185: Resiliency Radio with Dr. Jill: Dr. Scott Sherr How Methylene Blue Restores Your Mitochondria

Dr. Jill 00:12
Welcome to *Resiliency Radio* with Dr. Jill, your go-to Podcast for the most cutting-edge insights in functional and integrative medicine. I'm Dr. Jill, and on each episode, we have thought leaders and innovators who are at the forefront of medical research and practice. Our mission is to empower you with knowledge and inspiration, aiding you on your journey to optimal health.

Dr. Jill 00:31
Today I am absolutely delighted to introduce a neighbor, friend, and colleague. Dr. Scott Sherr is a Board-Certified Internal Medicine Physician, certified to practice Health Optimization Medicine, and a specialist in Hyperbaric Oxygen Therapy. He is also the COO of Troscriptions, a Smarter Not Harder company. His clinical telepractice includes HOMe, which is the Health Optimization Medicine. Its foundation is alongside an integrative approach to hyperbaric oxygen, which includes cutting-edge and dynamic protocols, comprehensive testing, targeted supplementation, personal practices, synergistic technologies, and so much more. We're going to dive into that.

Welcome, Dr. Scott, to the show today.

Dr. Scott Sherr 01:14
Thanks for having me, Jill. Yes, neighbor—five minutes away.
Dr. Jill 01:16
Yes. It's so crazy because we didn't know this. I knew about your company and your products. Then you were like, "I'm just down the street. Do you want me to stop out of the office?" I was like, 'Yes!'

Dr. Scott Sherr 01:25
Yes, it was amazing. I'm relatively new to Colorado, so it was great to have a veteran Coloradan, as they say, give me a little bit more about the lowdown.

Dr. Jill 01:34
If I can reveal... You were an ex-surfer, right? You're a California boy?

Dr. Scott Sherr 01:39
I was in California for a while. I wasn't much of a surfer, to be honest. But I was in California.

Dr. Jill 01:41
Okay, that's right. I think I said that twice.

Dr. Scott Sherr 01:43
No, it's cool because I give off that surfer vibe to people sometimes, but I'm not a surfer. I always liked the beach. Even when I was in medical school, I used to wear sandals all the time in Baltimore. I give out the vibe. I went to UCLA for undergrad. California does run deeper than I'd like to admit, sometimes.

Dr. Jill 02:01
I give off that Midwestern vibe somehow.

Dr. Scott Sherr 02:04
We all give off the vibes. I grew up in New York, so I don't know how much of a New York vibe I give off anymore.

Dr. Jill 02:09
We're all just like this mishmash. I am glad to talk to you today. And speaking of backgrounds in California and New York, I love [to hear one's] story. I love what drives us to get into what we do. We're going to talk specifically about what you're doing now, but how do you get into medicine? Tell us a little bit about your journey. Did you always know you wanted to be a physician?

Dr. Scott Sherr 02:30
My father is a chiropractor. He's been a chiropractor for over 40 years in New York, so I grew up inside his practice, seeing what he was doing. And as you likely know, Jill, before there was functional medicine or integrative medicine, there were chiropractors. Chiropractors did everything. He still kind of does everything. He's been changing his diet, doing different types of exercises, and bringing new technologies, doing everything from the ground up from a dietary perspective, since before I was born. That starts even before that, from his upbringing, etc. But in general, I grew up in that ecosystem. It was an interesting conversation.

Dr. Scott Sherr 03:07
I always loved science. I gravitated towards it, being in his practice. I had a conversation with him probably before I went to college, definitely before I decided to go to medical school. "What should I do, Dad? I like what you do. Should I be a chiropractor? Should I be a regular doctor? What should I do?" I decided on conventional medicine because I had this high-minded idea—it was very high-minded and it still is—where you could bridge this chasm between alternative medicine, as it was called then, and conventional allopathic medicine. Could I find a way to do this that felt like it could do something to move the needle on health and move the needle overall in how I could help people?

Dr. Scott Sherr 03:45
I ended up going to medical school in Baltimore at the University of Maryland. I graduated and did my internal medicine residency. "It's my fastest way out." That was how I thought about it. "I can get a good, broad education from there." I could figure out what I wanted to do. And in medical school, I learned about Hyperbaric Oxygen Therapy. It was interesting because it was a very novel technology in some ways, but it had been around for such a long time. I knew that there weren't that many people who knew a whole lot about it. I was like, "Wow, I really like this technology. I could learn it very quickly and know more than most people." That's the cool thing as a young doctor.

Dr. Scott Sherr 04:21
I got involved in creating an integrative approach to Hyperbaric Therapy. As I finished my internal medicine residency, I started becoming the medical director of various hyperbaric practices. I created my own telemedicine practice where I was consulting with hyperbaric patients across the world and hyperbaric clinics across the world, where I would help with protocols, development, and integration of various technologies inside of Hyperbaric Therapy. But something was missing from it.

Dr. Scott Sherr 04:44
There was a missing foundational piece, because I found out very early on that if I put people in a chamber too early, they wouldn't do well if they had a lot of chronic medical issues. And you can resonate with this, I'm sure, Jill, in your practice and how it works. If you start things too quickly, you might be doing the cart before the

horse kind of deal. So I gravitated toward another practice that was started by a friend and colleague, Dr. Ted Achacoso. Dr. Ted created this thing called Health Optimization Medicine. It's a foundational approach to health.

