



Advanced Clinical Focus: Detoxification and Biotransformation Transcript – Class 4 Part 2

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Alright, clinical detoxification; let's put all the pieces together. How are we actually going to apply this in the real world? There was a great practitioner by the name of Dr. Sid Baker, and he came up with this very simple concept; very easy to understand. Firstly, what do we need to get? Remember, detoxification and biotransformation are highly nutrient dependent. What do we need to fuel the body with in order for it to carry out what it does best? Remember, detoxification and biotransformation are happening all the time. It's not something you're either doing or not doing, and you have to do special things to make it happen, it's a process that the body's doing, we just need to get certain things to keep it running and moving. And second, what do we need to rid the body of? Do we need to clear things out? Do we need to clear things out of our environment and our surroundings? So when we're going through clinical detoxification, these are always the four main areas that are on my mind, all the time: diet as a foundation, functional foods, so specific things in those diet that might have a specific medicinal effect, possibly, or a specific physiological effect, lifestyle, and supplements, so nutraceuticals to stack on top of all that.

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Now, before we get into this, I want to talk about something called iatrogenesis. We can run into some potential detoxification issues and iatrogenesis means that we actually cause more symptoms than we started with. The Hippocratic oath in medicine is, above all, do no harm. We don't want to cause more harm to this person. These are a few factors we need to consider so that doesn't happen. We need to make sure that they have adequate nutritional support, healthy energy sources, because detoxification and biotransformation is extremely energy dependent. Support of a healthy gut microbiome, making sure that that gut is healthy, healed and has really good bacteria living in the digestive tract and also on the body. We might want to consider genetic variability, as well, to see possibly if they are able to detox properly. And we also want to take into account with possible iatrogenesis rapid weight loss. As I mentioned, a lot of these toxins are fat-soluble, they're stored in fat, so if someone is losing weight very quickly, that can release toxins quicker than the body is able to process and eliminate. And these are some common reasons why people run into what they might call a healing crisis. What I say is that a lot of the time when they haven't taken these things into account, and they're turning green, and sick, and vomiting, and having all these symptoms, it's not a healing crisis, it's actually iatrogenesis. It's not covering their basis, not making sure they have nutrients, and the channels of elimination are open. People should not feel terrible for a long, extended period of time when they're doing a detox. Sometimes they might not feel so good for a short period of time, but if that is maintained over a long period of time, then we've run into some serious issues.



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Now on the topic of fat and fat cells, I wanted to dive a little bit deeper into something called obesogens. This term was coined by Dr. Bruce Blumberg and Felix Grun. In 2006, they were doing quite a bit of work looking at these things, and they define them as chemicals that inappropriately stimulate adipogenesis and fat storage. Adipocytes are fat cells, so in adipogenesis is the creation of fat. Over 20 chemicals that they found have obesogenic activity. The mechanisms are many fold. When scientists try to figure out exactly what causes Type II diabetes or obesity, it's very hard to pin it down because there are multiple mechanisms happening, multiple genes are being affected, and it's a multifactorial type of condition. So it's fairly difficult to address and treat these conditions with one single targeted drug when it's really this complex activity that's going on. The best way to deal with this is to operate in many different places upstream, and we'll look at it by have ways to do that. So these were some examples pointed out as possible obesogens. Many of these chemicals we've seen multiple times throughout this course; persistent organic pollutants like pesticides, PCBs and dioxins, perfluorooctanoic acid, like we find in Teflon and water repellents like GORE-TEX and scotch guard, phthalates, which are plastic plasticizers, Bisphenol A, which are also plasticizers. They're on receipts when you pay for something, they're on the inside of cans or containers, commercial detergents and emulsifiers, people go and they wash their clothes with toxic products, just astounding. Flame Retardants, which have bromine as the main chemical, which we find pretty much everywhere; you know that new car smell, upholstery carpeting. And finally, atrazine, which sometimes is used as an herbicide. So these chemicals that a lot of people are exposed to are giving a message to the body that says, 'make fat, create fat, build fat cells'. It's very difficult to work against if you're toxic and trying to lose weight or trying to deal with something like diabetes. So we want to fuel this process of detoxification and biotransformation.

