



## **#619 Nitric Oxide: The Secret to Better Sex, Detox, Skin, and Blood Pressure**

### **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 and the health issues caused by toxins. 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 a lack of nitric oxide. For instance, if you have high blood pressure, if you have erectile dysfunction, dementia, or Alzheimer's, all of these health issues are in part from a lack of nitric oxide, even diabetes and insulin resistance.

Again, we go into the mechanism of how this 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 the use of fluoride toothpaste and fluoride mouth washes, and 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.

I heard this on another podcast that Nathan was on, and 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. We talk about what the story is with beets. We talk about a lot of different topics on this subject. It is 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 Cardiovascular Institute. After a two-year postdoctoral fellowship in 2006, Bryan was recruited to join the faculty at the Health Science Center at Houston by Farin Murad, 1998 Nobel Laureate in medicine and physiology.

Dr. Bryan's 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. BTI has active drug development programs in heart disease, Alzheimer's disease, and topical drugs for diabetic ulcers and non-healing wounds. Dr. Bryan also has a consumer line of products that are some of the most successful nitric oxide products on the market. You can find those at [nlol.com](http://nlol.com). Nathan, thank you so much for coming on the show.

### **Nathan Bryan**

It's great to be back with you. Thanks for having me.

### **Dr. Wendy Myers**

You're an expert on nitric oxide. Tell us, what is that?

### **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, and turns on our mitochondria to make cellular energy more efficiently.

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 relax and expand those blood vessels as well.

**Nathan Bryan**

I say that nitric oxide fixes the physics problem of hypertension. What I mean by that is we all have a finite amount of blood volume going through our blood vessels. 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 vessels and laws of physics as pressure equals volume of blood times resistance. If resistance goes up, volume stays the same pressure has to go up. And so if we can give nitric oxide or restore the natural production of nitric oxide, we dilate the blood vessels and pressure comes down. So 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. Viagra by increasing that nitric oxide. I want to get the guy's attention here. They're really paying attention.

**Nathan Bryan**

Now the nitric oxide is what causes the vasodilation, and the PDE5 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 phosphodiesterase 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 who are prescribed Viagra or Cialis don't respond with better erections. So these drugs, billions of dollars a year in revenue, only work in 50% of the men. And the reason they don't respond is because these men aren't making any nitric oxide to increase cycle GMP. So there's nothing for these drugs to work on. Science told us years ago that erectile dysfunction is a symptom of nitric oxide deficiency. So if we restore nitric oxide, you can take non-responders to PD five inhibition therapy, make them respond, or with better erections. Or you can in the 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?

### **Nathan Bryan**

Well, it was first discovered to be through an enzyme called nitric oxide syntase, and we call that nos, and it's found primarily in our endothelial cells. 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 the metabolic byproduct of that is L citrulline. Citrulline is a byproduct of nitric oxide production, and it's not a precursor. And so today we understand enzymology and biochemistry, and when that enzyme becomes uncoupled and dysfunctional, now it converges arginine into sup oxide instead of nitric oxide.

So giving arginine as a supplement to people with endothelial dysfunction was a really, really bad idea. In fact, in 96, a clinical trial was published about post patients who just had a heart attack were given arginine as a supplement versus a placebo. And the patients who received the arginine had higher morbidity and 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. That refocused the science on how do we maintain the function of the enzyme to where if you have nitro L arginine 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 uncoupling, what maintains NOS function and adequate nitric oxide production. That's what keeps the NOS pathway, and that's endothelial function or endothelial dysfunction.

### **Ads 08:30**

A word from one of our sponsors. Two of the most powerful supplements for women's health are whey protein and creatine. Studies show that women have about 70 to 80% lower natural creatine stores than men, which impacts our muscle function, muscle recovery, our brain functioning, and even our mood. Pouri Creatine Plus combines pure creatine monohydrate with trine to support muscle strength, performance, muscle recovery, faster workout recovery, and cognitive health as well.

I love the results of taking creatine. I honestly had never taken creatine in my life before I started taking the Pouri Creatine, and I absolutely love its effect on my mental clarity. It's also especially beneficial for both pre and postmenopausal women as well. It's shown in research to support bone health, improve cortisol response, support thyroid function, and so much more.

And like everything that Pouri makes sure each batch of Creatine Plus is third-party tested for over 200 harmful contaminants. It's clean and certified by the Clean Label Project as well, so you're only getting clean, safe ingredients and the test results are published online for complete transparency. All you have to do is scan the QR code on the bottle.