Dr. Scott Sherr 05:13
It's similar to functional medicine but from a little bit of a different perspective. [It has] more of a perspective on health and focusing on optimizing health and leaving disease to the side for the moment. That became the foundation of my practice and it still is. Now I have a telemedicine practice where I do Health Optimization Medicine as the foundation. Hyperbaric medicine is sort of my specialty upon specialties. And then we have a for-profit company called Troscriptions that makes products that help me along the way with everything that I do for my patients in my practice.

Dr. Jill 05:40
Wow! First of all, I knew I liked you, Scott. And there's something so similar. I had no idea. This is why I love getting to know my guests on the podcast. I grew up with my primary doctor, a chiropractor, Dr. Vernon Manning. He had had polio and he was bent over. He was the funniest version of a chiropractor, but his heart was the hugest healer. I'd go for preventative visits to him. He was my mentor. He was the epitome of a healer to me. I wanted to go and be a chiropractor.

Dr. Jill 06:08
I remember that it was similar to the conversation you had with your dad in your journey. I was like, "Dr. Manning, I really want to be a chiropractor." And it was funny because he had been in the '40s and '50s. He was older when I met him. There was a lot of persecution with the AMA and the chiropractors, as you well know. So your dad and my mentor, Dr. Manning, went through a lot of difficulties because of our dichotomy of healthcare, which is sad because you and I know it's all one thing, in a way, about how we heal. All that to say, he was like, Jill, "You're too smart to be a chiropractor," which, again, no offense. I have some of the most amazing friends and smart chiropractors. But he had been through the persecution.

Dr. Jill 06:47
And it's so interesting that you said your goal was like, "What if I could do something different?" I was finally like, "Well, maybe I should go to medical school."

It was an afterthought. Then, when I started getting acceptance, I was like, "Maybe I could be a doctor." That was not my thought process, [which was] of holistic medicine and keeping ourselves well. I remember probably at 10, the chiropractor gave me this nutrition book. And the same thing: Chiropractors were the original holistic [practitioners], [encouraging us to] take care of ourselves and eat good. And I was fascinated. I was like: "Really? Food could change our lives, our minds, and our bodies?" I love that about your dad because that was so much [like] my journey. Then, when I went to medical school with this big goal, I was like, "What if I could transform medicine?" [laughter]

Dr. Scott Sherr 07:27
Yes, small goals. Small ones. Very, very small.

Dr. Jill 07:30
But I love that. Your dad was clearly a mentor.

Dr. Scott Sherr 07:34
Yes, totally. It's funny; he used to say back in the '80s that food was the most powerful drug that you could take. And that was unheard of at the time. He was not even in the realm of possibility. He was, I think, in the same boat to some degree as your mentor, in the sense that "if you want to have licensure to do whatever you want to do, then become a medical doctor and then figure it out from there." But as you said, I have tons of very, very, very smart chiropractor colleagues. And I love what they do.

Dr. Jill 08:01
Smarter than me, right? That's why I respect everyone so much. I adore and admire [their work] because they went through so much more difficulty, especially back in that generation, than we ever will. And that's part of why I think you and I probably chose [this path]. For me, it was the same thing. If I wanted to do medical missions internationally or any sort of thing, sadly, our standard system reimburses the best for an MD or DO. So it's the same path as you, but it's so fascinating because it's quite similar.

Dr. Scott Sherr 08:29
That's so cool that we probably wouldn't have known that unless we had a podcast together. I'm so happy. That's awesome.

Dr. Jill 08:35
And this type of medicine, Health Optimization Medicine, I love it because it's so aligned. It sounds like whereas I'm at the complex chronic [illnesses], helping people reverse disease, you're over here, like: "How do we optimally perform and live well? And how do we thrive in that health and not just get up every morning and groan another day, but really, really feel our very best?" And I'm so excited to talk to you about that because I think not only myself but my patients and a lot of people listening want to really know that.

Dr. Jill 08:35
Let's start with Hyperbaric Oxygen Therapy, because I've got so many questions for you. First of all, I'm sure anyone could use it, but what are some of the biggest indications, the biggest game changers? What kinds of people would benefit the most from hyperbaric therapies?

Dr. Scott Sherr 09:19
When it comes to Hyperbaric Oxygen Therapy, I often say that if you need Hyperbaric Oxygen Therapy, it's when. Most of us can potentially benefit from it. It just depends on when that time is going to be best. What we're doing in the hyperbaric chamber is that we're immediately doing a bunch of things. We're decreasing inflammation, we're reversing low oxygen states, and we're releasing stem cells, which are the baby cells in our body that can make new cells wherever they need to go. We're fighting infection, increasing the immune system's function overall, and increasing blood flow overall too. And then, over the long term, you're creating new blood vessels and tissue, and you're decreasing inflammation in tissues and various types of pathways that are involved in inflammation as well. And those stem cells can mature, those infections can get better, and the flow can get better.

Dr. Scott Sherr 10:04
It's a matter of understanding what the reasons are, honestly, Jill. When it comes to acute trauma, acute inflammation, and acute stress, hyperbaric therapy is fantastic at mitigating all those things very, very fast. And it does it in a very synergistic way with the body and more efficiently, honestly, depending on where in the body we're talking about. If it's the brain, for example, the brain only has a certain amount of capacity to heal because it has to prevent itself from swelling. If the brain swells,

we're in a bad situation. So Hyperbaric Oxygen Therapy with more oxygen at play can help reverse those low oxygen states.

