#631 How Nitric Oxide Deficiency Drives Erectile Dysfunction, High Blood Pressure, and Rapid Aging | Nathan Bryan

Dr. Wendy Myers

Welcome to the Myers Detox Podcast. I'm Dr. Wendy Myers, and on this show we talk about everything related to heavy metal and chemical toxicity, the health issues caused by these toxins, and we get into advanced biohacking, bioenergetics, and more and more advanced topics than you're gonna hear on other shows. I don't really do the basics so much. On the show today, we have a really good friend of mine, Dr. Nathan Bryan. He is an expert in nitric oxide. So we're gonna talk about everything that is affected by lack of nitric oxide. For instance, if you have high blood pressure, if you have erectile dysfunction, and with dementia, Alzheimer's, all of these health issues are from a lack or in part from a lack of nitric oxide, even diabetes and insulin resistance.

Again, we go into the mechanism about how there is a lack of nitric oxide. We talk about how nitric oxide dilates all of your blood vessels and how that can reduce your high blood pressure when you supplement with it, how you can improve insulin sensitivity, how you can also improve erectile dysfunction and just so many other benefits. We also talk about some of the shocking things that reduce nitric oxide production, such as use of fluoride toothpaste, fluoride mouth washes, use of mouth washes that kill bacteria in your mouth that make nitric oxide and can affect it so much. It can negate the benefits of exercise. When I heard that on another podcast

that Nathan was on, I stopped using mouthwash immediately, even my natural essential oil-based mouthwash. It doesn't matter if it's killing your nitric oxide-producing bacteria.

So we talk about what's the story with beets and a lot of different topics on this subject. It's a really good in-depth show today. Our guest, Dr. Nathan Bryan, earned his undergraduate Bachelor of Science degree in biochemistry from UT Austin and his doctoral degree from Louisiana State University School of Medicine in Shreveport, where he was the recipient of the Dean's Award for Excellence in Research. He pursued his postdoctoral training at the Kerstein Fellow at Boston University School of Medicine and the Whitaker to cardiovascular Institute. After a two year post-doctoral fellowship in 2006, Dr. Bryan was recruited to join the faculty at the UT Health Science Center at Houston, by Faron Murad, 1998 Nobel Laureate in medicine or physiology.

Dr. Bryan has been involved in nitric oxide research for the past 25 years, and has made many seminal discoveries in the field. He's also a successful entrepreneur and Founder and CEO of Bryan Therapeutics, a privately-held clinical stage biotechnology company that's actively engaged in the discovery and development of nitric oxide-based therapies. BT has active drug development programs and heart disease, Alzheimer's disease, and topical drugs for diabetic ulcer and non-healing wounds. Dr. Bryan also has a consumer line of products that are some of the most successful nitric o oxide products on the market. You can find those at n1o1.com. Nathan, thank you so much for coming on the show.

Dr. Nathan Bryan

It's great to be back with you. Thanks Wendy

Dr. Wendy Myers

You're an expert on nitric oxide. So tell us what is that?

Dr. Nathan Bryan

Nitric oxide is this really phenomenal gas that's naturally produced in the body. It's a signaling molecule. It dilates blood vessels, improves tissue oxygenation, mobilizes stem cells, activates omega, and turns on our mitochondria to more efficiently make

cellular energy. So everything we know about health optimization, longevity and disease prevention is dependent upon adequate and sufficient production of nitric oxide.

Dr. Wendy Myers

If you have high blood pressure, you need nitric oxide to kinda relax and expand those blood vessels as well.

Dr. Nathan Bryan

Yeah, I'd say that nitric oxide fixes the physics problem of hypertension. And what I mean by that is, we all have a finite amount of blood volume going through our blood vessels. And so if you make adequate nitric oxide, it dilates the blood vessels with each heartbeat. If you can't make nitric oxide, you get chronically constricted blood vessels. So now you get that same volume of blood going through smaller pipes and laws of physics is pressure equals volume times resistance. If for instance, resistance goes up and volume stays the same, pressure has to go up. If we can give nitric oxide, restore the natural production of nitric oxide, we dilate the blood vessels, and pressure comes down. It is a very important contributor to adequate and normal healthy blood pressure because hypertension's the number one driver or the number one killer, which is cardiovascular disease.

Dr. Wendy Myers

Let's talk about erections as well. So Viagra works by increasing that nitric oxide. I want to get the guys' attention here so that they're really paying attention.

Dr. Nathan Bryan

The nitric oxide is what causes the vasodilation. The PD5 inhibitors like Viagra for erectile dysfunction work downstream of nitric oxide. So these drugs don't affect nitric oxide production. They affect nitric oxide signaling. So when nitric oxide is produced, it increases a second messenger called cycling GMP. Then there's an enzyme called phosphatase that degrades the cyclic GMP. So if you give a phosphatase inhibitor, you prolong the accumulation of cyclic GMP, and that's responsible for calcium mobilization, smooth muscle relaxation, and vasodilation.

Erections are a result of vasodilation and increase in blood flow. We call that engorgement, and that's both in men and women. But we know that 50% of the men that are prescribed Viagra or Cialis don't respond with better erections. So these drugs, billions of dollars a year in revenue, are only working for 50% of the men. The reason they don't respond is because these men aren't making any nitric oxide to increase cyclic GMP. So there's nothing for these drugs to work on.

That told us years ago that erectile dysfunction is a symptom of nitric oxide deficiency. So now if we restore nitric oxide, you can take non-responders to PD5 inhibition therapy, make them respond with better erections. Or you can best case scenario, wean them off of the drug and just let the body respond naturally to the natural production of nitric oxide.

Dr. Wendy Myers

How do we produce it naturally?

Dr. Nathan Bryan

Well, it was first discovered to be through an enzyme called nitric oxide synthase, and we call that NOS. It's found primarily in our endothelial cells, and those are the cells that line all blood vessels throughout the body, even our lymphatics. So this enzyme converts L-arginine, which is an amino acid into a very complex five electron oxidation, creates nitric oxide gas, and then the metabolic byproduct of that is L-Citrulline So L-Citrulline is a byproduct of nitric oxide production, and it's not a precursor. Today, we understand enzymology and biochemistry, and when that enzyme becomes uncoupled and dysfunctional, it converts arginine into super oxide instead of nitric oxide.

