



Essential Alchemy

The Ancient Art of Healing Naturally

Season 2, Episode 7: Detoxification as the Foundation for Building Resilience and Vitality with Christopher Shade, PhD

Jodi: Hi! I'm Jodi Cohen, your host. And I'm beyond honored to be joined by Christopher Shade. He is the Founder and CEO of Quicksilver Scientific. Amazing supplements that if you don't know about, you should. And you will be rushing to buy at the end of this interview. And the driving force behind the development and innovation of its formulations and programs.

He is recognized as an expert on mercury and heavy metals detoxification, liposomal, and nanoemulsion delivery systems. Dr. Shade has lectured and trained doctors in the United States and internationally for over 10 years on the subject of mercury, heavy metals, and the human detoxification system. His current focus is on the continued development of cutting-edge nutraceutical formulations using liposomal and nanoemulsion delivery technology, with a specific focus on immune, cardio, metabolic, and healthy aging.

Welcome, Dr. Shade.

Christopher: Thank you, Jodi. Happy to be here.

Jodi: And I'm excited to have you talk about how toxicity can disrupt the body's resilience capabilities. But I'd love to start by asking you to define how you define resilience.

Christopher: Yeah, almost like the dictionary.

Jodi: Okay.

Christopher: It's like, how well can the body take different stressors and bounce right back. Not, a little stressor and they fall off the edge. In fact, in toxicology it's called a hormesis. Something that hits you and something that hits you but makes you stronger. So, the old sort of what doesn't kill you makes you stronger.

And so, resilience is coming mostly from the mitochondria. The powerplants inside the cell, really define how well your body can adapt to anything. In fact, we have a big longevity program going now, and I have a whole way that I look at longevity called a Longevity Wheel. And it's different axes from a detox axis, to sirtuin activation, senescence, telomeres, neuroendocrine system.

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Christopher: And every one of these comes down to an action of the mitochondria. And the mitochondria being able to fulfil its duties, having enough mitochondria per cell, having enough NAD to do everything. And when the body's got the powerplant, it can do everything. And when things go in and damage the powerplant, it's just a downward spiral.

And so, we'll be talking a lot about toxins and detoxification. And toxins are one of the things that can send you into a downward spiral. So, the resilience is keeping the mitochondria up, and keeping a bunch of reactive mechanisms on board. Nrf2, which responds to toxins coming in and mobilizes all the forces of chemo protection and detoxification. AMPK, which is mobilizing calories when you need it. Sirtuins, which are keeping you at a high mitochondrial density. All of these contribute to a strong resilience in the system.

Jodi: That's a beautiful definition. I love that. So, let's talk a little bit about how toxicity can throw off your mitochondria and your resilience.

Christopher: So, in what we call the Longevity Wheel, the spoke called Nrf2/AMPK is the core or like the entry point into it. And this is to turn up and get toxins out of the body. Because toxins go in and they damage mitochondrial function quite a bit. I look at all toxins but I focus a lot on metallic toxins. So, mercury, cadmium, arsenic, lead. These are very efficient at getting into the mitochondria and damaging the protective systems in the mitochondria.

And as they do this, they are lowering levels of probably the most important molecule for resilience in your body, called NAD. So, NAD is responsible for taking electrons out of carbon substrates like carbs and lipids, and bringing them into the electron transport chain, and turning them into ATP. So, making energy. That's just one of the things that they do.

They also are setting up communication between the nucleus and the mitochondria. So that you make the right amount of mitochondria and you make them correctly. They're setting up cell-to-cell communication. They're setting up the diurnal rhythms, the internal clock of the body. And they also are setting up the detoxification and antioxidant system through a sister molecule called NADPH.

So, the toxins can come in and just disrupt all of that energy signal. And unfortunately, the energy's necessary to get all the toxins out of the body. So, when you keep that system up and coming all the time, they get the toxins out of the cell before they're able to penetrate into the mitochondria and take the mitochondria down.