Dr. Scott Sherr 10:40
If you had an acute heart attack, acute stroke, acute traumatic brain injury, or acute spinal cord injury, there is data [showing] that Hyperbaric Oxygen Therapy can help in those cases. Now, please go to the hospital first, of course. There've been crazy doctors in the hyperbaric community who have just put themselves in chambers with strokes and things like that—most of them from the Midwest, I have to say, or Texas. [laughter] But you're not surprised there.

Dr. Jill 11:03
No.

Dr. Scott Sherr 11:03
But in essence, what it comes down to for me is that if the physiology aligns with somebody who could potentially use Hyperbaric Oxygen Therapy, that's when I'm going to consider it. But, and this is the big but, if they have a chronic issue, if there is something long-term that's going on—a long-term goal, or long-term inflammation, chronic inflammation, chronic infection, or chronic fill in the blank—it's often not a good idea to go into a hyperbaric chamber right away because if you don't have the machinery available in your cells to make energy well.

Dr. Scott Sherr 11:34
What hyperbaric therapy is doing is getting more oxygen into the system. If the body has a lot more oxygen in it, what's going to happen? You're going to make more energy, but you're also going to make more energy byproducts, reactive oxygen species, inflammatory molecules, free radicals, or whatever you want to call them. The body has to neutralize those free radicals by creating an antioxidant response. If it can't do that—because you're already chronically inflamed, you're already antioxidant deficient, you already have a leaky gut, fill in the blanks, etc.—you're not going to do as well in the chamber, and it might not be beneficial for you over the long term.

Dr. Scott Sherr 12:09

So that's where the Health Optimization Medicine piece came in for me: What am I doing to truly optimize the cellular foundation of my patients? Can they make energy well? Are we getting oxygen to where we want it to go? Are we detoxing from the energy that we're making? Is our neurotransmitter ecosystem optimized in such a way that you're going to optimize the function of neurotransmission when you're inside a hyperbaric chamber? It was all very obvious to me when I was in clinical practice and realized if somebody went in with Lyme disease, for example, and they had a significant Herxheimer reaction, significant detox symptoms, or couldn't move for three days after getting out of a chamber, that wasn't conducive to their healing.

Dr. Scott Sherr 12:51
I even found that toughing it out in these kinds of situations... That's what a lot of hyperbaric clinicians told me that I needed to do initially: "Have them tough it out. They'll get better over time." Some did get better over time. But the problem was that three, four, or six months later, they were back to the way they were before because it was not a conducive process to put them in a chamber so early on in their process of getting better from Lyme. Those are some examples of what brought me to a more foundational approach before just doing Hyperbaric Oxygen Therapy for more of these chronic-related indications.

Dr. Jill (pre-recording) 13:24
Hey, everybody. I just stopped by to let you know that my new book, *Unexpected: Finding Resilience through Functional Medicine, Science, and Faith*, is now available for order wherever you purchase books. In this book, I share my own journey of overcoming a life-threatening illness and the tools, tips, tricks, hope, and resilience I found along the way. This book includes practical advice for things like cancer and Crohn's disease and other autoimmune conditions, infections like Lyme or Epstein-Barr, and mold- and biotoxin-related illnesses. What I really hope is that as you read this book, you find transformational wisdom for health and healing. If you want to get your own copy, stop by ReadUnexpected.com. There, you can also collect your free bonuses. So grab your copy today and begin your own transformational journey through functional medicine and finding resilience.

Dr. Jill 14:21

Okay, that makes so much sense. And I'm so fascinated. I have a few follow-up questions. My own experience was probably just shortly after my bad mold exposure. I was so toxic. I have had underlying Lyme and co-infections. They weren't maybe active, but I completely crashed the one time I tried Hyperbaric Oxygen Therapy. My thoughts were two things: The reactive oxygen, like you mentioned—these free radicals are created with oxygen. And oxygen is a great thing, but if you have all of this cytokine inflammation, you're going to drive it into the inflammatory pathway. So that makes so much sense. But you're just clarifying. I'm repeating this for our listeners: You don't want to be in a chronic state of Lyme, mold, or inflammation and go in there and do it intensely. My other thought is that I've read some research on nitric oxide production, which is so crucial to blood flow to every area of the body. And as we age, we diminish. The hyperbaric chamber—I think I saw a study that it increases nitric oxide as well.

Dr. Scott Sherr 15:19
To quickly put a little bit of an emphasis on Lyme, the co-infections, and the chronic illness, it doesn't mean you can't go into a hyperbaric chamber. It just means that you have to be supported through it and have a good idea of what your foundational cellular machinery is going to be able to handle. In previous cases, I used to give people antioxidants before they went in if they needed them. And that's paradoxical on some level because the way Hyperbaric Oxygen Therapy works is by creating this oxidative stress in the system. That stress causes these changes in your DNA and how it's expressed. That's called your epigenetics. You want that, but you don't always want it that much because what's also happening other than that free radical piece that we're talking about is that you're also getting a die-off of bugs. If you have bugs that do not like high-oxygen environments and you go into a chamber, you're going to get that die-off. Do you have the ability to bind and get rid of those bugs?

Dr. Jill 16:11
Deal with the garbage, right?

Dr. Scott Sherr 16:12
Deal with the garbage. Exactly. You have to be able to do all those things. I almost always refuse to put a person in the chamber if they don't have a Lyme literate doctor or a chronic complex medical illness doctor who's helping support them

along the way. Otherwise, I've just gotten burned too many times and it's not fair to the patient, obviously.