So giving arginine as a supplement to people with endothelial dysfunction is a really, really bad idea. In fact, in 96, a clinical trial was published at post patients who just had a heart attack were given arginine as a supplement versus a placebo in the patients who received the arginine had higher morbidity, higher mortality, they stopped the clinical trial halfway through because it was unethical to keep giving these patients arginine because they were dying. And then the same thing happened in a cohort of patients with peripheral disease. The arginine group got

worse. So that refocused the science on how do we maintain the function of the enzyme to where if you have arginine being around, which is inside the cell already, how do we convert that into nitric oxide?

So that's why we focus on the function of the enzyme, what prevents NOS coupling, what maintains NOS function and adequate nitric oxide production. So that's what we call the NOS pathway, and that's endothelial function or endothelial dysfunction.

Ads 08:40

And now a word from one of our sponsors. One day I was researching an article for toxins in protein powders, and I was so shocked what one research study found about the levels of heavy metals in protein powders. Most people don't realize that over two thirds of protein powders tested by consumer reports had lead above California's Prop 65 limits, some of them 10 times over the limit. And in another study, 47% of top-selling US protein powders exceeded the limits as well. 21% had more than double. It is just alarming what's in some of these products.

That's why I switched to Puori, grass-fed whey. It's an amazing tasting protein powder, and every batch is third party tested for 200 plus contaminants. Puori is the only supplement brand that publishes results online. So you can even scan a freak QR code on every bag and see what's in your batch. Each serving delivers 21 grams of whey protein from grass-fed cows. They also have six grams of branch chain amino acids, and it's made with totally clean ingredients. It's totally free of hormones, GMOs, and pesticides. They have amazing flavors. They have bourbon, vanilla made with real vanilla seeds from bourbon vanilla from Madagascar, which is the best in the world.

They also have dark chocolate with dark chocolate from organic cacao powder. Honestly, it just feels really good knowing exactly what you're getting, clean protein tested for safety and total transparency. You wanna use the code Wendy at puori.com. If you use the coupon code, you get 32% off the Puori grass-fed whey protein. And when you start a subscription, in addition, you get a free shaker worth $25 on your first subscription order, which brings a total savings to $49. So go to puori.com/wendy and use the code, Wendy, at checkout for this exclusive offer.

Dr. Wendy Myers

And aren't there exercises that you can do to increase nitric oxide?

Dr. Nathan Bryan

Well, when we begin to exercise, whether it's a brisk walk or even resistance training that causes sheer stress in the lining of the blood vessels. So that activates and turns on nitric oxide production. So then they go, that's your body telling you, Hey, I need to dilate these blood vessels and get more oxygen to these working skeletal muscles or cardiac muscle to meet the increased metabolic demands.

Dr. Wendy Myers

But there's bacteria on our skin and in our mouth that make nitric oxide too, correct?

Dr. Nathan Bryan

No, for sure. So that's what we call the compensatory redundant pathway, where the bacteria that live, there's different classes of bacteria in our mouth, in our gut, and on our skin. The nitrate reducing bacteria found in the GI tract, primarily on the dorsal part of the tongue, some in the lower GI, but these bacteria convert nitrate, which is found in green leafy vegetables. They do that two electron reduction to nitrite. Then when we swallow our saliva, we produce nitric oxide in aluminum in the stomach. And so we have to maintain an oral healthy MI microbiome. We have to have adequate stomach acid production, and we have to have the right diet to fuel this pathway.

And then on the skin, there's what's called ammonia oxidizing bacteria. So when we sweat, we're secreting both nitrate and to an extent ammonia. The ammonia oxidizing bacteria oxidize ammonia to nitric oxide gas. The nitric oxide that's produced on the surface of the skin prevents pathogenic bacteria from over colonizing. It prevents fungal infections, dermatitis, many important things and maintains adequate dermal blood flow.

Dr. Wendy Myers

I saw you on the diary of a CEO podcast and you were talking about how using mouthwash will kill the bacteria that helps to produce nitric oxide. I've had bad breath ever since I stopped using my mouthwash. I was like, oh no, 'cause you said that it will kind of cancel the effects of exercise almost. So there are pretty big repercussions from using mouthwash and everyone is doing that. They want their fresh breath. It makes sense. We need the microbiome in our mouth for many reasons. Yeah.

Dr. Nathan Bryan

Well, stay tuned. I launched a microbiome-friendly toothpaste supplement and in a couple of months, we're launching a nitric oxide-friendly mouth rinse. So now those that wanna use mouth rinse, we can create a fresh breath. But rather than killing the oral microbiome, we can support and improve the diversity of the oral microbiome while leaving a fresh minty breath. So stay tuned. We've got solutions on the horizon.

Dr. Wendy Myers

Oh, that's great. Yeah. That's such good news. I still will nuke my mouth bacteria sometimes on occasion, but I'm not doing it on a nightly basis. I used to just do it. It's just routine. You just don't think about it but even using a natural mouthwash with essential oils is still problematic 'cause even Listerine has essential oils in it. That's how it works as well.

Dr. Nathan Bryan

No Listerine. Look, all you gotta do is listen to the advertisement. They said they killed 99.99% of the bacteria in your mouth, and they're proud of that. And there's clear evidence. Now the preponderance of evidence says that killing 99% of the bacteria in your mouth is a really, really bad idea. It shuts down nitric oxide production, your blood pressure goes up, you lose the protective benefits of exercise. So I don't know if you're still advertising that.

Dr. Wendy Myers

Hopefully none of the people listening to this podcast are using Listerine, but a lot of us are using the natural ones that have the same essential oils that are in Listerine.

Listerine just has alcohol in it as well. Yeah. But still even the essential oils or they're still doing the same action, doesn't matter if it's natural.

Dr. Nathan Bryan

There's a lot that we know, but there's also a lot we don't know. We haven't really collected the data, done the investigations into how these different essential oils and certain concentrations, the idea was to selectively kill the pathogens while maintaining a normal, healthy commensal diverse microbiome. And so that's what we focused on with both our toothpaste and our mouth rinse. How do we selectively kill the pathogens, but improve the diversity? And improve the ecology of the non-pathogenic commensal so that we can create a normal, healthy microbiome to perform all these important metabolic functions that we as humans can't do, and we rely on the bacteria to do.