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How do we do that, we want to make sure there's adequate nutritional support for Phase I and Phase II liver detoxification. We want to make sure those nutrients or specific key nutrients are there to fuel the cytochrome P450 group of enzymes in Phase I detoxification. We want to make sure there are enough antioxidants to make sure those intermediates don't cause damage, those intermediates which are now potent, free radicals. We want to make sure there are enough amino acids and conjugates at Phase II detoxification so that we can finish up the process, make those toxins water-soluble and/or dump them into the gallbladder and bile for excretion and elimination. We need the nutritional support the antioxidants and this wonderful world of phytonutrients, which we'll talk about in great detail.

7:23

So first things first, what do we need to get rid of? We need to limit the intake of harmful chemicals. That's number one. And I also want to take this opportunity to remind you again, that in this course, you're getting the kitchen sink. You're



getting everything having to do with detoxification. You can pick and choose what to use, and in fact, a lot of these things used in isolation can make a huge difference. This slide alone can make a huge difference for a lot of people, just focusing on these things. So we want to make sure that we're only consuming organic meats and produce to really decrease the amount of toxins that might be coming in. We want to thoroughly wash all of the produce, because there can be chemicals on the outside of them. a lot of people are touching them, they're in trucks, they're taking up a lot of toxins. So a lot of chemicals can go systemic into the fruit and vegetable, but also a lot are on the outside, so we can work with what's on the outside and wash as thoroughly as possible.

8:37

We want to check with the Environmental Working Group what the latest Dirty Dozen and Clean 15 are. So they have a wonderful thing they provide. Every year they look at the different pesticide levels in fruits and vegetables, and they give you the top 12 fruits and vegetables that have the highest levels of pesticides, and they give you the lowest levels of pesticides, so the Clean 15. This is great because it's a really good default tool. If you're in the grocery store and there's nothing organic, or you don't have access to organic, which foods do you choose? You stay away from the Dirty Dozen and you eat more of the Clean 15. Or also, some people don't have the finances to buy everything organic, so they can go for some of the conventional produce, they just want to stick to the Clean 15.

9:30

Avoid all processed foods. The more we process a food, the more toxins usually we have to add to it, or preservatives or additives, to make sure it's shelf stable. Now, of course, there are a few small exceptions with this. If we're consuming an oil for example, it's minimally processed, and that's a fine level of processing. We want to limit packaged foods. They usually have preservatives, additives, and various excipients to make them shelf stable, and we also get various toxins from the actual packaging. An apple is in the perfect package ever, it's got a nice skin around it to protect it, we can eat that skin, it's not toxic, and that's the packaging of the apple. Cook using nontoxic materials, so we need to get the Teflon out, we need to get the aluminum out, sometimes we need to get the copper pans out, making sure we're not using plastic utensils, things like that, so we're not infusing toxic chemicals into the food. We want to use filtered water for cooking, drinking, and showering as well. Our body is 70% water and if our water is not being filtered, we are being the filter of that water, and we want to make sure we're using good water on the outside and we're also drinking good water. So those are just some ways to get the toxic chemicals out.

11:01

Now, these are some very specific detoxification basics. These are things that need to be addressed and be used as a foundation for the whole detoxification process. So firstly, the best solution to pollution is dilution. We need to make sure people are consuming about one ounce of good clean water per kilogram of



body weight to really flush out whatever might be being released. It's one of the best ways to detoxify; drinking lots of water. We also need to make sure we have enough protein in the diet. We need about 0.8 grams per kilogram of protein just to maintain our daily activities. If we're in a trauma, or if we're bodybuilding, or exercising really hard, or pregnant, things that demand higher levels of protein, our protein demands can get up all the way to 1.6 1.7 grams per kilogram. So you need to work with that little bit of wiggle room depending on what your needs are. When we have that amount, we have enough protein for all of our bodily functions: make the enzymes, make our different immune factors, and, very importantly, have those amino acids for Phase II liver detoxification pathways, which are the conjugation pathways, so we can bind up those toxins. We want to make sure there's lots of fiber in the diet. Typically, if we're consuming a plant-based diet, meaning mostly plants, then we have lots of great fiber, we have a good amount of fiber by default. Sometimes we may want to add a little bit of extra fiber, you know soluble or insoluble fiber to really help with the elimination, and to help soak up the toxins. And then we also want to make sure there's really good fats in the diet, like monounsaturated fatty acids, like we might get from olive oil. Polyunsaturated fatty acids like we might get from fish oils, and things like flax oil and hemp oil, which really helped to maintain a good fluid membrane to help get the toxins out and bring the nutrients in. We may also want to consider medium chain triglycerides. These fats that are really important for energy production in the cell and have a direct pathway into the cell, whereas the longer chain fatty acids, they need a vehicle to get into the cell known as L-carnitine. But the medium chain is really used for really good energy and are quick efficient energy sources. We can get that from coconut oil and palm oil, and we can also get that from purified medium chain triglycerides, which you can get in supplement form.