Dr. Jill 16:31
That makes sense. Like you said, I feel like anyone can benefit. Are there any contraindications? Let's talk about that. What would be an absolute or temporary contraindication besides what we talked about?

Dr. Scott Sherr 16:42
There's only one absolute contraindication and that's if you have a dropped lung or attention pneumothorax, which is when one of your lung cavities is filled up with air and you can't breathe. But you'll most likely be in a hospital for those kinds of things. Relative contraindications: If you're pregnant, you're not supposed to go into a hyperbaric chamber. But the chambers are indicated for carbon monoxide poisoning and pregnant women have gone into chambers for decades without any problems; the babies are fine, etc. If you are a COPD patient, if you require oxygen before going into the chamber, if you have severe asthma, if you have severe cardiac disease that's not controlled, if you have an ejection fraction less than 35%—[which is] basically how well your heart is pumping—if you have uncontrolled seizures, you don't want to go into a chamber because the oxidative load or the extra oxygen does cause more potential brain excitability.

Dr. Scott Sherr 17:28
But in essence, what you're doing here, if you're doing it well, is looking at dynamic hyperbaric protocols. You might have to start somebody at a milder pressure and then drop them deeper into pressure as you're trying to get more effects systemically because more neurologic pressures are milder pressures, so less oxygen, less pressure, and more systemic pressures are deeper pressures overall.

Dr. Jill 17:48
Oh, fascinating. I could talk to you for hours on this.

Dr. Scott Sherr 17:51
Yes, there are a lot of things to talk about. You asked me about nitric oxide, too. I forgot.

Dr. Jill 17:57
Yes. Let's talk about that. Yes.

Dr. Scott Sherr 17:59
What's interesting about nitric oxide is that with hyperbaric therapy, the deeper you go, the more vasoconstriction you have. This is because you are initially mildly depleting nitric oxide. This is because what those free radicals are doing is making nitric oxide less active and making it more inert, so you get mild vasoconstriction. And this is not a bad thing.

Dr. Scott Sherr 18:25
If you've had a traumatic brain injury, for example, you have a lot of swelling in your brain, unfortunately. What they do is open up your skull to let the swelling out, but they also notice that if you put somebody in a hyperbaric chamber, you decrease their risk of death by half in just three hyperbaric sessions. The reason why it's doing that is it's causing vasoconstriction, but at the same time, you're getting more oxygen into that tissue because you've diffused so much more oxygen into circulation. So despite that vasoconstriction, there is more oxygen flowing, which is what it comes down to.

Dr. Scott Sherr 18:57
Over the long term, there is an enhancement of nitric oxide. This is because of some of those epigenetic things that are happening and new blood vessels that are forming in these tissues. But in the short term, you're having a mild depletion of it. But in my cool integrative way, I always look at ways to mitigate that. And you can think about using nitric oxide boosters and things like L-arginine, Niacin, or other things to help vasodilation. Low-level light therapy helps as well. There are tons of things you can do to help mitigate some of that, depending on what you're going into the chamber for.

Dr. Jill 19:27
Okay. I'm having a big aha because post-COVID and even before, I'm treating a lot of people with this thing called the triad. It's this combination that often occurs together: Mast cell activation, dysautonomia/POTS, and hypermobility or Ehlers-Danlos symptoms. This all relates to the mast cells, inflammation, and all that. And what happens vascularly—you're going to know this because of your

internal medicine background—is there's a kind of collapse of the circulatory system at least on the lower extremities, right?

Dr. Scott Sherr 19:52
Yes. This is inducible nitric oxide.

Dr. Jill 19:53
There's this lack of [inaudible]. They're not getting blood flow to the brain when they stand up; they feel weak and dizzy. And I had this last year after COVID for a couple of months—[patients with] really low blood pressures. And what you're saying is that something like Hyperbaric Oxygen Therapy probably helps that as well. That is because the iNOS pathway can be reactive to reactive oxygen, infections, and inflammation, which makes us vascularly collapse, right?

Dr. Scott Sherr 20:18
Exactly. Yes. Inducible nitric oxide is the key there. We have different types of nitric oxide. We have endovascular nitric oxide or eNOS, in our vascular system. That's the normal [type]. And then you have inducible nitric oxide. That's the one that gets released with inflammation, stress, and infection. And that's the one that mostly gets impacted by hyperbaric oxygen therapy. It's the same one that gets impacted by methylene blue, which is a cool combination there.

Dr. Jill 20:43
Yes. That's a perfect transition. Okay, this is starting to make sense. One of the reasons I brought you on the show and wanted to talk about methylene blue, your company, and all that good stuff is because, for me, this POTS/dysotaunomia stuff that I had had since COVID was dramatically shifted by the small little doses of methylene blue. And it's because of this. But I did not know that hyperbaric could do the same thing.

Dr. Jill 21:09
So let's talk about methylene blue. There's so much to talk about. First of all, do you want to give us a little bit of the history [behind it]?—because this has been around for a long time. And I think one of the things that's so puzzling to people is that this is an industrial dye. But it has some profound benefits and lots of research. Do you want to lay out the framework a little bit about why it's potentially a positive thing?

Dr. Scott Sherr 21:28
Yes. The brief framework, the history for me personally, and the background are that the nonprofit organization that we have called Health Optimization Medicine & Practice is an educational company. It's training practitioners on how to optimize health, as I was alluding to earlier. And I'm trained in this. As we were creating this whole process and this program, we knew that we needed to create a for-profit company to help people right now on that health optimization path.