Dr. Wendy Myers

Is there anything else that we're doing that's harming our nitric oxide production? Like maybe just soaping your body down every shower that you're doing?

Dr. Nathan Bryan

That's right. We've developed this germophobic society, right? People taking a couple of baths a day and it still blows my mind when I get on an airplane every week and they're still giving you the antiseptic antibacterial, hand wipes and people sterilizing their environment. I intentionally try to sneeze on those people. But we have to support the microbiome. We can't keep killing it. And people who bathe multiple times a day, typically they have unhealthy skin, they have acne because you're destroying the microbiome. And that's an important health component of every organ in the body.

In fact, dysbiosis is associated with every major age-related chronic disease, gut dysbiosis, oral dysbiosis, skin dysbiosis, vaginal dysbiosis, colonic dysbiosis. It's all there and we gotta stop killing the bacteria. We gotta, we rely on these bacteria.

Dr. Wendy Myers

That's why I think I'm a proponent of just soaping up maybe once a week. You can just get in there, do your pits or whatever. I'd be a dirty bird. Just get in there and just roll around the dirt.

Dr. Nathan Bryan

That's what I tell my kids out in the country. Just go outside, roll around the dirt.

Dr. Wendy Myers

Yeah, well just rinse off and clean little crevices. But just maybe once a week or even longer, then you do your exfoliation with your soap or whatever you want

Dr. Nathan Bryan

That's exactly what I do. Maybe once or twice a week, I'll use soap, but I've got an ozone generated pool outside, a chemical free pool, and a lot of times I just jump in the pool and fully oxygenate and that's my bad for the day.

Dr. Wendy Myers

That's great. Let's talk about what are some of the consequences of low nitric oxide. You talked about high blood pressure. It affects millions and millions of people and they're just taking medications, synthetic salts and stuff to manage that. What else can they do?

Dr. Nathan Bryan

Well, because there's no clinical measure of nitric oxide in labs, we can get vitamin D or triglycerides or important things like that. We have to rely on symptoms. So the first sign and symptom of nitric oxide deficiency is erectile dysfunction. And we talked about that because if you lose the ability to dilate the blood vessels, you get erectile dysfunction. And then secondly, your blood pressure starts to go up. And we know two outta three Americans have an unsafe elevation in blood pressure. So any blood pressure above 120 over 80 is your body telling you that you're not making enough nitric oxide. And now the clinical data tell us that one millimeter mercury increase in pressure systolic increases your risk of cardiovascular disease by 1%.

So if you're walking around with a blood pressure of 140 over 90, you've got a 20% greater incidence of having cardiovascular disease. And then 150, 170, it's incremental. Again, nitric oxide dilates the blood vessels normal and blood pressure comes down. And then thirdly, you start to develop insulin resistance and metabolic disease. In 2011 we published a paper showing that nitric oxide is required for insulin signaling and glucose septate. If your cells can't make nitric oxide, you develop insulin resistance. And then fourthly, we talk about exercise, but if your body's not making adequate nitric oxide, then you can't maintain a normal exercise regimen.

So people who get short of breath, tight to chest, and walking up the flight of steps, coronary arteries aren't making enough nitric oxide to dilate the coronary arteries to increase blood flow and oxygen delivery to the working cardiac monocyte. And then fifthly, you start to develop mild cognitive impairment, eventually Alzheimer's. So that's the hierarchy that we documented clinically of what happens, but our body's constantly talking to us. If you have erectile dysfunction, that's not normal. It doesn't make it, especially if you're 20 or 30 years old and you have ED, that's a major problem. That's your body telling you, Hey, something's not right here and you need to change course, or you're gonna develop high blood pressure, diabetes. You're gonna get Alzheimer's individually and die of cardiovascular disease.

Ads 19:17

I wanna take a minute to give a shout out to one of our sponsors, True Energy Skincare. They have an amazing serum that I am cuckoo about. I've been using their facial serum here for well over a year for a reason. This is just by far one of my favorite products. It's very, very light. It's just a serum you'll put on under your moisturizer. And the reason I use it is because it's a frequency-based skincare. They have frequencies imprinted on this serum that improve collagen, improve elastin. Collagen is that support matrix in your skin that makes it look firm and juicy and we lose that as we age. That accelerates rapidly after we hit menopause. You lose 30% of your collagen within two years after menopause. I'm using everything I can get to improve collagen. This has over 2000 frequencies imprinted on it for skin nutrition, to help the appearance of your skin, the fine lines, the age spots, and it will smooth out the texture of your skin as well.

This has been my secret weapon that I've been using to improve my skin, look and feel healthy, like I said, for well over a year. And so, I'm not promoting this because they're a podcast sponsor. I'm promoting this because this is one of my secret weapons. I love this product and I use it every single night under my moisturizer. This has no toxic ingredients in it whatsoever. It has lots of nutritive ingredients as well. It's got fruit, enzyme extracts. It's got oat kernel extract. It's got oat beta glucans. It's got beach bud extract and it's got algae and chlorella in it as well. It has lots of great nutrition in this as well as the frequency enhancing aspects of it. Any old product can moisturize your skin. That doesn't impress me, but the results you get from this are bar none, and that is why I highly recommend it. They have a very good offer for my listeners. Go to trytrueenergy.com/wendy and get a very special deal for my listeners.

Dr. Wendy Myers

Statins can cause that also. The cholesterol lowering medication, if you're taking those and you have ED, that's why, or one of the reasons.

Dr. Nathan Bryan

Statins is a very, very bad medicine.

Dr. Wendy Myers

Obviously there's an age-related decline, so at what age do people need to start paying attention to this and start taking action to increase their nitric oxide?

Dr. Nathan Bryan

If you look at population based studies, just looking at people only selected for their age group, so 20 to 30, 30, 40, 40, 50, all the way up to the 90s, we see about a 10 to 12% decline in endothelial nitric oxide production per decade. So that's kind of normal. But today we know that that doesn't have to be the case 'cause we've measured people looking at endothelial function and flow media dilatation in their twenties and look at the vascular age of it. Normal 60-year-old, and then we know we can reverse that. I'm 51, but I've got the vascular age of a 3-year-old.