Now let's talk about whey protein. Protein is essential for women. A lot of people are not getting enough protein and many protein powders on the market are loaded with toxins and heavy metals and harmful contaminants, but the Clean Label Project reviewed over 160 top selling protein powders in the US and found that 47% exceeded California Prop 65 safety limits for lead with 21 containing double the acceptable. That's horrifying when you think about it. How many people are drinking protein shakes daily, believing that they're doing something healthy?

That's why I use and trust Puori's PWI Whey Protein. I absolutely love the vanilla flavor. It tastes incredible. I love dark chocolate also. It tastes like fancy chocolate milk, but it's clean and safe, not like a lot of other cacao and chocolate products on the market. My daughter Winter loves the vanilla flavor. She loves making smoothies. And recently, Vogue also named Pouri PWI Whey Protein, the best whey protein powder and for all the right reasons if you ask me. Like I said, my daughter's making smoothies daily and I have peace of mind knowing that she's using this protein powder that's clean, pure, and safe. It's been tested for purity.

Here's how I use the PWI and creatine. Every morning I make a shake with coconut water, a scoop of the PWI protein and the Creatine Plus. I add berries, maybe a banana, some dates, a little pinch of salt and that helps me stay strong, focused and energized throughout the day. I know that I feel good knowing that I'm fueling my body with truly clean supplements. So go feel the difference for yourself. Taste the difference. Go to [puori.com/wendy](https://puori.com/wendy) and use code Wendy at checkout for 20% off. That code even works on your already discounted subscriptions, giving you almost a third off of the regular price. So don't wait. Go try the PWI and the Creatine Plus today. Clean science backed supplements that you can actually trust. Again, go to [puori.com/wendy](https://puori.com/wendy) and use coupon code Wendy.

### **Dr. Wendy Myers**

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

### **Nathan Bryan**

Well, any exercise, 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. That activates and turns on nitric oxide production. That's your body telling you, Hey, I need you 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 in our mouth that make nitric oxide too. Correct?

### **Nathan Bryan**

No, for sure. So that's the second, what we'll call the compensatory redundant pathway where the bacteria 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 and do that to electron reduction to nitrite. Then when we swallow our saliva, we produce nitric oxide in aluminum in the stomach. 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. When we sweat, we're secreting both nitrate and still ammonia. The ammonia oxidizing bacteria, oxidize ammonia to nitric oxide gas. 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's a 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.

### **Nathan Bryan**

Well, stay tuned. I launched a toothpaste, a microbiome-friendly toothpaste and supplements, and in a couple of months we're launching an 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 as a 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.

**Nathan Bryan**

Look, all you gotta do is listen to the sales. 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. Shut down nitric oxide production, your blood pressure goes up, you lose the protective benefits of exercise. So I don't know why they're still advertising that.

**Dr. Wendy Myers**

Hopefully none of the people listening to this podcast are using Listerine, but some of 'em might, you know who you are, but a lot of us are, we're using the natural ones that have the same essential oils that are in Listerine. Listerine just has alcohol in it as well, but still, even the essential oils are still doing the same action. Doesn't matter if it's natural.

**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 or done the investigations into these different essential oils and certain concentrations, the idea was to selectively kill the pathogens while maintaining a normal, healthy commensal, diverse microbiome. That's what we focused on with both our toothpaste and our mouth rinse. How do we selectively kill the pathogens that 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?

**Nathan Bryan**

That's right. We've developed this germophobic society, people taking a couple of baths a day. 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.

That's an important health component of every organ in the body. In fact there dysbiosis is associated with every age related chronic disease, gut dysbiosis, oral dysbiosis, skin dysbiosis, vaginal dysbiosis, colonic dysbiosis. I mean, it's all there. And we gotta stop killing the bacteria. We gotta, we rely on these bacteria.

**Dr. Wendy Myers**

And that's why I'm a proponent of just soaping up maybe once a week. You can just get in there, do your pits or whatever

**Nathan Bryan**

I'd be a dirty bird. Just get in there and just get to roll around the dirt. 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, clean little crevices. But just maybe once a week or even longer, then you do your exfoliation with your soap or whatever you want

**Nathan Bryan**

No, that's exactly what I do. Maybe once or twice a week, I'll use soap, but you know, 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 bath for the day.