Dr. Scott Sherr 21:56
Some people have a long way to go, and it can take a long time to get there. And Jill, you work with the most challenging of the challenging. And how long it can take people to truly see the benefits of the work that they're doing. We created the Troscriptions company to help people right now along that path. The first compound that we started to dive into was methylene blue. And as you mentioned, methylene blue has been around for a long time. A little bit of history: It used to be the dye that we used to dye blue genes blue. Then somehow, in the late 1890s, they figured out that high doses of methylene blue treated malaria. It was the first drug that was registered with the FDA back in 1897.

Dr. Jill 22:36
Like the original antibiotic, right?

Dr. Scott Sherr 22:38
Yes, the OG, because it was the only antibiotic antimicrobial available until the 1950s. There are great stories about World War II pilots going to the Pacific theater and having to take methylene blue tablets with them as a preventative for fungal infections. They had songs about urinating blue because, back then—and it's one of the things we still know now—when we take methylene blue, it concentrates in our urine. So we urinate blue as a result of taking it. Really high doses will also make other secretions blue. But we're not talking about those kinds of doses for the most part. It came out of favor in the 1950s because of antimicrobials coming around. But it was a primary treatment for urinary tract infections, fungal infections, and viral infections. My colleague, Dr. Ted, talks about how in the Philippines they used to have methylene blue lollipops that they would give kids when they had viral infections coming on to prevent the viral infection from propagating, etc. It has that history.

Dr. Scott Sherr 23:36
Then, in the 1950s, the first antipsychotic drug was derived from methylene blue, called chlorpromazine. And that's because methylene blue also has something called monoamine oxidase inhibition. This means that it helps or prevents the breakdown of neurotransmitters, dopamine, norepinephrine, and serotonin. As a result of that, it gives people a mood boost when they take it. Initially, it was used in a way where it was compounded with antipsychotics so that they knew the psychiatric patients were taking the antipsychotic because their urine would turn blue. Now we know that it has fantastic properties on its own. It's been studied now in depression, bipolar, and other mental health disorders to potentially help as a standalone treatment or as something that could be used in combination with other therapies.

Dr. Scott Sherr 24:31
The final part of the history is that, in the last couple of decades, we now know that methylene blue is a fantastic mitochondrial enhancer. Most of us know methylene blue from—if you were like you and me—medical school. We would look at stains in biochemistry and methylene blue is used as the stain. And what does it stain? It stains your mitochondria. We know that it concentrates in the mitochondria. And where do we have the most mitochondria? In our brain, heart, liver, muscle tissues, sexual organs, ovaries, and testes. So why are we having such huge amounts of infertility right now, brain fog, brain problems, heart issues, or exercise-induced fatigue? It's because our mitochondria aren't working well—95% of us have poorly functioning or non-optimal functioning mitochondria.

Dr. Jill 25:20
It makes so much sense. And that's how we get to know one another, like: "Scott, what's this thing you're making? It's really cool. I want to know more about it." Granted, you can get it from company pharmacies. The one caveat I would say, which we've talked about—and we have the data to share if people want—the purity of this matters. If it's just the industrial form, it could contain heavy metals or toxins. Tell me just a little bit about that so that people listening [inaudible].

Dr. Scott Sherr 25:48
Good point. Methylene blue is still found in fish tank cleaners as well. People who love aquariums—there's a word for this that I'm forgetting—will use methylene blue

to treat the fish and treat the water as an antifungal and as an antimicrobial. The problem with that is that it's industrial-grade methylene blue. Industrial-grade [methylene blue] has up to about 11% impurities, which could be mercury, cadmium, arsenic, and other heavy metals. So you want to make sure that you're getting the cleanest stuff possible.

Dr. Scott Sherr 26:22
The first thing you want to make sure of is that you're getting a USP version. A USP is pharmaceutical grade. But unfortunately, that's not even good enough because USP can even be contaminated. It took us another eight months to launch our company back in 2019–2020 because that's how long it took us to find a clean source of methylene blue. We publish everything that we get. We publish all of our testing.

Dr. Scott Sherr 26:45
As you know, I'm a clinician, and we wanted to make sure—there were three other doctors on the team, including me—that we were giving our patients the cleanest stuff available. We go to the ends of the earth. We test every batch that we get. We have given away batches. We've thrown away batches in the past—thousands of dollars and things—because we just want to make sure we have the cleanest stuff possible. And it's a big deal because you can buy stuff on Amazon, but they don't come with a C of A, which is a certificate of analysis. You have to ask for it. Make sure that you're asking for it if you are looking for it from other sources.

Dr. Jill 27:16
Yes. I'm so glad we're talking about this, because I think it is so common. And we know that even during the pandemic, people were going for substances—we won't name any names or things—but they weren't pure and they weren't made for human consumption. And to me, that's really a big deal on this, especially because it is a powerful substance.

Dr. Jill 27:33
Just yesterday... I have a patient who's on oxygen with chronic babesiosis. She's in her late 20s. She's a young woman. She's been disabled and in bed. I've had her on methylene blue for the last six months and she came to the clinic. She's getting ready to go to Europe with her mother. It is a game-changer for her. She's been

doing a lot of other things for a lot of years, and this is the thing that took her to the next level. My thought is that, as we're talking, I bet she'd benefit from Hyperbaric Oxygen Therapy as well.