So we know we can slow this age related decline or prevent this age related decline in nitric oxide production. But on average it's about 10 to 12%. So if you look at the general population, by the time you're 40 or 50, you're down to 50% of the nitric oxide you had when you were younger. We've gotta prevent that age-related decline or start compensating through the Entero salivary circuit by changing our diet, supporting the microbiome, and having adequate stomach acid production.

Dr. Wendy Myers

Is nitro oxide regulated by circadian rhythms at all by the sun or wake times?

Dr. Nathan Bryan

Well, for sure. Yeah. The sun certainly has an effect on nitric oxide production because both ultraviolet frequencies and infrared frequencies can release nitric oxide that's bound to cystine dials or, or bound to metals. So once nitric oxides were produced. It binds to proteins, it binds to metals. And if we're exposed to sunlight, then it liberates that nitric oxide and releases it to maintain normal vasso reactivity and vasso activity.

Dr. Wendy Myers

So, we've gotta get out in the sun, everybody, just like for so many things, insulin, right.

Dr. Nathan Bryan

Here's 20, 30 minutes a day. The first sunlight of the day is best.

Dr. Wendy Myers

What about toxicity? How do heavy metals or chemicals contribute to low nitric oxide levels?

Dr. Nathan Bryan

There are tons of toxins. We live in a toxic world, but heavy metals number one, interrupt nitric oxide. So they scavenge nitric oxide, things like metal cat, any redox active metal 'cause when nitric oxides are produced, it has an affinity for metals. So if

you have a heavy metal toxicity, it'll scavenge any nitric oxide that's being produced before it has a chance to diffuse into the smooth muscle and dilate blood vessels. So, people with heavy metal toxicities typically have hypertension 'cause they're scavenging any nitric oxide that's being produced. And then there are things that are the fat soluble toxins, like glyphosates, herbicides, and pesticides, those are typically fat soluble chemical toxicants.

Those are disrupting the function of the NOS enzyme and leading to oxidative stress, which oxidizes BH4 and leads to coupling. They develop endothelial dysfunction. So toxins are a huge burden in interrupt nitric oxide production. I think too few people focus on toxins. It's always trying to supplement what the body's missing and develop or deploy stem cells. But if you're burdened with toxins, your body's not able to do its job. So we have to focus on removal from the source of exposure to toxins, liberating all the toxins out of the body,giving back what the body's missing and then the body heals itself.

Dr. Wendy Myers

That's why I keep trying to tell people, but they're not so simple. They're not doing what they're supposed to be doing. They're not listening to me. It's simple. If you just listen to me, it's simple,

Dr. Nathan Bryan

But it's not easy.

Dr. Wendy Myers

If you just listen to me, you will feel so much better. So how do we restore nitric oxide? You have a supplement that helps with that. Let's talk about that and other ways we can naturally restore it.

Dr. Nathan Bryan

First, I developed product technology, but I did that because, and the only reason we could do that was number one, we had to answer two important questions. How does the human body make nitric oxide? And then what leads to a loss of its natural

production? Until you can answer those two questions, you shouldn't even start thinking about developing product technology. So we have to first focus on what are you doing that's disrupting natural production? That includes using fluoride, which is an antiseptic in your toothpaste and your drinking water.

We've talked about antiseptics. You gotta get off antiseptic mouthwash and tannic acids. If we inhibit stomach acid production, it completely shuts down electric oxide production from both pathways. And so if you stop using mouthwash, get rid of fluoride in your toothpaste and wean off tannic acids, now you've released the breaks on the body's ability to make nitric oxide and you gotta cut down sugar and anything that leads to an increase in blood sugar. When we see an increase in fasting glucose levels, glucose is sticky. It's glue as the name implies. So it sticks to proteins, it sticks to enzymes, and enzymes and proteins have to undergo a conformational change, and if the sugar sticks to it, it glues into a single conformational change.

So it renders them dysfunctional, and that's what we measure as hemoglobin A1C. It's the amount of sugar that is stuck to hemoglobin. So anything that leads to an increase in blood sugar is shutting down nitric oxide production.

Dr. Wendy Myers

What level do you want your A1C to be? What range?

Dr. Nathan Bryan

I think anything about 5.6 or 5.7 is pre-diabetes, diabetes range, but the lower the better. You don't mulch sugars stuck to important things like hemoglobin and oxygen carrying molecules because hemoglobin itself undergoes a conformational change when it goes from the arteries to the vein. If it can't undergo that conformational change because it's got too much sugar stuck to it, then you can't deliver oxygen.

That's why diabetics are hypoxic. That's the reason they have neuro diabetic neuropathy. That's the reason they have non-healing wounds because you're not oxygenating that tissue because your sugar is stuck to that molecule, that hemoglobin, that protein.

Dr. Wendy Myers

Tell us about your supplement. You have a skincare line as well, correct?

Dr. Nathan Bryan

Based on my 20 years in science in figuring out how this molecule works and how it's produced, we developed what's called an orally disintegrating tableau. And so you gotta remember, nitric oxide is a gas, it's not something you can chew on. It's not a capsule you can swallow. So I developed what's called an orally disintegrating talent. You put this in your mouth and you just let it dissolve. It'll take five or six minutes. But as it's dissolving, I designed this matrix to slowly fall apart. And then as this matrix is falling apart, we're producing about 20 to 30 parts per million nitric oxide gas.

So it's a therapeutic release of nitric oxide. And if I had an ultrasound right now, I could watch my carotid arteries dilate. The nitric oxides proven in the oral cavity are dilating my carotid. It's improving cerebral blood flow, opening up the conduit, the resistance arteries and opening up the microcirculation. Some fully oxygenate every organ, tissue, and cell in the body. So that's number one. If your body can't make nitric oxide, we have to do it for you. It's similar to hormone replacement therapy. If your body can't make estrogen, we gotta give it to you. If your body can't make testosterone, we gotta give it to you.