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Christopher: So, it's kind of like having a good defense system on the outside of your village or of your country. Unfortunately, it's a little bit military and so is the immune system. But the ability to intercept these things and push them out of the cell. And then get them to the liver and kidney, and get them out of the body before they penetrate all the way into the interior, into the inner sanctum of the mitochondria and take that down.

Once they've taken that down, the whole system goes down. Like, you see with people get Lyme, or chronic mold. There the damage has gotten all the way into the inner sanctum. And then it takes a long time to get back. So, you want to keep those defenses up so you don't get that.

Jodi: That's a brilliant description. Thank you so much. And how would someone who's listening, like it's like the moat surrounding the castle. What products, what mechanisms, how do you support basically good immune boundaries?

Christopher: Sure. Or good detox boundaries here in this case. Jodi: Yeah. Christopher: And there's a total overlap between the two. And let's just hit that first. Because as the toxins come in, and lower your defenses, and they lower your immune defenses. Many of the toxins, some of them will shift you into what's called a TH2 dominance, where your immune system is all focused on being allergic to everything and missing their primary defenses against the invaders coming in. They'll turn down interferon.

A lot of this is because they bring down glutathione. So, glutathione, we're going to talk about here, as one of your core detoxification defenses. But it's also totally central to your immune system. So, there's this big overlap. The immune system needs the mitochondria to do things. It needs glutathione to keep the cytokine profile balanced. And so, whenever you're toxic you become immunocompromised in a certain way.

But here we're talking about keeping up the defenses. So, to talk about keeping up the defenses, let's just first wind up how you get a toxin out of the body. And so, we're going to start from the cell. We're going to go to the blood and lymph, the circulating fluids. And then, we're going to go to the filtration units which would be the liver, kidney, and GI. So, you're going to go from cell, to circulate, to filter out, and excrete.

So, there's what are called phases of detoxification. One thing you said to me is that a lot of people have good phase 1, but they're missing phase 2 and phase 3. So, the way this works, when you're in a cell, and you've got a toxin there, you have to link some of your molecules on to it. That's in phase 2. And then you have to transport it out in phase 3. But first you have to get it ready for that. And that's called phase 1.

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Christopher: So, the toxin is there. If we talk about like something that's hard to work on, like a flame retardant, we need to come in in phase 1 and sort of chop into it. And make it more reactive. We actually turn it more into like a free radical. And we're actually making it a little more toxic. And this is why we need to couple that first phase 1 reaction to the subsequent reactions. And the subsequent reaction's are phase 2 and phase 3.

So, we've made this thing sort of vibrating and reactive, so that in phase 2 we can link something on to it. These are called conjugation reactions. And we're going to link something like glutathione on to it. Now, there's 3 main reactions there. Glutathione conjugation, glucuronic acid conjugation, and sulfate conjugation. Depends on the chemistry of the molecule, which one of those you're going to put on.

But when you put that on there, you're going to make it nice and water soluble, and recognizable by the transporters that are phase 3. So, we wound it up in phase 1. We linked stuff on to it in phase 2. And that stops its reactivity. And now we're going to transport it out of the body in phase 3.

So, these are transmembrane transporters. So, we're in the cell, there's a transporter that goes across the cell membrane. And it uses energy, ATP, and magnesium. So, you have to be able to make energy. You have to have enough magnesium. And you're going to push it out of the cell, in the extracellular fluid, which becomes the lymph, and then joins with the blood.

So, now we've pushed it out of the cell and now it's circulating in the body. Now, we have to get it out of the body. So, phase 3 continues. So, at the liver, the liver has a phase 3 transporter pulling it into the liver cell. So, grab that toxin conjugate, pull it into the liver cell.

Then it has another phase 3 transporter dumping it into the bile. So now, if we visualize a rectangular liver cell, every single liver cell is fed on one side by blood, and drained on the other side by bile. So, we're pulling these things into the liver cell. And then we're dumping them out with the bile, into, the first part is called the bile canaliculus.

