what people tend to do.

Number one, they go too fast. The go, 'Okay! I'm going to go from my cigarette-smoking, coffee-drinking, alcohol-drinking life to a 30-day juice cleanse.' And then they hit a wall. They're just eliminating too fast, they don't have the nutrients to back them up, and they hit a wall.

Slow and easy.

Not addressing the stress – right? When you don't address the stress, your body's continuing to make oxidative byproducts, continuing to feed those liver pathways and stress those liver pathways. So it's really important to address the stress, whether it be with the HeartMath, with yoga, with meditation.

Working too hard while you're doing a cleanse – it's really a good idea if you can slow things down. Now, I know that may not be reasonable or realistic for all of you. But if it's in any way possible to slow down to do a detox, it would be awesome. Okay.

When I first did my very first detox, I made some of these mistakes. I went too fast. I jumped right in from my lifestyle, which had been getting better and better over time – I will say that. It wasn't like where I was, eating M&Ms and Twinkies, like a year before I did the detox. So that year before I'd been tinkering and removing allergens and doing all sorts of stuff. But I went to a 28-day water fast, and what I didn't know not to do was having…I had my last hurrah meal right before, and I had been doing really well with my food, but I decided I was going to have all my favorite foods because I was making the decision that I wasn't going to ever eat those again. I was going to go on this fast and then I was going to… forever and forever after, I was just going to really be good with my diet.

And actually, I stuck to it, which is really rare and unusual. But I stuck to it. And so that was my last ice cream. That was my last fish dinner with whatever else I had with it. That was my…I think I had mozzarella cheese sandwich a few days before. I knew I was committed to this, and I did the really stupid stuff of increasing toxins right before and then I went into it. So the first four days of that fast were like 'whoa!' It hit me hard, but then, once I got through that, I managed to deal with it.

And I went away to do it. So I got rid of the stress. I actually took a six-week leave of absence from my job, and I went away to a fasting retreat. And it was awesome. I decided after the fast to go back to school and do all my prereqs so that I could go to chiropractic school, get my nutrition degree, and get into acupuncture and all the stuff that I'm now in. And 1985, so we're talking almost 30 years ago.

I didn't work hard during it, and it is great if you can slow it down. You may not be able to get a six-week leave of absence like I did, but there may be ways that you can…that you can plan it so that you're doing it when you're not right in the middle of hard deadlines.

Another thing people do is they don't exercise. Another thing people do is they exercise too much and that's too much. I exercised a little bit.

I got up and I did some walks and I did a little bit of weightlifting – I think maybe 15, 20 minutes of exercise every day while I was doing my 28-day water fast. I'm not taking you through a 28-day water fast. That needs supervision.

Not keeping the colon clean – that is a mistake that I made because I wasn't guided to keep my colon clean. And after 28 days of not eating, I finally had a bowel movement. How I had a bowel movement after 28 days – some kind of liver movement bile pushed things through. But I didn't do the enemas or the colonics and I really think that would have been a shorter time for me to get the results had I been keeping the colon clean and not getting my liver extra help. I wasn't doing that because it was a fast. But a fast is different, so…. But we're going to give you some extra help with your liver.

So we're going to make sure you don't make those mistakes.

I highly recommend this book by Bruce Fife. It's called *The Healing Crisis*. You can find it on Amazon. He distinguished between a healing crisis and a true crisis. Right? People say, 'Oh, I'm just detoxing,' and they're doing it for six months and they're just incapacitated. No. Okay? It's detox and crisis, detox and crisis.

If you get into a place where you're feeling like the detox is too fast, like 'whoa, I can't tolerate that,' there's ways that you can slow down or stop it. There's certain nutrients that can enhance it, and I've give you a list of those earlier on, just choosing from adding some extras of some of those nutrients sometimes does that. Eating some of the foods that slow phase 1 and enhance phase 2 are really important, and that could slow it down.

Say your cleanse is a raw foods cleanse – sometimes people just will do raw foods for two or three weeks and they go into a major detox. That's too fast.

They sit down and they eat a plate of steamed vegetables with oil on it and maybe a little bit of brown rice or quinoa, that slows it down. Okay? So that's a way to slow it down. You may have to do this during the cleanse. You may have to do it.