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Here's a list of just some of the basic nutrients needed for detoxification for proper detoxification. We're going to hone in on some of these specific nutrients, but these are the basics to make sure detoxification is occurring properly. This is why I always like to start with a multivitamin in any detoxification protocol, just to make sure we cover the bases, everything from A to Z. We've got vitamin E and C covered here, we've got the B-complex, and then we break it down a little bit more with the B vitamins, making sure there's a good form of folic acid known as 5-methyltetrahydrofolate. Then we get into some of the minerals: magnesium, zinc, copper, selenium, and iron as needed. We can look at the blood work and try to figure out the dosage based on that. We don't want to give someone iron unless they are iron deficient or below optimal. And sources of sulfur like MSM, N-acetyl cysteine, which we talked about when we looked at acetaminophen toxicity, how important it is and increasing glutathione and taurine as well.

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Here are some specific nutrients for detoxification. So things that you might want to stack on top of what you're already doing fibers. I always like to include some



sort of fiber supplement in a detoxification protocol, because we're dumping so much into the small intestine, and we want to soak that up. So you might want a combination of insoluble and soluble fiber. One of my favorites to use is psyllium, which is really, really high in soluble fiber and you also get a little bit of insoluble fiber. And with the insoluble fiber, you get a bulking up of the stool; it helps our digestive tract eliminate it with the soluble fiber, we get the soaking up effect like this swelling. If you've ever had a chia seed in your mouth, it just kind of blows up, right? So about 5 to 25 grams of insoluble and soluble fiber. Again, I like to recommend people do it before they go to bed because then when they wake up in the morning, it's had time to work right through their system and they're ready to have a bowel movement and just get rid of all that.

16:20

Some key amino acids: I talked about N -acetyl cysteine, taurine, arginine and glycine are also really important amino acid conjugates, so we might want to up the dosage on those a little bit. Specific fats, which I talked about are EPA and DHA, which are polyunsaturated Omega-3s, maybe 1 to 6 grams. Alpha linolenic acid, which is quite abundant and flax oil, maybe 1 to three grams. GLA, which really helps to also bring down inflammation. Medium chain triglycerides, 1 to 2 tablespoons. And phospholipids, one of my favourites to use is lecithin, and lecithin helps to flush out the liver, helps to thin the bile, and really helps to detoxify and helps the whole detoxification process actually. We also want to consider a variety of antioxidants, possibly, like alpha lipoic acid, carotenoids, various options there. Specific phytonutrients like those found in green tea, and berries, pomegranate, curcumin, and possibly even add something like calcium d-glucarate, which really to get the conjugates from glucuronidation out of the body. Calcium d-glucarate inhibits the beta glucuronidation enzyme, so that thing like estrogen doesn't get unconjugated and go back into circulation.

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Now, you can get a little bit crazy looking at each one of these specific nutrients and trying to put a formula together. One of my favourite things to use, which really does this for me, are medical foods. There are certain protein shakes that have been created by various supplement companies and they're known as medical foods because they can act as a complete meal replacement. They've got all the nutrients there. But they also have an extra punch where they have specific phytonutrients that help with specific conditions. So in this case, we're talking about detoxification. Usually they have a really good serving of protein, about 15 to 22 grams per serving, so you're getting the good amino acids there. They add sometimes additional fat like medium chain triglycerides, or even olive oil. They've got the whole gamut of vitamins, minerals, and antioxidants. They sometimes have additional amino acids for amino acid conjugation, and they usually have a variety of phytonutrients. So I love these because you can use them as a meal replacement, you can use them up to six times per day, and you can even go exclusively on them for a few days. This really puts someone on a liquid diet, first of all, so it gives their digestive tract a huge break. It's hypoallergenic because you're taking out all other foods. It's easily absorbable