I like to look at it like an upside-down tree. And these are roots extending into rootlets. And the little rootlets are called the canaliculi. And the little rootlets drain every single liver cell. And they come together into bigger and bigger roots. And then they drain out of the trunk called the common bile duct. That will then fill up in the gall bladder and release every time we eat food. So, if you can't drain bile out of the liver, you can't drain toxins out of the liver. Now, women have a harder problem with this than men. This is why they have much more frequent gall bladder removals. They have gall bladder sludge, gall stones, all that stuff. It's the sluggish movement of the bile out of the liver.

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Christopher: So, to make this all work, yeah, we have to do those phase 1, phase 2 reactions in the cell, but really we have to make sure that that bile is draining. And it's like clearing the drain on your sink. And so, then you have to go into like, why does that all get blocked? And so, we'll talk about that in a second. But now let's just continue the flow all the way out.

So, say we get these toxins into the bile. They drain down into the small intestine. Now there, there's another problem down there in that a lot of them can reabsorb. Now, a lot of toxins like methyl mercury from fish, cadmium, mold toxins, a number of other environmental toxins would get reabsorbed once they get down to the GI tract.

So, how are we going to deal with that? We're got to make sure that these things don't get reabsorbed. So, let's take a moment and talk about this central hub first, and that's the liver draining with the bile. Because I know you said you have a lot of women between 35 and 65. This is where this becomes an issue. So how do we keep the bile draining and what things block the bile?

Now, let's talk about what blocks it first. Let's just first say, stress blocks bile flow. All right? And then we're going to link stress to hormones and neurotransmitters in the brain. But inflammation also blocks bile. And so, usually when I'm talking in a general context, I'll bring up this stuff called endotoxin. Endotoxin are these little parts of bacteria that come across your barriers when your barriers aren't very strong, from areas of high bacterial load, into the blood.

And what areas are these? The biggest one is the GI tract. So, when you have leaky gut that is where the cell-to-cell barriers get weak in the GI tract and open up. These are called tight junctions, between each cell. They open up. And it's not whole bacteria coming through. It's just little parts of them. And the immune system recognizes them like they're whole bacteria. And sounds an inflammatory alarm and winds up inflammation. And when you wind up inflammation, you shut down a lot of processes that are luxury or house cleaning processes.

In fact, house cleaning proteins is what all of this machinery of detoxification used to be called house cleaning proteins in like the 70s and 80s, as they started to recognize these things. They were clean up things. Then we started to understand how fundamental they were. But when you're going to kill bacteria or viruses that come in, even if you've just perceived if that's the case, you turn off those processes.

Those house cleaning processes are all antioxidant processes. You shut them down, and you turn up inflammatory processes which are pro-oxidant processes. Your immune cells make hydrogen peroxide. They make bleach-like compounds, and superoxide, hypochlorous acid to go kill things. So, you turn up inflammation, and you turn down all this detoxification stuff.

Christopher: Because you've got to get rid of all this stuff first before you can go and clean up the house.

And so, other areas that you get endotoxin from, UTIs. Chronic UTIs bring a lot of endotoxins into the system. And one of the things that people don't realize, and which is the really big deal, is periodontal infection. So, any periodontal inflammation is bringing endotoxin into the system. And in fact, there's great papers relating periodontitis to heart disease because of the endotoxin that gets into the system.

And periodontitis to depression, because depression is an inflammatory disorder of the brain, which is screwing up your neurotransmitters, and making you depressed, by creating constant neural inflammation. Because this endotoxin goes into the body, opens up tight junctions, and its inflammatory response, including the junctions of the blood-brain barrier. And it gets into the brain. And it turns up inflammation in the brain.

