



Transcript: #356 How Nitric Oxide Deficiency Causes Poor Detox and Chronic Illness, and The Truth About Nitric Oxide Supplementation with Dr. Nathan Bryan

Wendy Myers:

Hello everyone. Thank you so much for joining me today for the *Myers Detox Podcast*. I'm your host Wendy Myers of myersdetox.com. Today we have a fantastic show. Dr. Nathan Bryan is coming on the show. He is a nitric oxide expert. He's been researching this for over 20 years. We are going to have such an interesting conversation today. We're going to be talking about how nitric oxide deficiency causes poor detox and chronic illnesses like heart disease and hypertension. We'll find out the truth about nitric oxide supplementation and what you need to know. We will cover lots of different points including the many benefits of increasing nitric oxide such as lowering blood pressure, better cognition, better athletic performance and increased sexual enhancement and performance for both men and women. This is because nitric oxide causes blood to flow into different areas, helping your blood vessels and whatnot.

Wendy Myers:

We also talk about erectile dysfunction and other signs and symptoms that you are low in nitric oxide, and nitric oxide production. We discuss how nitric oxide is key to shuttling heavy metals out of the cells, so it plays a very important role in detox. We'll also talk about why nitric oxide production is a precursor to all the chronic diseases that so many people suffer from today. We'll talk about one surprising thing that you and 200 million other people in the United States alone, are probably doing, that destroys their ability to produce nitric oxide. It's very interesting.

Wendy Myers:

We'll also talk about how antacids destroy nitric oxide. Hundreds of millions of people are taking antacids. It's destroying their health in more ways than one, not to mention malnutrition. We'll talk about what you can do about it and the foods you can eat to enhance nitric oxide production. We'll discuss why you can't get enough from foods alone, so every little bit helps. We'll also discuss the truth about nitric oxide supplementation and supplements that are on the

market. We'll discuss the pros and cons and what to take instead. There are skin creams that enhance nitric oxide flow in your skin. They increase blood flow which will enhance your beauty and slow down the aging process. It's a really good show today.

Wendy Myers: Dr. Nathan Bryan was one of the doctors who participated in our recent Harmony Pendant Study. If you haven't heard of the Harmony Pendant yet, our new study helps to prove that the Harmony Pendant protects from EMF and reduces stress. To see all of the benefits that people receive from those two variables, go check out harmonipendant.com. Dr. Nathan Bryan tested about 15 patients in the study, and those results are on harmonipendant.com.

Wendy Myers: I know some of you listening today are concerned about your heavy metal levels, and rightly so. Heavy metals were the number one primary driver of disease to date. That is why I focus so much on them to help you understand what these metals do to your body and how to remove them, to enjoy better health. That's why I created a quiz at HeavyMetalsQuiz.com. There you can take a two minute quiz and get your relative levels of body burden of toxins. After you get your results, you will get a free video series that answers all of your frequently asked questions. Questions like, how long does it take to detox? What kind of testing is best to discover my metal levels? What kind of supplements are good to detox? Where do I start? All these questions and more are answered in a free video series after you take the quiz at HeavyMetalsQuiz.com.

Wendy Myers: Our guest today, Nathan Bryan, Dr. Bryan, earned his undergraduate degree of bachelor of science in biochemistry from the University of Texas at Austin. He earned his doctoral degree from the 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 post-doctoral training as a Kirschstein Fellow at Boston University School of Medicine in the Whitaker Cardiovascular Institute. After a two year post-doctoral fellowship in 2006, Dr. Bryan was recruited to join the faculty at the University of Texas Health Science Center at Houston, by Ferid Murad, MD, PhD. Dr. Murad was also the 1998 Nobel Laureate in Medicine or Physiology for discovering nitric oxide.

Wendy Myers: Dr. Bryan has been involved in nitric oxide research for the past 19 years. He has made many seminal discoveries in the field. His many discoveries have resulted in dozens of issued US and international patents. The product technology resulting from his discoveries and inventions has improved patient care, worldwide. You can learn more about Dr. Bryan and his work at DrNathanSBryan.com.

Wendy Myers: Nathan, thank you so much for coming on the show.

Dr. Nathan Bryan: Thank you, Wendy. It's a great honor and pleasure to spend some time with you.