### **Ads 18:11**

And now a word from one of our sponsors at the Myers Detox Podcast. I wanna tell you about a lip peptide treatment that I've been using and I've gotten amazing results. It was created to help you restore smoothness, fullness, and lasting hydration to your lips while protecting against visible signs of aging and environmental stress. And what I love most about this lip peptide treatment is that it contains true energies and signature proprietary bio photon frequencies to enhance cellular communication, optimize ingredient absorption, support collagen production, and helps lips maintain their smooth, fuller appearance over time. It's something I'm really into right now at age 53, and honestly, I can't ever see myself using any kind of skincare unless it has frequencies in it that enhance its effectiveness and sends new information to your skin into your lips to improve their appearance.

This Tru Energy peptide contains plant-based botanical oils, vegan moisture, ceiling waxes, and a collagen boosting clinically studied peptide infuses the Tru Energy signature frequencies to condition, smooth and energized lips for a healthier, more youthful appearance. Each ingredient is also sourced to meet high purity standards and doesn't contain any synthetic fragrances, parabens, toxic ingredients, or harsh petrochemicals. So if you're ready to smooth away the look of fine lines around your lips, maintain lasting softness and hydration without stickiness, enhance natural lip volume and contour, protect against dryness, flaking, and environmental damage, and energize your own lips, repair and renewal cycles, Tru Energy is offering a BOGO special so you can get buy one get one free for a limited time for my listeners only.

Go to [trytruenergy.com/wendy3](https://trytruenergy.com/wendy3) to buy one, get one offer. This is something that I use every single night. I absolutely love this product. I highly recommend it.

**Dr. Wendy Myers**

Let's talk about 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?

**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. 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. 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. The clinical data tell us that one millimeter mercury increased 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.

150, 170, it's incremental. Nitric oxide dilates the blood vessels normally 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. If your cells can make nitric oxide, you develop insulin resistance. And then four, 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 tied to chest angina walking up the flight of steps, their 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.

Fifthly, you start to develop mild cognitive impairment, dementia, eventually Alzheimer's. So that's the hierarchy that we've 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 and eventually die of cardiovascular disease.

**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.

**Nathan Bryan**

But statins is a very, very bad medicine.

**Dr. Wendy Myers**

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

**Nathan Bryan**

Well, if you look at population based studies, just looking at people only selected for their age group, 20 to 30, 30 to 40, 40 to 50, all the way up to the nineties, we see about a 10 to 12% decline in endothelial nitric oxide production per decade. So that's, 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 mediated dilatation in their twenties and look at the vascular age of a 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.

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 this enteral circuit by changing our diet, supporting the microbiome, and having adequate stomach acid production.

**Dr. Wendy Myers**

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

**Nathan Bryan**

Well, for sure. 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 THS or bound to metals. So once nitric oxide is produced, it can bind to proteins, it can bind to metals, and if we're exposed to sunlight, then it liberates that nitric oxide to re-release it to maintain normal VA reactivity, vaso activity.

**Dr. Wendy Myers**

We gotta get out in the sun. Just like for so many things. Put insulin right. It's 20, 30 minutes a day

**Nathan Bryan**

The first sunlight of the day is best.

**Ads 24:59**

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 want to 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](https://organifi.com/myersdetox) and put in coupon code Myers detox to get 20% off. Go to [organifi.com/myersdetox](https://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**

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

### **Nathan Bryan**

There's tons of toxins. We live in a toxic world, but heavy metals, number one, interrupt nitric. So they scavenge nitric oxide, things like metal cadmium, any redox active metal 'cause when nitric oxide is 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 really, people with heavy metal toxicities typically have hypertension because they're scavenging any nitric oxide that's being produced.

There are things that are the fat-soluble toxins, like the glyphosates, the herbicides, the pesticides, that are typically fat-soluble chemical toxicants. Those are disrupting the function of the NOS enzyme and affecting oxidative stress, which oxidizes BH4 and leads to NOS coupling. They develop fetal dysfunction. So toxins are a huge burden in interrupting 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,

**Nathan Bryan**

It's simple, but it's not easy.

**Dr. Wendy Myers**

If you just listen to me, you will feel so much better. 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.

**Nathan Bryan**

First, I developed product technology, 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, in your drinking water.

We've talked about an antiseptic, so you gotta get off antiseptic mouthwash and antacids. If we inhibit stomach acid production, it completely shuts down electric oxide production from both pathways. If you stop using mouthwash, get rid of fluoride in your toothpaste, and wean off 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 an unconventional change, and if the sugar sticks to it, it glues into a single conformational change and renders them dysfunctional. 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? Like, what range?

**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, 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 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 and that protein.