When it turns up inflammation in the brain, it shifts your autonomic nervous system from the parasympathetic, or rest-digest-repair-regenerate-detoxify, over to what we all know now as fight or flight. So, here we have a chemical trigger putting you into fight or flight. Turns out there's a lot of other chemical triggers. Mercury puts you into fight or flight, by affecting the neurotransmitter glutamate.

So, in the brain there's this balance between glutamate and GABA. Glutamate is good for you when it makes you on, like I've got to do something now. I've got to give a talk. I've got to handle a problem. Something's gone wrong, I've got to deal with it. I've got to remember something. It controls memory, action, vigilance.

But when it goes too much, it brings with it, memory, fear, anxiety, and eventually cycles of anxiety and depression as the system's up too much and then crashes. Up too much and then crashes. This is a really big deal because it wears you out. And when you're in fight or flight, you shut down all, now at an autonomic level, before it was happening at a chemical level. Now the autonomic which controls where resources go. They control what things that we do with our body. Now we're in fight or flight and we stop all of that clean up and regeneration that was going on.

And that neurotransmitter that's associated with that is called GABA. So, you've got glutamate and GABA. And 80% of all the signals in your brain are between those two. One is go, and one is, all right, chill out, clean up. And so, when you're hyper on the go, so to speak, I'm hyper on the go, and I'm hyper in fight or flight.

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Christopher: So, whenever you're over there, you shut down bile flow. So, we're seeing this happening at a cellular level, at a neurotransmitter level, and at this liver open-close level. That's why when you're stressed, even though there is stress eating, where you're forcibly trying to be in a GABA state by feeding, it's like dopamine serotonin feeding. Most people, when you're stressed and you're like trying to deal with something, you're not hungry.

But then you go and you get some massage, you get some acupuncture, you do some deep breathing, you shift over into parasympathetic, and you're hungry again. That's because the bile is turned on and off. Now remember, we're talking about bile as the conduit for toxins. The bile is fundamentally a digestive juice. It is what emulsifies fats so that you can absorb them.

Now, one last thing before we take a moment to recoil from all this information. Let's tie it into hormones. Because it ties in perfectly. What hormone blocks bile flow? Estrogen. So, estrogen dominance blocks bile flow. What does estrogen do in the brain? Makes you glutamate dominant. That's why when estrogen's low, you're a little dull. When estrogen's high, what are you? You're irritable, anxious, you have all of that fight or flight stuff. And you lock up your bile flow.

What is the antidote to all of that? Progesterone. Progesterone, taste it. It's the most bitter of all of the hormones. But why does bitter matter? Because bitters and bitter flavors affect bitter receptors, which open up bile flow. When we talk about compounds for opening up bile flow, it is the bitter flavors.

And when progesterone goes into the brain, it's actually progesterone metabolites, they wind up and make more active the GABA receptors. So, progesterone is GABA, it's rest and digest, it's parasympathetic. And estrogen is sympathetic, glutamate, fight or flight.

Jodi: Oh my god, you just explained PMS. Like, that's unbelievable. Estrogen equals glutamate equals grumpy. Wow!

Christopher: Yeah, totally. And equals blocked liver.

Jodi: Wow! Amazing! And when you're stuck in all of these situations, you can't access your energy for resilience and positive shifts. So, how do the listeners that are all like, "Okay, that's me, now I get it." How do we unravel this bile bottleneck?

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Christopher: Yeah, yeah. So, yeah. And let's stay at the liver function then we can fill in the other sides. But the main things for keeping the bile flow going chemically are the bitter compounds. This is like bitters you put in your cocktails. Swedish bitters. This was like the cure-all at the turn of the 1900s, because it opened up so much stuff.

In fact, Angostura Bitters was developed by the Surgeon General in the army at the time who was stationed down, I forget where it was. He was somewhere like in the Caribbean and he needed one thing to keep all of his troops healthy, and he made Angostura Bitters to keep the liver. Because their food inputs could be bad and variable. They just kept the liver flowing, everything worked.