- Wendy Myers:** Why don't you tell us a little bit about your work and how you came to do the work that you're doing today.
- Dr. Nathan Bryan:** Well, I spent the last 20 years trying to understand the production of molecules called nitric oxide, in the human body. I was first obviously interested in science and math as a high school student. I went on to get a degree in biochemistry from the University of Texas at Austin. From there I went to LSU School of Medicine where I got involved very early on, in some nitric oxide research. I completed a PhD in molecular and cellular physiology at LSU, and then went up to Boston and trained as a postdoc fellow for several years. I got my first faculty position at the University of Texas Health Science Center in Houston by Ferid Murad. He was one of the gentlemen who shared the Nobel Prize for the discovery of nitric oxide.
- Dr. Nathan Bryan:** It was really there where we began to make some fundamental discoveries about nitric oxide, like trying to understand how the human body makes nitric oxide. What goes wrong in patients who can't make it? What are the clinical consequences and manifestations? Perhaps most importantly, we made some discoveries that we could integrate into some pretty important and innovative therapies for nitric oxide deficiency.
- Dr. Nathan Bryan:** That's 20 years of research. I have dozens of issued US and international patents. I have published hundreds of peer reviewed papers. We've made pretty seminal discoveries in the field and I think some important contributions to our understanding of nitric oxide.
- Wendy Myers:** I've been taking nitric oxide. I did a little pH strip test and found that I was deficient, which isn't surprising. I'm 48 and as we get older we make less of it, so I started taking it. Please tell us what nitric oxide is and what role it plays in the body, for anyone that doesn't know?
- Dr. Nathan Bryan:** It's a very good question even though it's still relatively new in the scientific literature. It was only discovered about 30-35 years ago. It's a gas that's produced naturally in the body. It's produced by the lining of the blood vessels and it controls and regulates blood flow, blood pressure and oxygen delivery to every cell in the body. When you can make sufficient nitric oxide, you have normal blood pressure. Every organ and cell works properly. When you lose the ability to make nitric oxide, cells become deficient in nutrients and oxygen and those cells begin to fail. The tissues fail and that's really the basis for any human chronic disease.
- Dr. Nathan Bryan:** It's really important for the regulation of blood pressure and blood flow. For instance, if you're trying to recall where you left your keys, you have to regulate blood flow to observe regions of the brain to recall memory. That's due to nitric oxide. When you begin to exercise or run, you need to increase blood flow to the heart and meet the increased metabolic demands on the heart. You do that through nitric oxide. If you can't generate nitric oxide, then you begin to get

vascular dementia because you can't regulate blood flow. You develop heart disease. You develop sexual dysfunction. You can't regulate blood flow to the genitalia. Many, many things go wrong when you can't make nitric oxide.

Wendy Myers: How does the human body make nitric oxide? What's going on there?

Dr. Nathan Bryan: There's two primary pathways that we understand now, after 30 years of research. Number one, there's an enzyme in the lining of the blood vessels. It's called nitric oxide synthase or NOS. It's a very complicated biochemical reaction. Under normal health conditions, that enzyme will take an amino acid called L-arginine and convert it into nitric oxide. That pathway is what becomes dysfunctional with age. So the older we get, the less nitric oxide we make through that pathway. That's dependent upon both diet and lifestyle. In some, genetic predispositions will render people a little bit more compromised in their ability to generate nitric oxide.

Dr. Nathan Bryan: The other pathway is through diet. For instance, the mechanism of action of a vegetarian diet, a plant-based diet, a Mediterranean diet or even the dietary approaches to stop hypertension, is due to the fact that a lot of these diets and vegetables contain organic nitrate. The body can then metabolize that into nitric oxide. That's a very complicated, multi-step pathway and many things can go wrong in people. For instance, using mouthwash and using antacids, all those disrupt nitric oxide production.

Dr. Nathan Bryan: I think it's important. We now understand how to prevent the age-related decline in nitric oxide production and also how to promote nitric oxide production through these pathways.

Wendy Myers: Are there any foods that help to promote nitric oxide production?

Dr. Nathan Bryan: Yes, there are. Primarily they are green leafy vegetables. Things like spinach, arugula, kale and beets. Beets are a hot item, ever since around the 2012 Olympic games. A lot of Olympic athletes were drinking liters and liters of beetroot juice because it had been shown to enhance their performance through a nitric oxide dependent pathway.

Dr. Nathan Bryan: The problem, Wendy, is that we tested this in 2015 and we published this. Our intent was to try to figure out if we wanted to change the dietary guidelines to basically provide an answer to the question that you asked, how much broccoli would one need to eat or how much spinach or arugula, based on the nitrate content? This is based on how well the body could metabolize this into nitric oxide. We went to five cities across the US and found that there was a fifty-fold difference in the amount of nitrate in cells grown in New York versus Chicago versus Dallas versus Los Angeles and Raleigh.

Dr. Nathan Bryan: This told us, number one, that you can't standardize this because of the regional differences in farming practices. This accounted for the differences in nitrate

content of vegetables. Then, number two was really intriguing to us, that organically grown vegetables have about 10 times less nitrate than conventional ones. Everybody's taught to eat organic, eat clean, avoid herbicides and pesticides but you can never eat enough organic vegetables to get sufficient nitrates to generate nitric oxide and normalize blood pressure in the body. That's one problem. There's no standardization of that. The primary problem is people using antiseptic mouthwash. Especially in this age of COVID, everybody's using mouthwash, antiseptics, antibacterial soaps, lotions, salves and everything else. In fact, 200 million Americans wake up every morning and use an antiseptic mouthwash. Now we're finding that that's not only killing the bad bacteria, it's killing a lot of good bacteria.