Dr. Scott Sherr 27:58
Possibly. But now that she's much better. Now that she's more supported. The way I think about methylene blue here is that there's a spectrum of dosing. And I think that's what you were alluding to earlier, too.

Dr. Jill 28:07
Let's talk about that. Go ahead and dive in.

Dr. Scott Sherr 28:09
There is a lot of literature out there [suggesting] that the dose of methylene blue "should be somewhere around 1 milligram per kilogram," which would be about 50 to 70 milligrams for most people. But I find that's usually a very high dose for most people. I often find that very, very low doses can go a long way. And some interesting studies have been done on Alzheimer's patients. They did a study where they compared 8 milligrams twice a day to 50 milligrams twice a day to 150 milligrams twice a day. And the people in the 8 milligrams twice a day [group] did much better. That was the placebo group. And the reason they used the 8 milligrams was that they wanted everybody's urine to turn blue. And there are a lot of parallels to this in Hyperbaric Oxygen Therapy, but we can talk about that another time. But it's very difficult to do studies when things turn colors or you have pressures and things like that. But interestingly, this lower dose did the trick.

Dr. Scott Sherr 29:01
I think the reason for this, Jill, is that methylene blue can enhance mitochondrial function. It's got this cool capacity that's called electron cycling. What that means is that it can help donate electrons, which, in the mitochondria, help you make more energy. Even if some of the parts of your mitochondria aren't working very well and you have all these protein complexes, it can bypass those. It can support them and it'll help you make energy where you need to make it. At the same time, when you make energy—we were talking about this on the hyperbaric side—you're making free radicals, and you have to have the ability to neutralize those to help keep the system efficient. If you don't, the system is going to be inefficient, and it's going to break down. Methylene blue can directly act like an antioxidant. It can pick up these

electrons. At the same time, it induces pathways in your system that increase antioxidant production, specifically glutathione, through something called the Nrf2 pathway.

Dr. Scott Sherr 29:59
What you need here is something that could be supportive most of the time. And it's not the only thing that you're doing as a clinician. You're using methylene blue—at least the way I think about it—as a support while you're also doing other work to enhance and regenerate mitochondrial function. So you're giving and you're optimizing vitamins, minerals, and nutrients. You're optimizing gut health. You're working on neurotransmitters and hormones. And if you're doing all that at the same time as you're giving some methylene blue, you can start with low doses and see these profound benefits, which is what I think you've seen in your practice.

Dr. Jill 30:31
Yes. This makes so much sense. I've been using it. It is indicated. A lot of the doctors who treat chronic Lyme and tick-borne infections have used it. It's especially good for Bartonella, which is a tough one to treat. We often add that in. But we would start at 50 and go up from there. And I'll just tell you there's a side effect—you know this well—methemoglobinemia and all these different things, so we'd have some real issues with dosing people up and side effects. And since I've just reframed that and started with the lower doses…

Dr. Jill 30:59
And I'll just tell you personally, for me, with POTS/dysautonomia, this was the biggest thing that transformed my symptoms. I was doing like 8 milligrams every other day or every third day. That small, tiny little bit. I didn't even need it daily. And it transformed. So I could probably do 8 milligrams twice a week and be okay. It's just phenomenal. To me, that was such a game-changer and eye-opener. That came from your product because it comes in 16 milligrams but is quartered, so you can do a quarter, a half, or whatever. What made you think about… Was it the studies with the low dose? I feel like that's a real game-changer. And it's also more safe for the average person to try versus a 50 or 100 [milligram dose]. I think the research shows that above 50 [milligrams] is when you're going to have side effects and interactions with SSRI drugs and things like that, right?

Dr. Scott Sherr 31:41
Right. We started at low dosing because of the work that was being done on Alzheimer's and the cognitive literature. Somewhere around the 16-milligram dose seemed to be the sweet spot for neurologic optimization. If that was the case, we said, "Why don't we start at this dose?" because it's extremely safe. The side effect profile is next to none overall.

Dr. Scott Sherr 32:05
Our company has a professional line and we have something called Tro+ Blue. That's our prescription strength or our professional-only methylene blue troche for those reasons.

Dr. Scott Sherr 32:17
As far as SSRIs go, we talked a little bit about MAOI inhibition earlier and how methylene blue was the drug that some of the antipsychotics first came from. The risk of having an SSRI alongside being on methylene blue at the same time is something called serotonin syndrome. This is extremely rare. It's never been described with oral methylene blue before, only with IV at very high doses. So honestly, Jill, I don't worry about it very much.

Dr. Scott Sherr 32:47
But I do worry about some of the oxidative load that happens at higher doses of methylene blue. As you get to a higher dose, you're going to get more hydrogen peroxide production. And hydrogen peroxide is something that our body makes. It's a way that our body fights infection. It's a way that our body helps stimulate antioxidant pathways to make something like glutathione, like I said earlier. That's not a bad thing, but you do have to think about: Does your patient have the capacity to neutralize the hydrogen peroxide that they are making? For somebody who has chronic infections, that may not be the case.

Dr. Scott Sherr 33:26
At least in my clinical practice—and I've worked with a number of Lyme-literate doctors that are doing Bartonella work, etc.—they start it off at 8 milligrams. And I'll titrate their dose every five to seven days until I get to a dose where we're having a positive effect. Then, depending on how they're doing, we might keep them on seven days a week for a month or two months. But we're always trying to see what

we can do about coming down to that dosing over time. But I think the key is titration. And the key is understanding that the risk with a higher dose is going to be more of an oxidative load.