So, the bitter receptors then open up these transporters that move bile and toxins out of the liver. And so, like in the Quicksilver line, we have Bitters No. 9, and BitterX. Bitters No. 9 was developed by me and a male pharmacist. And is excellent as a little bit more of a stomach thing. But then when I started hiring a lot of younger women with a lot of PMS issues, I had to make a stronger one. And that was called BitterX. And it features as its main bitter compound, myrrh.

And so, myrrh wasn't used as much by the European herbalists. It came from Ayurveda. In Ayurveda it was the primary bitter detoxifier, kind of the way they use berberine-like compounds in Western Eclectic herbalism. And it was in all the gynecological formulas, because it was great at moving stagnant chi and stagnant blood out of the uterus. But it's also great and moving stagnant bile out of the liver.

And so that became a big workhorse for us. It's also lightly antimicrobial. And so, when you're stagnant in the liver for a long time, you can build up parasites and different things growing in there. So, the BitterX is really the best one for just getting that to flow. And it's really good in a gin cocktail as well. And so, you just start working this into your life.

So, the bitter compounds and the bitter cocktails are really good for moving that. And phosphatidylcholine. Phosphatidylcholine or PC is in all of our liposomal and nanoemulsion formulas. And then we have things like Pure PC and Membrane Mend, which are just concentrates of just phosphatidylcholine.

Now, why is that? So, phosphatidylcholine is a workhorse for us. it makes all of our cell membranes everywhere. And when our membranes are strong, all of the biological power is driven by healthy membranes that act as capacitors. These are little electrical circuits where they set up a charge differential across the membrane.

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Christopher: The most famous of these is how we make ATP in the mitochondria. In the mitochondria it's called the proton motor force. We build all the protons on the one side of the membrane, not on the other side. And then they rush through, and they spin this motor that makes ATP.

Well, you're doing these kinds of things all through your membranes. So, you're separating charge on them, and you're creating this power that's driving the reactions that are housed in the membranes. And that's membranes of the cell, membranes of the mitochondria, membranes of the endoplasmic reticulum, where almost all of your hormones are made. That's all important.

But at a liver level, your liver is taking phosphatidylcholine from the cell membranes of the liver and donating it into the bile flow 24/7 to thin the bile and protect the bile tree from the detergent-like aspect of the bile. The bile is a detergent. Now, it's carrying the toxins with it, but when it gets down to the upper GI, it's cleaning the upper GI. It's cleaning bacteria out of the upper GI.

What do we call that when the bacteria grow up there? It's called SIBO, small intestinal bacterial overgrowth. Or for fungus, SIFO, small intestinal fungal overgrowth. The upper GI, we take all these probiotics. That's more for the lower GI. Mid to lower is where stuff grows. Upper GI is pretty clean. And it's cleaned by the bile and that detergent-like effect.

But that detergent-like effect will destroy the liver cells if it's not draining out of there all the time. So, what happens is, when the liver gets totally blocked and can't drain the bile, you dump the bile and all the toxins back into the blood. This is what happens when you try to detox and you don't have bile flow going. You hear like, "Oh, I hear lipoic acid gets mercury out of the cells." And you take it.

And you start mobilizing all these toxins, but you can't get them out. And they build up in the liver and then the liver dumps them all into the blood. They circulate all through. You get brain fog. You start itching. The itching is actually the bile salts lodging underneath the skin.

In fact, it was just earlier today, I was scratching my arms. I was like, "Umm!" And I went for the bitters. Itch went away immediately. That's how I know that I need to move bile a little bit. You might also feel upper right quadrant pain. You might feel lower backpain. Why lower backpain? Because that toxic load just went from the liver to the kidneys. Now you're overwhelming the kidneys.

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Christopher: And then, once you start getting rashes, that means that the toxins are coming out and they're affecting the immune cells in the skin and creating the rash. So, that's all the blow back of the liver. And the way you keep that moving again is with the bitters and the PC.