It's no different with nitric oxide. We don't give your body precursors and substrates and hope your body can make it. That's the reason people are nitric peroxide deficient. And then more importantly, we understand we're fixing the enzyme that makes nitric oxide Melania in the blood vessels. So within 20 minutes of me putting this in my mouth, my endothelial function improves by 20%. And then because it's an early disintegrating tablet, it's restoring the normal flora is killing the pathogens and improving the diversity of the nitrate reducing bacteria. So now we're improving the body's ability to naturally produce it, which is no other product technology like that in the world.

Dr. Wendy Myers

It seems like a really smart thing to do before an infrared sauna as well. If it's dilating all the blood vessels.

Dr. Nathan Bryan

That's exactly what I do. When I get up in the morning, I take my nitric oxide and I sit in the infrared sauna. It helps improve circulation for mobilizing toxins. We want good circulation so we can excrete those toxins. It's a great idea before red light therapy, infrared sauna, hyperbaric oxygen, any biohack or bio stack you're doing, you start with the lozenge.

Dr. Wendy Myers

In that same vein, it makes sense that if you have a skincare line, where you can put that. I use it as well. You can put it on your skin. You're going to dilate the blood vessels, get that microcirculation and oxygen to your skin, which helps to promote young looking skin. You need oxygen and nutrients to it.

Dr. Nathan Bryan

Now look, this concept I developed back in 2014. My dad, who's a paraplegic diabetic from a car accident in 1984, had a 4-year-old non-healing decubitus ulcer. And every wound care doc I took him to, said, you will never heal this wound in a 65-year-old paraplegic diabetic. He became septic, and almost died. And once we got him outta the hospital, I started developing a nitric oxide releasing gauze, and I would change his wound dressing twice a day. I put a micro oxide of the leasing gauze in that wound to kill the infection and number two to force blood flow to that wound bed.

And within six months we healed a 4-year-old non-healing wound. These wound care docs were like, what the hell did you do? We've never seen this before. So then, realizing drugs take about 10 years and $800 million to bring to market. We're now developing this as a topical drug through the FDA. But in the meantime, we've developed a skincare product. This is a dual chamber. You take one pump from one side, one pump from the other, and then when you mix 'em together. Again, it

produces nitric oxide. You apply it to the face, nitric oxide gas, it'll diffuse into the dermis and the recruit capillaries dilate blood vessels.

So we're improving blood flow oxygenation, improving cellular turnover, mobilizing stem cells, and you can see this product working right before your eyes 'cause your skin will turn a slight pink and that pinkness is due to an increase in blood flow. It's an incredible new product category in Skin Cube. We've got six published clinical trials on it. It's an amazing skincare product.

Dr. Wendy Myers

I've looked at everything on the market, believe me, I'm hunting down places in South Korea right now. I'm like on Instagram looking for all the latest treatments. I've never heard of any skincare that's using nitric oxide.

Dr. Nathan Bryan

Zero, the only one in the game and it is a remarkable product.

Dr. Wendy Myers

And that makes sense. It's not just about actives you're putting on your skin. It's not just about moisturizing. Those are super basic. It makes sense. You need that microcirculation. That's why I love the sauna because it's also dilating the blood vessels, getting that oxygen, nutrients to the skin. That's where you see the skin aging, especially in smokers. You can see this 'cause that's constricting their blood vessels for sure and constricting the oxygen and nutrients. That's where you get the smokers' lines and where you see women that are really, really, really aged. It's the constriction of the blood vessels. So this does the exact opposite of that to maintain youthful skin.

Dr. Nathan Bryan

In our clinical trials we do biopsies and with 30 days use of our nitric oxide serum, twice a day, we see an improvement In collagen deposition, we're actually increasing the amount of collagen in the skin. So hydration improves fine lines and wrinkles get better. We've got data in acne, scar remediation, wound care, rosacea, and age spots. The skin is an organ just like the sex organs or the brain or the heart. We've got

to maintain adequate perfusion and blood flow and mobilization of stem cells and improve cellular turnover in order for those organs to function. Nitric oxide does all that.

Ads 33:46

Are you taking collagen supplements? Well check this out. Our friends at Organifi have sourced the best collagen on the planet, and you can get it with 20% off savings today too. So, what is collagen? It's the most abundant protein in our body. It's everywhere. It's in your muscles, joints, hair, skin, fingernails, everywhere. It's one of the fundamental building blocks of life. Your body uses collagen constantly to keep itself refreshed and repaired. But as you get older, especially as women that are going into menopause, you can lose 30% of your collagen within the first five years of menopause, and that starts in perimenopause as well. Your body just stops making as much of it and you start losing it, especially as your estrogen levels come down. That's why consuming collagen is such a great idea every single day. It gives your body a fresh supply to keep working at its best.

It's not only good for your hair, skin, and nails, but it helps to support your gut and metabolic health, immune system, cardiovascular strength, and all of your muscles and moving parts too. Collagen is nothing new. It's one of the oldest supplements out there. Collagen supplements have been around for quite a while now. But what makes Organifi so special is it's all about the quality.The non-organic collagen scare 16 me. They're really problematic because they can be full of glyphosate, pesticides and other chemicals that you do not wanna be taking on a daily basis. Not all collagens are the same. It can come from many different sources and the source can drastically impact its potency and effectiveness as well.

Some manufacturers just go with the cheapest stuff that they can find and then add fillers and artificial flavors and they still charge you a lot of money for that. Organifi always goes the extra mile to ensure their quality is the best. They blend five collagen types from four different sources, and they taste and test until it's perfect. And then they go even further to test for things like glyphosate residue and other sneaky toxins that can get into the mix. After passing through all of these goalposts, it finally gets the Organifi seal of approval so you can rest assured it's the highest quality and

non-toxic. I love that this company is a company that I can trust that their products will be safe and effective exactly as they say they will be.