Dr. Scott Sherr 33:57
SSRIs are important. You have to be thinking about that, but only in the context that people might feel more uncomfortable with the extra serotonin around. And you also have to think that if you have a little bit more norepinephrine around, that's something that can also be interactive. And with the POTS, it's going to be helpful, but for some people who already have high blood pressure, you have to be a little bit careful with your dosing to go slowly to make sure they don't have any elevations in their blood pressure when they start taking methylene blue as well.

Dr. Jill 34:25
Yes. Wow. This is so great and such good information, even for the general public, because I feel like it's really safe at these low doses. I've been doing this and doing methylene blue for probably a decade, but I've had much better results with the low dose. To me, it's a game changer and safer in that sense. So you'd recommend starting at like 4 or 8 [milligrams], which again, you can quarter to make sure you tolerate it.

Dr. Jill 34:51
A couple of thoughts. First of all, I think there's some research on combining methylene blue with red light therapy for the brain. Do you want to talk about that a little bit?

Dr. Scott Sherr 34:58
Yes. There is a great researcher out of the University of Texas, Austin; his name is Francisco Gonzalez-Lima. He's done a couple of podcasts over the years as well. He's done most of his research. His main thing is methylene blue for Alzheimer's and Alzheimer's-like disorders. He studied Alzheimer's in animals. He studied it in traumatic brain injuries in animals. The challenge with methylene blue, Jill, as you know, is that it's off-patent. So it's not something that has a blockbuster drug at the end of the rainbow. But he published a cool paper looking at low doses of methylene blue, so less than 0.5 milligrams per kilogram, so around that dose of about 25 milligrams or so. He did this in combination with red light. The red light dose was around 660 nanometers. The cool thing about methylene blue and red light is that

under relatively normal conditions, they're both going to donate electrons to what's called complex IV, or cytochrome oxidase, in your mitochondria. As a result of that, they're synergistic and they're both going to enhance the capacity of your mitochondria in your cells to make energy.

Dr. Scott Sherr 36:04
If anybody's done this and I certainly have it, I'm guessing you have too... You can take methylene blue and then go out in the sunlight about 30 minutes later or maybe an hour later and you'll feel this rise in energy. Your cognitive capacity is going to go up. Your endurance is going to go up too. I have a bunch of elite athletes that I work with that are using methylene blue, along with their training program, to help with their endurance while they're in the sun. And of course, red light panels do this too.

Dr. Jill 36:31
Amazing. I'm going to share a little secret here in public that I haven't ever talked about before. But one of my favorite things is taking low-dose methylene blue. I have a device that goes on the head and does red light to the brain through the nose, the cribriform plate. Sometimes I'll even add a mitochondrial peptide to that mix. And it's amazing. It's funny because we talked about this. There's not a high. It's just like a wonderful, good, healthy energy.

Dr. Scott Sherr 36:52
It's a rise.

Dr. Jill 36:53
It's just like, "I feel good!" You know these days where—if you're out there listening, hopefully most of you have had these days—you just wake up and it's going to be a great day? You just feel amazing. That's because of our natural neurotransmitters. Maybe you had a good, deep sleep or whatever happened or you just got home from vacation. But that's the kind of thing we're talking about. It's just this really good, sustainable energy where you're not crashing. Granted, there are all kinds of natural highs too. But this isn't a natural high. It's just a healthy state of being, right?

Dr. Scott Sherr 37:21
Yes. I like to call it an elevation. I just feel this rise. And then for some people, if

you're pretty well optimized, what you may realize is that you take it and then the day is over and you're like: "How is my day? I didn't get as tired in the middle of the day. I was able to have more conversations. I ran further at the gym." Some of my patients refuse to work out without methylene blue because they can keep their heart rate up longer. And one of the things that it can do is be just like oxygen at your cells. So even if you have less oxygen around, it can take the place of oxygen or compensate for low oxygen levels.

Dr. Scott Sherr 37:56
If you're coming to visit Jill and me in Colorado and you're going to be at altitude for the first time in a while, methylene blue can potentially help you. If you're on an airplane, for example, you're pressurized to about 8,000 feet. For Jill and me, that's like nothing because we're already at 5,000 or 6,000 here. But for somebody at sea level, 8,000 feet is a lot. You're going to get low oxygen up there. You can get radiation exposure and you're going to get sluggishness from the circadian rhythm disruptions, the lights, and everything else. What is methylene blue going to do there? It's going to compensate for that. It's going to give you more energy capacity. It's going to give you more detoxification potential as well. It's a great, great thing to have, a support, especially with travel. It's a big jet-lag hack. We have a full blog on it on our website to talk about the protocol that we've developed and it works flawlessly. You can add in certain other things, of course—this is not the only thing you want to do—but it can certainly help significantly along those processes.

Dr. Jill 38:51
I love that. I'm a traveler and I really love travel hacks.

Dr. Scott Sherr 38:55
I know you are. We're at a lot of the same conferences.

Dr. Jill 38:58
I know. But that's an aha for me. I'm like, 'Oh, yes!' I remember going to Australia. I had a whole protocol to totally hack jetlag, and I did. And I was very impressed with the ability to do that. But this is going to add to that. And it's super exciting for those of you listening. You can give that a try too.