So, a lot a women, before you get gall stones, you'll get sludgy gall bladder. They call it sludge. And PC and bitters will fluidize that, take that all the way out, and clear that all the way up. You're not doomed to have your gall bladder removed. You can just flush that plumbing all the time.

Jodi: Isn't morning sickness a gall bladder thing too? Will this help?

Christopher: I bet it is. In fact, that's like when we talk about how do you make sure you don't recirculate toxins, it's by taking binder. And binder, this is a blend of charcoal, and zeolites, couple of other metal binding and toxin binding compounds that go in there and sort of like grab everything so it doesn't reabsorb. But it also kind of pulls on your liver.

And if you don't have enough bitters on board, you'll actually get a little bit nauseous. And then you take the bitters and everything flows. So, morning sickness may be that inability to get that liver to drain. And you're just feeling that nausea of that poor digestion. Because the body needs to eat all the time but it doesn't have the bile going down there. And everything's out of whack. And so, I bet bitters would help with that quite a bit.

Jodi: Yeah. And you've said everything I wanted to say. It's brilliant. Detoxification should come before other treatments and initiatives, because I think that's a step most people miss. Can you land on that?

Christopher: Yeah. How are you going to bring up mitochondria if you're all toxic? How are you, "Oh I want to activate sirtuins with some resveratrol, so I can live forever, because I heard the rats lived longer when they took this." Well yeah, may be. But not under this toxic load.

And really, especially for your demographic, you want to go into bioidentical hormone replacement. And so, you're going to throw, let's throw some testosterone and some progesterone on there. And a little estrogen. And you're just a toxic mess. You think that your body's going to process all of those?

There's hundreds of metabolites, there's so many different hormones. There's a big cascade of that, of the sex hormones, the adrenal hormones. They all have to be working really well. And they're dependent on the endoplasmic reticulum and the mitochondria. That's where all the transformations take place.

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Christopher: But those are the 2 most sensitive sites to toxicity. So, you could be damaging all those membranes and all those enzymes that are supposed to do all those transformations. And if you've damaged them, you're going to build up this hormone, and have none of those. And it's just going to be a disaster.

And once you clear all that junk out of there, then you put in those hormones, they will cascade through there, and make everything work really well. And this is a big thing, when you're going into perimenopause, there's this big trigger that turns up all of detoxification, called Nrf2. And there's a bunch of things like in our Liver Sauce, and lipoic acid, and sulforaphane. Things from garlic and the broccoli family that all upregulate that.

But, if your progesterone is low, we already established the bile flow is not going to be right, but these are triggers into the nucleus to turn up different genes. They won't work without sufficient progesterone and pregnenolone. So, as your hormones go down, your resilience is going down. Your ability of the body to turn on the detox system going down. So, you both need the hormones and you need the detoxification. Both of those have to happen.

But starting with detox, stripping out all the junk out of the system. And if you're using our system with, like we have this thing called PushCatch Liver Detox. It's a bottle of liquid called Liver Sauce, very simple. And then there's black powder called Ultra Binder. And you take the Liver Sauce. You might take some other things with it. It mobilizes at a cellular level. Dumps it into the blood. It opens up the bile. Dumps stuff out with the bile. And then you come in with the binder half hour later, and you pick it all up so you don't reabsorb it. Really simple, really efficient.

But it has a number of things that activate a metabolic switch called AMPK. This is what's activated when you do a keto diet, or especially when you fast. And so, it's great in conjunction with like intermittent fasting where you just miss breakfast. But the key to that, when you activate that, you mobilize a lot of fatty deposits, especially ones in the liver called fatty liver disease. And this could be non-alcoholic fatty liver disease. It's from having too many carbs for too long. And you build up all this inflammation and fat in the liver.

And in a study where a guy used this simple system on fatty liver, he got 82% resolution of fatty liver in 2 months. So, you're not just stripping stuff out. You're actually creating what's called metabolic flexibility. Your ability to go between burning carbs and burning fat. This is essential for being able to have resilience and longevity. And one of the things that comes along with that is also better bile flow. That comes along with AMPK.