because it's basically in a liquid form. One thing we want to take note of when using medical foods is that we should titrate the dose slowly so we should ease someone into it, ease the dose slowly, maybe over about a week. So if you're going to be doing it like six times a day, maybe we do one time a day and then do that for a couple days and then add the second dose and then go another day and then add the third dose etc., etc. So you can sort of feel it out based on the product, based on the person, figure out how you're going to ease them into it. And you also might want to think about easing them out of it. Medical foods can be extremely useful for helping to get those nutrients in, and a lot of these companies have already done the work for you. So look at the label, look at the ingredient list and see if those are the nutrients that you're looking for. Usually, they have a really good base. And then sometimes we have to stack some other things on top of that, like, maybe some botanicals or phytonutrients are antioxidants.

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Foods that you definitely want to frequent are things like carotenoid rich fruits and vegetables, all those beautiful colors. Olive oil, specifically, has some really great detoxification abilities, and it also helps with the absorption of carotenoids, so you get a double whammy there. Nuts and seeds, green tea and pomegranate juice are some specific beverages, which have a particularly strong effect. The cruciferous vegetable family, which we're going to talk about in great detail, because this is one of the most powerful groups of foods. Lots of herbs and spices, berries, garlic, onions, and beets. And you can do lots of juicing as well as a great way to help the detoxification process.

21:29

So what diet do we actually use for detoxification? Well, this is a wonderful diet that's been put together to help us guide our clients on what to eat. I'm not so focused on telling people what not to eat, oh, you can't have this, and you can't have that. When people start to focus on what they can't eat, it gets very hopeless, right? So I always like to really focus on what people can eat. I give them this page, it's the detox food plan, and I say, you can eat anything on this page that's not in the eliminate box. So just to go through it with you, so you can understand what's going on here, typically, the stuff that's in yellow=the fat-based foods, orange=protein base, and the green=more carbohydrate base. So that's how that's divided in terms of the colour. You can see that in the red boxes, you've got things that should be completely eliminated from this detox diet. Then you have in most food groups, you've got like a shaded area, and you've got just an area that's white. So they're typically allowed to consume everything on the page, but they want to give special focus to the shaded area. So for example, if we look at the fats and oils area, we see that in the non-shaded area we have various oils like almond oil, canola, pumpkin, safflower, sesame, sunflower and walnut oil. But with specific detoxification abilities, we have things like coconut oil, and avocado and ghee, and olives and olive oil, which are going to add an extra punch. An area that I would really like to focus on is the vegetable area. Now, as you can see, that area is sub-divided into brassicas, also



known as cruciferous vegetables, detoxifying leafy greens, thiols, and liver and kidney support. So I don't just want people to sort of pick and choose from this area, I want them to consume at least four servings a day choosing one from each of these categories. I want at least one brassica, I want at least one detoxifying green, I want at least one thiol, and one liver and kidney support. So they might have a meal with some celery, they might use a little bit of garlic and cilantro, and possibly broccoli and then they've covered all of those categories. You can use this as a tool, you can lay out how many servings you want them to consume a day and they can actually check it off if they want. And then also you can see where it says gluten free grains, this is gluten free, so we've taken out all the gluten. By default, we're just left with the other grains, which is going to have a detoxifying effect in itself. So I love this page. It's incredibly useful. It pulls together a lot of what we're going to talk about in terms of proteins phytonutrients antioxidants, making sure we focus on various foods. It makes it a lot more usable. So we want to revert back to this, you can use this as a handout, you can give this to your clients so they have a guide as to what to follow.

25:11

Now breaking it down a little bit more, we've got Phase I nutrients and sources of those. So if you wanted a really good reference to see which nutrients fuel Phase I detoxification and where we can find those foods, this is a good reference. Some of the foods you really want to proceed with caution, like tuna is mentioned here a number of times, you really want to be careful on the source of tuna, but there are a lot of other sources as well, so use this in context. We've also got a whole bunch of antioxidant nutrients that will protect against the more toxic intermediates. So remember, we have Phase I detoxification. So I'm just going to go back here for a sec, we've got the Phase I nutrients, so these are all going to fuel Phase I. Then we've got a whole bunch of antioxidants, which are going to help protect us from those intermediates. And then we've got nutrients for Phase II conjugation. So again, these are going back to the amino acids to help bind those toxins. Now we're going to dive into specific nutrients and eventually nutraceuticals that are going to help a detoxification.