**Dr. Wendy Myers**

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

**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 tablet. And so we gotta remember, nitric oxide is a gas, it's not something you can chew on. It's not a capsule you can swallow. I developed what's called an orally disintegrating tablet. You put this in your mouth and you just let it dissolve. It'll take five or six minutes, but it's dissolving. I designed this matrix to slowly fall apart. And then as this matrix has fallen apart, we're producing about 20 to 30 parts per million nitric oxide gas.

It's a therapeutic release of nitric oxide. And if I had an ultrasound right now, I could watch my carotid arteries dilate. So this nitric oxide has been increasing in the oral cavity. It's dilating my vessels. It's improving cerebral blood flow, opening up the conduit, the resistance arteries, and opening up the microcirculation, some fully oxygenating 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 'cause that's the reason NI people are nitric oxide deficient. Then more importantly, we understand we're fixing the enzyme that makes nitric oxide the lining 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 orally disintegrating tablet, it's restoring the normal flora, it's 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. That's exactly what I do. When I get up in the morning, I take my nitric oxide and sit in the infrared sauna.

### **Nathan Bryan**

Great, let's improve circulation. For mobilizing toxins, we want good circulations. We can excrete those toxins, and so 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**

And 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.

### **Nathan Bryan**

Now, 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 releasing gauze in that wound. So number one, kill the infection. And number two, to force blood flow to that wound bit. Within six months, we healed a 4-year-old non-healing wound. And these wound care docs were like, what the hell did you do? We'd 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 is a gas, it'll diffuse into the dermis and the recruit capillaries dilate blood vessels. And so we're improving

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

**Dr. Wendy Myers**

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

**Nathan Bryan**

Zero, none for the personality movement in the game. It's a remarkable product.

**Dr. Wendy Myers**

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, and that's where you see the skin aging, especially in smokers. You can see this 'cause that's constricting their blood vessels and constricting the oxygen and nutrients, and 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.

**Nathan Bryan**

In our clinical trials, we do biopsies, and so 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, age spots. Look, the skin is an organ, just like the sex organs or the brain or the heart. We have to maintain adequate perfusion and blood flow and mobilization of stem cells and

improve cellular turnover in order for those organs to be optimal. And nitric oxide does all that.

**Dr. Wendy Myers**

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

**Nathan Bryan**

The products you can find at [nlol.com](http://nlol.com).

**Ads 38:58**

This episode is brought to you by Chef's Foundry. They've got a fantastic line of cookware called P600. It's totally non-toxic. I think people don't realize that when they're cooking, most people's cookware is adding toxins to their healthy food. People spend so much money on healthy organic food and then cook it in toxic cookware. That includes cast iron, which I do not recommend. It adds way too much iron in a form that we can't absorb. People use aluminum cookware, which is very inexpensive, but it's used in most restaurants, giving us tons of aluminum. People are also using ceramic cookware, which can leach toxins into your food, and not to mention, the non-stick cookware that has many PFAS or PFOS, that is so toxic. It's one of the forever chemicals. So, you really have to pay attention to what you're cooking in.

That's why I recommend the P600 line by Chef's Foundry so that you can have peace of mind when you're cooking and you're not getting any nasty chemicals like lead or cadmium or nickel, or PFAS in your healthy food. You can get a special discount for my listeners by going to [bit.ly/myersdetox](http://bit.ly/myersdetox) to get an exclusive discount, just for my listeners. I want you to be thinking about what you're cooking your food in, and I highly recommend the P600 line by Chefs Foundry.

**Dr. Wendy Myers**

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

**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 the root 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. Shortly thereafter, hundreds of companies started selling beet root powders and beet root products. 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 beets, and we use these as placebos in clinical trials if we're taking an active beet component, which we use versus a placebo. And again, these commercial beet products are great placebos because you have to understand the active component in beets in terms of nitric oxide is nitrate. And there's no detectable nitrate or nitride in any of these beetroot products. It's because of a number of reasons. Number one, they don't understand the agronomy and the soil condition.

Number two, when they dry this, high bricks 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. Yet you turn on your tv, you turn on your radio. 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, 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.

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 NNO Beets, where we start with a high concentration of the beets. We ferment them to pre-vert 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. Most beets contain ICIC acid, which is a huge problem. People are drinking liters of this stuff or taking these beet products and it's not making them better, it's making them worse. So don't believe the hype and 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?

### **Nathan Bryan**

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. Some people are more sensitive to others. People who are trying to get nitric oxide from beets or vegetables are offsetting that by taking the increased intake of oxalates and 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. They're just trying to get that 120 over 80. 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?