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Christopher: So, we're hitting this from a number of different triggers. Some are just bitter receptors, others are nuclear receptors where you're turning up whole gene sets. And you're cleaning out and making the body fundamentally more resilient. And then you can go in and build up NAD levels, build up sirtuin activity, get rid of what are called senescent cells, build up your hormones. But you go in and you clean up first.

Jodi: I love that. Yeah, you can't paint on a dirty canvas. And I love metabolic flexibility, it's really supporting the resilience.

Christopher: Totally.

Jodi: So, we've talked a little bit about your detox products. You've 2 other products that I think are fantastic that I'd love to highlight. Your Melatonin and then, I'm going to mispronounce it, your Quinton water, which helps with the flow.

Christopher: Ah, Quinton, yeah.

Jodi: Yeah. Can you speak to those a little bit?

Christopher: So, all right. So, up in the brain, melatonin is a big one. A lot of people don't make enough melatonin to drop into deep sleep at night. Now, in deep sleep is when all of the reset of the body happens. And the craziest thing happens to your brain. You lose 60% of the water volume of your brain at night. That's where you clear all the junk out. And then you fill it back up in the morning.

So, you're detoxifying and regenerating your brain at night. And when you don't have sufficient melatonin, you can't do this. So, the nano melatonin goes in very quickly, unmetabolized, has a very strong effect on your brain, helping you drop into deep sleep.

Now, remember we were talking about fight or flight. So, other things that help with that are CBD and GABA. And we have a number of CBD products from just broad spectrum and full spectrum CBD, that's whether or not it has the natural amount of THC in it. We have CBD Synergies AX, which has both CBD and GABA in a form called pharma GABA in it, as well as skullcap herb and some essential oils. So, that's really working to keep you moved over into parasympathetic state. L-theanine also does that. Whenever you take any of those with the Liver Sauce, it's going to enable your body to drop into a parasympathetic state from a neurotransmitter level, so that your body says, "Oh yeah, let's detoxify now." Because you can take Liver Sauce when you're freaking out and nothing's going to happen.

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Jodi: Your delivering mechanism, the liposomal, can you speak a little bit to how that's superior to ingesting pills?

Christopher: Yeah. So, the way we do everything is, we make essentially like tiny little cells. We use phosphatidylcholine and some other surfactants, to create these tiny little nano sized spheres. And we tuck the different supplements inside of there. So, the CBD, or the quercetin, or the bitter compounds are all in these little spheres that are so small, when you take them in your mouth, they absorb right across the mucus membranes in the mouth and right into the capillaries below. And they go right into circulation.

In fact, you can test those compounds in the blood in 2 minutes after you've held them in your mouth. Then what you swallow gets absorbed in the stomach and the upper GI. The effect of this is, everything that you take peaks in your blood in about 20-25 minutes. And activates everything at once. Because, if you're taking 5 different supplements that have 5 different absorption rates, one absorbs in 4 hours, and one absorbs in 40 minutes. And you want them all to work on one target, they're not going to.

So now, we get a whole bunch in really fast, work on all the targets, mobilize everything out, and then you can come in with your binder in 30 minutes. So, whether you're just doing the Liver Sauce and it's activating all these detox, or if you're doing CBD or GABA to calm the brain, and the Liver Sauce at the same time, to activate all that stuff. Or, you're taking a sleep formula, like the Melatonin, it's going to happen fast and with a coordinated response.

And this gets past a lot of people with really bad GI tracts. In fact, what we'll see is a much tighter blood level. If you take 10 people, and you give them these nano particle absorptions, we'll see a much more blood level and the variation person-to-person is like 20 to 30%. But if we give it to you in a capsule, there'll be a 100 to 200% variation. That means one person might have a blood level 2 or 3 times higher than another person.