In the supplement world these days, that kind of honesty and transparency is getting harder to come by. So, if you've never tried collagen, now is a great time to start. And if you're already taking it, now is a great time to switch to a better brand. Upgrade what you're doing right now so you and your entire body is gonna love Organifi Collagen. It is something that I take on a daily basis. It's been a part of my supplement routine for the past five years, since I went into menopause, and so I can't recommend it highly enough. Now let's talk about saving you some cash as well. Here's what you do. Go to organifi.com/myersdetox and put in coupon code Myers detox to get 20% off. Go to organifi.com/myersdetox and don't forget the Myers detox coupon code as well. You'll save an extra 20% off by putting in my special coupon code Myers detox. So, like I said, collagen's one of those things that I take every single day. It's one of the most important parts of my anti-aging protocol, the things I'm doing to fight off the clock. So for me, taking clean collagen is really important. It's hard to find, so I highly, highly recommend Organifi collagen.

Dr. Wendy Myers

Where do we get these products? What is your website?

Dr. Nathan Bryan

The products you can find at n1o1.com.

Dr. Wendy Myers

What's the story with beets? So you see a lot of beet products out there that are talking about nitric oxide and lower blood pressure. What's that deal?

Dr. Nathan Bryan

It's probably one of the biggest myths ever perpetuated in nitric oxide science. Going back, say 15 years ago, there were data showing that beet root, which can contain a certain amount of nitrate when consumed, if you have the right oral bacteria and you have stomach acid production, can produce nitric oxide. So then in the 2012

Olympic games, almost every country was using beet root juice as an ergogenic heat to improve their performance.

So then shortly thereafter, hundreds of companies started selling beet root powders and beet root products. And they were saying it was a nitric oxide benefit. Now, I've measured and tested every beet product on the market and 95 to 99% of the commercial beet products on the market contain no nitric oxide activity. They are what we call dead beats, and we use these as placebos in clinical trials if we're taking an active beat component, which we use versus a placebo. And again, these commercial bee products are great placebos because you have to understand the active component in beet in terms of nitric oxide is nitrate.

There's no detectable nitrate in nitride in any of these bee root products. And it's because of a number of reasons. Number one, they don't understand the agronomy and the sole condition. Number two, when they dry, these hybrids concentrate into a powder. They use high heat, high pressure. These are water soluble compounds, and they come out and there's nothing left in the powder. So beets are not a source of nitric oxide, and yet you turn on your tv, you turn on your radio, and these companies are spending millions of dollars every month trying to convince you that beets create nitric oxide and can lower your blood pressure and improve your energy.

I get complaints all the time and emails saying, Hey Nathan, you say nitric oxide is important. But I've been taking this beet product that I've seen advertised for years and my blood pressure hasn't improved. My energy hasn't improved. My erect sexual function hasn't improved. So nitric oxide doesn't work for me. And again, that's a huge misinterpretation. Nitric oxide always works. The problem is that the product doesn't make nitric oxide. You're not getting nitric oxide. So that company and that product failed you. Nitric oxide didn't fail you. So I tell people, stay away from the beets. We made fermented beet powder because we felt we had an obligation.

If people want to take beets because of the nitric oxide, then we make a product called non beets, where we start with a high concentration of the beets. We ferment them to pre-con the nitrate into nitrite. So now when people take our beets, it's not dependent upon the oral microbiome and it's not dependent upon stomach acid. If your body can't make it, we do it for you and we remove the oxalates.

Dr. Wendy Myers

Most beets contain silicic acid, which is a huge problem.

Dr. Nathan Bryan

It's a huge problem, and people are drinking liters of this stuff or taking these beat products and it's not making them better, it's making them worse. So don't believe the hype, the marketing, it's deceptive, it's fraudulent. Beets are not nitric oxide.

Dr. Wendy Myers

Can you talk about the oxalate issue? Just for anyone that doesn't know what those are or what they do?

Dr. Nathan Bryan

So oxalic acid or oxalates are found in many vegetables, root vegetables, dark green, leafy vegetables like kale, spinach, and if you can overconsume them and there's different sensitivities, but you can form oxalic acid and they form crystals and cause kidney stones or exacerbate gout or some of these other things, but they're inflammatory. You have to limit them. And some people are more sensitive to others, but people who are trying to get nitric oxide from beets or vegetables are offsetting that by taking the increased intake of oxalates and really sometimes doing more harm than good, especially if they're not providing any nitric oxide.

Dr. Wendy Myers

Some people absorb a lot more oxalate from their diet. If they have a leaky gut, they're gonna absorb a lot more than someone who has a gut intact. So you have to be careful and when it comes to high blood pressure, there's a lot of people that are managing their high blood pressure with blood pressure medication. So, they're just trying to get that 120 over 80. And so that doesn't negate their need for nitric oxide. That doesn't mean you're all good to go, problem solved. It's great to prevent a stroke, but you really wanna be thinking about, what is the underlying root cause of this condition, and how do I address that? Can you talk about that?

Dr. Nathan Bryan

Well, there's different classes of antihypertensive medications, right? There are drugs that affect the renin angiotensin system, which are ACE inhibitors and angiotensin receptor blockers. There are classes of drugs that affect calcium metabolism and transport. We call those calcium channel blockers. And then there's beta blockers that pace your heart, diuretics that cause volume, unloading to normalize blood pressure. Physicians need to figure out the etiology of their hypertension, and here's what the real time data tell us. 50% of the people that are prescribed antihypertensive medication for their blood pressure don't respond with better blood pressure. So what do they do? You go to your doctor, you have high blood pressure, they'll put you on an ACE inhibitor. Typically, first line therapy best you may get is a four to six millimeter reduction in blood pressure. But if you're starting at 150 and you're trying to get to 120. You gotta bid 'em five different medications.

So they'll put you on a higher dose, an ARB, a calcium channel blocker. Many physicians negligently still use beta blockers as first line therapy versus second line therapy, which shouldn't be used ever. So what we're finding is that the ED, the majority of people that have resistant hypertension, meaning they're resistant to anti-hypertensive therapy or have oral dysbiosis. So the people who have resistant hypertension, I go, are you using mouthwash? Most people say, yes. Do you have fluoride in your toothpaste? Well, of course. Okay, stop using fluoride toothpaste. Stop using mouthwash. Come back 30 days later and let's remeasure your blood pressure.