**Nathan Bryan**

Well, there's different classes of antihypertensive medications. 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 BI 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 one 20. You gotta bid 'em five different medications. So they'll put you on a higher dose and a CCB, a calcium channel blocker. Many physicians negligently still used beta blockers as first line therapy or second line therapy, which shouldn't be used ever. What we're finding is that the majority of people that have resistant hypertension, meaning they're resistant to antihypertensive therapy, have oral dysbiosis. 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 measure your blood pressure. And 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.

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 biochemical reaction, which is what most drugs are. You gotta understand the root cause of the high blood pressure and address that and the body responds appropriately.

**Dr. Wendy Myers**

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

**Nathan Bryan**

That's right. So not only providing a source of nitric oxide that's vasoactive and dilates the blood vessels, but we're improving the bodies that don't even make it on their own. Then blood pressure naturally comes down except in people who have heavy metals and except in 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. The adrenal tumors are just over secretion of mineral corticoids, and it's a volume overload.

**Ads 48:06**

For anyone listening who really wants to detox their body, go to [heavymetalsquiz.com](http://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](http://heavymetalsquiz.com)

**Dr. Wendy Myers**

How often should you take the lozenge that you created?

**Nathan Bryan**

Based on the pharmacokinetics and pharmacodynamics, I designed this 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.

So, 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, but everybody has to dose according to need. There's not one size fits all. But what I can tell you is that one lozenge twice a day is kind of your daily supplemental dose to prevent this age related decline.

**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 can't hurt.

**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 get 17 and 14-year-old athletes before basketball games, before football games for recovery. I think the earlier you start to recognize the importance of nitric oxide. My kids are very 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.

If you start getting older and you start to see your erections aren't what they used to, your libido is not what they used to. If your blood pressure starts 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 Myer**

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, atherosclerosis and heart disease, et cetera. Can you talk about how nitric oxide can help improve that insulin sensitivity?

**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 glucose is the primary glucose transporter or glucose transporter. Glucose is typically a cytosolic protein, but when insulin binds, it sends glucose to the membrane to bring glucose into the cell to clear 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. Insulin binds and activates an enzyme called or or protein called PI3K-AKT kinase. It's a protein kinase of phosphorylate. The Enos enzyme also activates MP 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. Then the question was, well what role is nitric oxide playing in glucose transport's location?

In our 2011 paper, we showed that if we give nitric oxide, it binds it. It post translationally modifies two cysteine residues on glucose. And when we post translationally, modify those proteins, it leads to glucose transport's location, and we bring glucose into the cell. So nitric oxide is the link between insulin binding and glucose substrate. You can't make nitric oxide. You don't get glucose into the cell and you develop insulin resistance.

That is the mechanism, but it's also interesting to see 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. Now you've got hyper insulinemia 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.

**Nathan Bryan**

With basic science, we've completely lucidized the mechanism of what nitric oxide is, how it's produced, where it goes, what it becomes, what scavenge is it, and so now, 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 podcasters, they could fuse me because these people, number one, typically have no pedigree, have no credentials, and they have influence over people. They're giving 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. 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.

**Dr. Wendy Myers**

Nitric oxide is just one of those molecules that as you get older, you're just producing less of, and 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 all of this huge list of things that you need to take to replace as you get older. Nitric oxides is definitely one of those for sure

**Nathan Bryan**

I say it's a foundational molecule. It's not an end all, be all cure all. It's not a pan C, it's not gonna make everything in your body. 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'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.

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. It's nitro nitric IDE 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**

Micro circulation is so important. That's why I'm such a huge proponent of the infrared sauna, just getting all that oxygen and that vasodilation and the nutrients and everything to every corner of your body. That over time starts to reduce because of inactivity, 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.

**Nathan Bryan**

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

**Dr. Wendy Myers**

There you go. 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 saying, damnit, 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 that's very compelling and that 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, which 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.

**Nathan Bryan**

Now, 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.

**Dr. Wendy Myers**

Well, Nathan, thanks for coming on the show. Tell us what your website is again and where to get the N101 Nitric Oxide.

**Nathan Bryan**

Well, first I want to plug my latest book called *The Secretive 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. I encourage people to subscribe to my YouTube channel, Dr. Nathan S. 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 when all this fails, we have product technology that does it for you and you can find that on [n101.com](http://n101.com)

**Dr. Wendy Myer**

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 this podcast. I'm just taking you guys along on my personal health journey and doing all these things that I'm doing. Thanks for tuning in every week.

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