Dr. Jill 39:14

Our last few minutes. You're in this health optimization world. I love it. Our worlds very much overlap. Methylene blue has really been a game-changer. First of all, thank you for helping to be on that team to develop and get it out in an easy and safe way that's tested for the public and general population. If you're listening, no matter where you're listening, you'll be able to find a link to get your own. And I'll mention this now and I'll mention it at the end, but the code, 'DrJill', will give you 10% off. You guys have graciously given us a code to share. You guys can get a discount on your order.

Dr. Jill 39:49
Let's go back to the final thing, though. What do you see as up-and-coming, either new technology or new ideas in health optimization?—maybe just things to keep on our radar.

Dr. Scott Sherr 40:01
Well, Jill, this has been awesome. It's always good to hang out with you. What I've been more focused on recently is the GABA neurotransmitter system. This is because GABA is our most powerful inhibitory or relaxing neurotransmitter. Most of us—I think we discussed this when I had you on my podcast—are in fight or flight most of the time. The challenge with that is that it depletes our GABA system. GABA is important for relaxing the brain and relaxing us. People who are GABA-deficient have higher levels of anxiety, stress, and depression. They have sleep problems. They have multiple issues. It's associated with mental health disorders like schizophrenia and OCD and even systemic symptoms like tremors and high blood pressure, and so many different things.

Dr. Scott Sherr 40:44
What I've been interested in recently—and this goes along with, I think, society in general, and Troscriptions, my company, is also very involved in this—is: How can we modulate the GABA system and take people off that threshold? This is actually my father's description of people: So many of us are just over the cliff. But if we can bring them back off that threshold, that's when we can start healing. This goes back to my work in hyperbaric therapy: If I want people to be in the chamber, I need to have them relax so they can heal in there, not watching John Wick 3 or something like that. Because, [if so], you're going to be so stressed in there. Your body's going

to be all clenched up. It's the same deal. When we're trying to heal, I think that the real key for all of us is to get more parasympathetic or more rest and digest.

Dr. Scott Sherr 41:27
I've been looking into the world of how we can modulate the GABA system. The hard thing about the GABA system is that you can't give GABA itself most of the time, because GABA itself is not something that can get across the blood-brain barrier very easily. It's kind of cordoned off. It's a big molecule. So, what can you do? You can use herbals like kava, for example, or valerian root, or you can look at something called agaric, which is an ingredient from the psychedelic mushroom Almanita Muscaria that gets across the blood-brain barrier. It doesn't cause psychedelic experiences, but it helps you as a long-acting GABA agonist, something that increases GABA.

Dr. Scott Sherr 42:01
On the health optimization side too, what are your glutamine levels like? What are your glutamate levels like? Do you have vitamin B6 and magnesium? These are all important to enhance and support the GABA system. If anybody's had MSG at a Chinese restaurant or an Asian restaurant in general, you'll have this experience of headaches. I'll get them. My father gets them for three days. This is because you get this overabundance of glutamate from the monosodium glutamate. You're having a hard time converting it because glutamate in the brain gets converted into GABA. That's like its own thing. But in general, I'm excited about modulation of the GABA system and increasing the ways that we can modulate and be more parasympathetic and relaxed, more of the time.

Dr. Jill 42:46
Awesome. This is super exciting. We talked about methylene blue. Your website is Troscriptions.com. And if you're listening and want to get that discount on your first order, you can use the code you guys have graciously given me to share. And that's just 'DrJill'. But this also lends itself to mentioning the other products because you guys have some of these other things available. Why don't you tell us real quickly what else is on that site?

Dr. Scott Sherr 43:15
Sure. On our methylene blue side, we have a combination with nicotine, caffeine, and CBD. This is our Blue Cannatine. This is for focus. This is for productivity. This

is for three to five hours of trying to get it done kind of deal. It's great for targeted focus. And then we have Tro Calm, which is for anxiousness and stress relief. It's something you can use during the day. It has kava, CBD, CBG—both non-psychoactive—and something called nicotinoyl-GABA, vitamin B3 attached to a GABA. It lets it get across that blood-brain barrier. It's fantastic for stress relief.

Dr. Scott Sherr 43:46
We have Tro Zzz, which is our sleep formula. This has eight different ingredients in it for comprehensive sleep modulation, helping you fall asleep, stay asleep, and wake up feeling rested. There are a number of things that are working on the GABA system, [including] slow wave sleep with something called cordycepin, which is a fantastic mushroom derivative, and 5-HTP and melatonin.

Dr. Scott Sherr 44:08
But, Jill, and this is the big but with all of this—I'm a clinician and you are too—what I truly care about is that all of these products that we make can hopefully be just temporary solutions for you while you're doing the hard work, and we know it's hard, trying to optimize over the long term. That's always the framework for me. Yes, I have a product company. We make supplements. I think they're fantastic. But in the end, my hope is that you can only use these things when you need them and hopefully you don't need them all the time.

Dr. Scott Sherr 44:36
If you're doing the work of optimizing mitochondrial function and your gut health, your toxic load, as you say, etc., after all of that is said and done, hopefully, you don't need our stuff all the time. Only when you're traveling, when you're not sleeping well for a couple of nights, or when your immune system is messed up because you're not sleeping because you have a baby at night that's crying, or whatever it might be. But we're there for you. I think hopefully, in the long term, you don't need us as much. And that's completely fine with me.

Dr. Jill 45:04
Scott, thank you for bringing this great information to the world. Thank you for [being] the clinician that you are. It is an honor to talk to you and also call you neighbor because you're just down the road from me. What a treat. Thank you again!

Dr. Scott Sherr 43:14
Likewise.