When you stop killing the oral microbiome that are producing micro oxide, your blood pressure becomes normal, and now you can start weaning people off of different classes of medications. But I tell people, look, if your blood pressure is managed with prescription therapy, then so be it. But everyone's goal should be off all prescription medication. Our body's never deficient in a synthetic compound that inhibits a biochemical reaction, which is what most drugs are. You gotta understand the root cause of the high blood pressure, address that, and the body responds appropriately.

Dr. Wendy Myers

In taking nitric oxide, do you see an improvement in people's high blood pressure?

Dr. Nathan Bryan

That's right. We're not only providing a source of nitric oxide that's vasoactive and dilates the blood vessels, but we're improving the body's ability, even making it on its own. So then blood pressure naturally comes down, except in people who have heavy metals and accepting people who have adrenal tumors. Those are the sources of hypertension that we will not bring down with nitric oxide 'cause even though we're giving nitric oxide, the metals are scavenging and the adrenal tumors are just over secretion of mineral corticoids. It's a volume overload.

Dr. Wendy Myers

How often should you take the lozenge that you created?

Dr. Nathan Bryan

You know, based on the pharmacokinetics and pharmacodynamics, I designed it to be once in the morning, once in the evening, 12 hours apart. And that's kind of your daily nitric oxide support. But that's for people who are healthy and just want a kind of a supplemental prophylactic dose of nitric oxide. In 2011 we published on a pediatric patient with a rare genetic disorder and he had to take one lozenge every four hours to manage his blood pressure. We monitored this kid for a period of hours and days and there was no increase in met hemoglobin formation, no unsafe drop in blood pressure.

We feel very confident that taking one lozenge every four hours is safe. And some people with extremely resistant hypertension require one lozenge over four hours. So, but everybody has to dose according to need. There's not one size fits all. What I can tell you is that one loss twice a day is coming at your daily supplemental dose to prevent this age-related decline.

Ads 46:22

And now a word for one of our sponsors. If you cook with non-stick pans, there's a good chance that you are consuming plastic. It's not fearmongering. It's what the

current research suggests. There's a 2024 study that showed that just one scratch from a Teflon coated pan can release thousands of microplastic particles into food during cooking, every saute, every egg, every healthy homemade meal.

These particles don't just exit the body. They accumulate in your arteries, in your brain tissue, and may contribute to hormonal imbalance to inflammation and cardiovascular risk. So there was one study that found a 4.5 times higher risk of heart attack or stroke in people with microplastics lodged in arterial plaque and others have identified plastic particles inside brain tissue itself.

This is why reducing daily toxic exposure wherever possible is such an important part of long-term health. And it's not just old or damaged cookware. Research suggests that even brand new non-stick pans can begin shedding particles from every use. This is one reason that I'm very, very mindful about the materials that I use in my kitchen. That's why I recommend the P600 ceramic cookware. I personally use these. The P600 is completely free from Teflon, PFAS and plastic based coatings. It's made with Swiss engineered, ceramic designed to be truly non-toxic. It heats evenly, it cleans easily, and most importantly, it doesn't add to your toxic load.

So reducing exposure doesn't require perfection. It's just about making smart upgrades where they matter the most. So, if cookware is something that you use daily, this is a very meaningful place to start. Right now, the P600 cookware is 50% off, and for a limited time for my listeners, you can take an additional 20% off by using coupon code Wendy 20 at checkout. Just go to chefsfoundry.com, use the coupon code, Wendy 20. Your body and your detox pathways will thank you

Dr. Wendy Myers

When do you recommend people start supplementing with nitric oxide? Are there symptoms or just an age that you recommend they start it at if it can't hurt?

Dr. Nathan Bryan

No, it can't. I said there's only two people in the world who need nitric oxide. There's the people who are sick and wanna get well, and there's the people who are well and don't wanna get sick. So if you fall in one of those two categories, you need it. My kids

take it, I give it to 17 and 14-year-old athletes before basketball games, before football games for recovery. So yeah, I think the earlier you start to recognize the importance of nitric oxide.

My kids are very fit, physically active, they eat a good whole food, chemical-free diet. So probably they can get away with not taking nitric oxide supplements 'cause their body's primed and makes sufficient nitric oxide. But again, if you start getting older and you start to see our erections aren't what they used to, if your blood pressure starts, you know, sneaking up and you start to develop insulin resistance and hyperglycemia hyperinsulinemia, that's your body telling you, Hey, I'm not making enough nitric oxide. So it's better to be proactive rather than reactive, and unfortunately, medicine is a reactive practice. We gotta change that.

Dr. Wendy Myers

Can you talk about maybe in more detail about the nitric oxide and insulin resistance because high blood sugar is the root of so many different health issues, including hypertension, including atherosclerosis and heart disease, et cetera? Can you talk about how nitric oxide can help improve that insulin sensitivity?

Dr. Nathan Bryan

In 2011, we published a seminal paper showing insulin signaling. Insulin is secreted from the pancreas, and so when insulin is secreted, it binds to insulin receptors primarily on fat cells, skeletal muscles, and liver cells. Then that tells those cells to bring in glucose and glute four is the primary glute transporter or glucose transporter. GLUT4 is typically a cytosolic protein, but when insulin binds, it sends GLUT4 to the membrane to bring glucose into the cell to clear it from the circulation. So, the question was, what's the mechanism in signaling from the time insulin binds to the insulin receptor till glucose comes into the cell?

We worked out this entire intracellular signaling cascade. So insulin binds an enzyme or protein calledPI3K/AKT. It's a protein kinase that phospholate. The NOS enzyme also activates MAP kinase, which is the target of metformin, the primary anti-diabetic drug. But both of those pathways converge on the nitric oxide synthase enzyme. But we know in diabetics that the enzyme is uncoupled and dysfunctional so we can

phosphorylate that enzyme, but we're not producing nitric oxide. And then the question was, well what role is nitric oxide playing in GLUT4 train's location?

In our 2011 paper, we showed that if we give nitric oxide, it binds it. It post-translational modifies two cysteine residues on GLUT4. And when we post translation, we modify those proteins. It leads to GLUT4 translocation, and we bring glucose into the cell. So nitric oxide is the link between insulin binding and glucose. You can't make nitric oxide. You don't get glucose into the cell and you develop insulin resistance. But that is the mechanism. It's also interesting the speed forward mechanism, because if you're not bringing glucose into the cell, you're developing hyperglycemia. That's telling your pancreas, Hey, I need more insulin. It secretes more insulin, and I've got the hyperinsulinemia hyperglycemia, and that's the inflammatory cascade of diabetes.