The nutrients that support the detox that help you get phase 2 moving that are foods that slow down phase 1, foods that enhance phase 2…. The other thing that can be phenomenal if you're having a big detox reaction, and this is the key…this is the key between identifying whether it's a healing crisis or a true crisis: an enema. If you're starting to get a really pounding headache, you're starting to feel itchy, achy, and you think it's a detox reaction, give yourself an enema.

If it's a detox reaction, generally speaking, you're going to feel much better within 10 to 20 minutes – or half an hour. Really. So that's a really good way to do it.

I know enemas have gotten a bad rap, but they're really, really valuable.

Antidotes for excessive detox symptoms – so some of the symptoms you may see if you're over-detoxing, you're detoxing too fast, are skin rashes, headaches, fatigue, nausea, irritable bowel, confusion, memory problems, brain fog.

You can get some immediate relief by high doses of buffered vitamin C. And I'm talking 1,000 to 2,000 milligrams every hour until you get diarrhea, sometimes, when you create that diarrhea, that flush, everything feels better.

So doing a vitamin C flush or a vitamin C calibration can be very helpful to eliminate those symptoms. Giving yourself an enema, like I said, increasing your intake of sulfur-rich foods doesn't work for everyone, so if get worse when you increase the sulfur-rich foods, it could be that you have a particular genetic abnormality that's creating metabolic byproducts that are not so good. Sometimes too much sulfur can create ammonia if you have a particular set of genetics.

Detox baths, you know, where you fill of the bathtub with apple cider vinegar or some of the detox clay and then getting into the sauna or exercising – all of these things can cause the detox symptoms to go down. So whereas you may feel like going to bed, you can get up and walk around the block and get a sweat going, you may feel a lot better.

Let's talk about some of the things that we're going to do to help you to prepare for a deep tissue detox.

We're going to remove all processed food – hopefully you've done that already. Get it out of your house if you can. If you have other people in your house that eat it, well, you may have a problem with that. But if you…you're in control, get it out of your house.

Remove all your toxic cleaners, chemicals, and body care products. We've prepared you for this in an earlier section of this. Make sure that you're doing the right laundry soaps and you're not adding toxins that way.

Get ready to sweat on a regular basis. Interval training, exercise all-out for 30 to 60 seconds, then slow down and repeat. That can be enormous for helping you to release toxins – if you have the energy for it. If you're really weak, then not a good thing. You'll wait.

Saunas and steam rooms – so sweating regularly are super important.

And then the stress management. We've talked about this before. We talked about the sweating regularly in our part four, so go back and review the materials from part four to get really clear on how to do that. And then the stress management – we've been talking about this from day one. If you need to, go back and restart your Transforming Stress series. Just start listening to it again if you've gotten out of the habit of the HeartMath. Get into a yoga routine, a meditation routine, prayer – healing prayer, if that's part of your spiritual practice. Journaling is super important. And anything you want that you find de-stressing, you know, whether it's walking, whether it's sitting with the flowers, planting a vegetable garden – things that you do on a regular basis, where you feel the difference.

My personal favorite is HeartMath, because I can do it quickly. I can do it in a snap. I can do it anywhere I am. So I can just take the time right now, transform my body. Really important. These are going to be super important for you.

Go back and review the Everyday Detox Schedule for more details. Basically, it included having your a.m. gut rejuvenator, the water with lemon juice, lemon oil, peppermint, optionally cayenne if you can handle it. Cayenne is amazing for detox. Having your green breakfast with chia seeds, doing your HeartMath before each meal, chew, chew, chew, chew your food. If you don't find yourself chewing, blend. Having your four cups of Brassicas every day – four cups - and I personally think it should be a pound. And four cups may equal a pound, I'm not sure, but at least a pound of Brassicas every day: two teaspoons a day of ground broccoli seeds, some broccoli sprouts that you can put in your smoothies or in your salads, on your soups – things like that. A tablespoon or more of ground milk thistle seeds. For more intense detox, two tablespoons of milk thistle seeds, ground up and put into foods two to three times a day can be miraculous. Having greens at each meal, and of course, exercise.

So these are the things that we're going to be doing as part of the deep cleanse. We're going to add to these things a few extra shakes and a few extra protocols and nutrients that are going to go deeper – if you're ready for it.