So, how are you, as a clinician to predict what their response to a capsule is going to be? So, we know all the biochemistry and we know the delivery, how to get this all into the system. And that's why these systems work so well.

And then the last thing that you asked about was Quinton water. This is real fundamental. Quinton water was developed in the late 1800s. There's an area off the coast of France, where there is a permanent upwelling.

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Christopher: The oceans have what's called a global conveyor, where like the gulf stream is water coming from the Caribbean, along the east coast of the US, up towards Greenland, where it loses all its heat. The heat goes into Europe. It keeps Europe warm. And then it sinks. And then it goes down south.

So, there's currents like this everywhere. And this one current comes up along the coast of France and comes up. So, this is ancient water. It's not current sea water. It's ancient water coming up. And it's got all these nutrients. And there's a permanent phytoplankton bloom there that you can see from space. And they reach right into where that bloom is. They pull the water out.

This is sea water with all the minerals from along the ocean floor, plus all of these phytochemicals from the phytoplankton. And they filter sterilize it. It's never heated. It's raw. And they do it in 2 concentrations, pure seawater, called hypertonic, and one that's diluted with spring water. Used to be diluted with Evian. But it's a similar source as Evian. And it's diluted down to the same salinity as your plasma. That's called Isotonic.

And these 2, one is re-mineralizing, alkalizing, and strengthening. That's the hypertonic. And the other is calming. It puts you into parasympathetic. And it gets lymphatic drainage going. That's the isotonic. So, these have the fundamental minerals that are all missing from today's produce. Even when we're buying organic, we're missing all of these minerals. There's 72 different elements in there that are really hard to get in this really pure, raw matrix, coming right out of the sea.

And in fact, these ratios of minerals are identical in their proportions to your blood plasma. So, in fact it used to be called Quinton Isotonic Plasma.

Jodi: Amazing. And it helps your lymph flow. It helps balance your system.

Christopher: Yeah. In fact, in the world wars, it was a plasma replacement. They would use it in the war. And they would give you IVs of it when you lost blood.

Jodi: I heard that. That they used seawater for blood replacement. And they used coffee enemas for pain.

Christopher: Yeah. Yeah, I didn't know about the coffee enemas. But I did know about the seawater for the blood replacement. In fact, they did want us to, it's a little freaky but they took a dog and drained all its blood out. And filled it up with Quinton plasma. And the thing lived.

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Jodi: Wow, amazing! Is there anything on resilience or boosting resilience that we haven't touched on that you'd like to add?

Christopher: No, I would just bring NAD in there as the most fundamental thing for building mitochondria. We have 2 products, NAD Gold, NAD Platinum. When you are building NAD, there's a balance you need with methylation. You're from Seattle, you're familiar with all of the needs of methylation. But those two need to be balanced in.

And so, a lot of people went out, when Tru Niagen was available, the nicotinamide riboside. And they would just take tons of that. And it's great, but it drains your methylation groups. And so, you have to balance those 2.

So, we have NAD Gold and Methyl Charge that go together. Or in the NAD Platinum, they've been balanced together for you. So, NAD is a beautiful thing, if you know how to take it in conjunction with your methylation groups. And that is one of the strongest resilience promoters once you've gotten all of the junk out.

Jodi: Awesome. And can you share where people can learn more about you and purchase these products, especially BitterX, if they're PMS concerned.

Christopher: Yes, yes, yes. QuicksilverScientific.com If you go on the site and sign up for an account there, it's real easy, you'll get access to our newsletters, a lot of our education. You'll find me all over YouTube, different talks there. In fact, Quicksilver Scientific has a YouTube channel there. Tons of stuff. You'll see lectures I've given in Seattle, all around YouTube. And then you can follow us, Dr.ChristopherShade@Instagram. And there's an Instagram and a Facebook for Quicksilver Scientific.

Jodi: Well, thank you so much for all of your amazing information. It's so appreciated.

Christopher: All right. Thanks so much, Jodi.