Dr. Wendy Myers

It's so interesting how you mentioned that heavy metals scavenge up all the nitric oxide, and that is one of those mechanisms also where heavy metals promote insulin resistance and diabetes as well.

Dr. Nathan Bryan

The basic science, we've completely lucidized the mechanism of what nitric oxide is, how it's produced, where it goes, what it becomes, and what scavenge is it. It’s not a lack of understanding. Number one, there's a lot of information. My job as a basic scientist is to take the information and confer that into knowledge, but there's so much misinformation out there, and people are getting misinformed and they're confused. I spent 25 years in academia, and if I were to listen to a lot of biohackers and podcasters, they could fuse me because these people, number one, typically have no pedigree, have no credentials, and they have influence over people. And they're given medical advice on things that they have no basis for.

So I get why consumers are confused, If you watch TV and watch these commercials, consumers are confused. And so that's why we have to do a better job of taking information and distilling it down into basic knowledge that's based on science. That's really my objective.

Dr. Wendy Myers

Nitric oxide is one of those molecules that as you get older, you're just producing less of. It's one of those things you need to take for anti-aging. You need to take some melatonin and maybe some hormone replacement. And there's this huge list of things that you need to take to replace as you get older, and nitric oxide is definitely one of those for sure

Dr. Nathan Bryan

I say it's a foundational molecule. It's not an end all, be all, cure all. It's not a panacea. It's not gonna fix everything. But what it is gonna do is allow your body to respond to anything you do thereafter. Because without nitric oxide, your body cannot and will not heal because it can't. It's not gonna get adequate blood flow. You're gonna have runaway inflammation, oxidative stress, and immune dysfunction. You can't mobilize stem cells to repair and replace. Your telomeres get shorter. You develop mitochondrial dysfunction and that's aging and chronic disease. So if we restore the production of nitric oxide, that's the foundation we start with. And now, you gotta focus on detoxification. If you're deficient in certain vitamins and minerals and nutrients, you gotta replete those.

You gotta get good sleep. Nitric oxide is not gonna replace a good night's sleep. You still gotta get sunlight. You still gotta get physical activity and movement, and you've gotta practice deep breathing and get away from mouth breathing. So it's foundational. It's not a silver bullet and I don't want people to come away with that.

Dr. Wendy Myers

That microcirculation is so important. That's why I'm such a huge proponent of the infrared sauna, just getting all that oxygen and that the vasodilation and the nutrients and everything to every corner of your body and over time, that starts to reduce because of inactivity and not going in the sun, reduction of nitric oxide, et cetera. So, by taking that nitric oxide, you can start replacing, enhancing and improving your body's ability to get that microcirculation for sure

Dr. Nathan Bryan

It's all about oxygen delivery to the mitochondria, so the cell can produce energy. Without nitric oxide, you can't deliver.

Dr. Nathan Bryan

There you go.

Dr. Wendy Myers

Well, Nathan, thank you so much for coming on the Myers Detox Podcast. Always a joy to have you on. As soon as I saw the diary of a CEO talk about my mouthwash I said, dammit, I've gotta have him come back on and talk about this again, because I think that it's shocking for a lot of people to think that using mouthwash, just that one simple thing can negate the effects of exercise and that's very, very compelling. And these little adjustments that you can make in your life can make such huge changes, especially taking nitric oxide when it comes to anti-aging, improving insulin resistance, and your high blood pressure. That's what so many people are dealing with tens of millions, hundreds of millions of people are dealing with as they start getting into their forties, fifties, and sixties.

Dr. Nathan Bryan

Now, look, the fact that cardiovascular disease remains the number one killer of men and women worldwide is completely unacceptable. We know how to diagnose it. We know what causes it. We know how to treat it. It's not a lack of information, it's a lack of the translation of that information into clinical practice.

Ads 56:29

For anyone listening who really wants to detox their body, go to heavymetalsquiz.com. I created a quiz for you. It only takes a couple of seconds and it's based on some lifestyle questions. You can get your toxicity score and get a free video series that answers all of your frequently asked questions about how to detox your body. Check it out at heavymetalsquiz.com

Dr. Wendy Myers

Well, Nathan, thanks for coming on the show. Tell us what your website is again and where to get the N1O1 Nitric Oxide.

Dr. Nathan Bryan

Well, first I want to plug my latest book called The Secret of Nitric Oxide: Bring the Science to Life. In this book, I chronicle what nitric oxide is, what led to a Nobel Prize and my personal journey of discovery. And then I encourage people to subscribe to my YouTube channel, Dr. Nathan Bryan, Nitric Oxide. My job is to educate and inform people based on science. I'm less interested in selling products, but I want people to get educated, become aware and informed on the importance of this molecule and do the things that we discussed. Stop doing the things that are disrupted, start doing the things that promote it.

But yeah, when all else fails, we have product technology that does it for you and, you can find that in n1o1.com.

Dr. Wendy Myers

Well, Nathan, thanks for coming on the show. Everyone, I'm Dr. Wendy Myers. Thank you so much for tuning in to the Myers Detox Podcast where I love having experts like Dr. Nathan coming on and helping you make those distinctions, make those upgrades that you need so that you can live the life that you deserve. You deserve to feel good, and I just so want that for you. I love everything I learn on these podcasts. I'm just taking guys along on my personal health journey, doing all these things that I'm doing. So, thanks for tuning in every week.

Disclaimer

The Myers Detox Podcast is created and hosted by Wendy Myers. This podcast is for information purposes only. Statements and views expressed on this podcast are not medical advice. This podcast, including Wendy Myers and the producers, disclaims responsibility for any possible adverse effects from the use of information contained herein. The opinions of guests are their own, and this podcast does not endorse or accept responsibility for statements made by guests. This podcast does not make

any representations or warranties about guest qualifications or credibility. Individuals on this podcast may have a direct or indirect financial interest in products or services referred to herein. If you think you have a medical problem, consult a licensed physician.