Dr. Nathan Bryan: We now know that if you use mouthwash, it causes an increase in blood pressure. I was on *The Doctor's* show a couple of months ago, revealing that if you use mouthwash you eliminate the benefits of exercise. This is a very profound step that people are doing. I think most people are well intended because they want to use mouthwash so that they have nice breath. I think the consequences far outweigh any benefit you're getting from it. I tell people if you use a mouthwash, you have to stop because there's clear evidence that that's disrupting nitric oxide production. When you have a disruption in nitric oxide production it sets the stage for early onset and progression of chronic disease, including cardiovascular disease.

Wendy Myers: Wow. That's so profound. Does that also apply to mouthwashes using essential oils, like thyme and oregano, et cetera?

Dr. Nathan Bryan: That's a very good question and one I don't have the answer to. All the studies that we've published and what's in the literature are using the stringent antiseptics like chlorhexidine in Listerine or Scope. Those are in antiseptic, alcohol-based mouthwashes. I think you can rationalize this by the fact that even if it's natural we want diversity, broadly speaking, in the microbiome, the gut microbiome and the oral microbiome. We found that the more diverse the microbiome, the better you are at generating nitric oxide from organic nitrate in the diet. If you're using mouthwash, you're killing a lot of bugs and then you're decreasing the diversity. The bad guys out-compete the good guys, but if you provide an environment where the good guys can actually grow then the good guys keep the bad guys at bay. That's what we're after.

Dr. Nathan Bryan: I think I don't have any evidence that people that use natural mouthwashes and essential oils, when we use the nitric oxide test strips, it doesn't seem to be affecting the nitrate related bacteria.

Wendy Myers: Fantastic. This was true with probiotic foods. I give my daughter a probiotic, an oral probiotic, to help reduce cavity production. That's an option as well. That's really interesting. I think watermelon is also a good food to help to produce nitric oxide. It's something my fiancé does when he feels like he wants to pep things up down there. I found that to be true. There's a strong connection there

when he eats watermelon. I found that to be amazing. I went and did a little bit of research. I only found one study to support it. Have you found anything to that effect?

Dr. Nathan Bryan: What's been found is there's this amino acid called L-citrulline, found in high concentrations in watermelon. Citrulline is actually a byproduct of nitric oxide production. Through the urea cycle, citrulline is actually converted back to arginine. Arginine is good at making nitric oxide. If you're young and healthy and that enzyme that converts arginine to nitric oxide is functional, you can get a little bit more nitric oxide out of that. If you have endothelial dysfunction, you can push arginine and you can push citrulline all day, until the cows come home. The problem is the body has lost its ability to convert that into nitric oxide.

Wendy Myers: Okay, great.

Dr. Nathan Bryan: It's lost the enzyme so that it's unable to utilize those amino acids.

Wendy Myers: Great, that's a very good distinction. What are the clinical consequences of insufficient nitric oxide?

Dr. Nathan Bryan: Really, the first clinical sign you see is an elevation in blood pressure because nitric oxide is what we call a vasodilator, meaning it dilates blood vessels. When you dilate blood vessels, you reduce the pressure and you increase the fusion. When you lose a major vasodilator in the cardiovascular system, your blood pressure goes up because the vasoconstrictors outweigh the vasodilators. So with dilation of blood pressure, two out of three Americans have an unsafe increase in blood pressure, which is the number one modifiable risk factor for cardiovascular disease. It's the number one killer of men and women worldwide. That's huge. 200 million Americans have a deficiency of nitric oxide, based on their blood pressure.

Dr. Nathan Bryan: Number two, it's usually sexual dysfunction and that's erectile dysfunction in both men and women because to gain engorgement of both sex organs, you have to have an increase in blood flow. In order to get an increase in blood flow, you have to be able to generate nitric oxide. If your body can't make nitric oxide, you can't dilate the blood vessels of the sex organs. You can't increase blood flow. You don't get any engorgement and that's sexual dysfunction.

Dr. Nathan Bryan: Those are the main two, and then people develop vascular dementia. You lose regulation of the genitalia. You get ED. You lose regulation of the blood flow to the brain. You start to develop vascular dementia and some neurological symptoms. Then amongst all that, you lose insulin signaling. You become insulin resistant and there's now a worldwide epidemic in type two insulin-resistant diabetes.

Dr. Nathan Bryan: Every major human, chronic disease is associated with a loss of nitric oxide production. In fact, it's not just an association. The clinical data tells us that it's

the loss of nitric oxide that's the first step in the onset and progression of all these chronic diseases. To me, it's paramount that people understand what their nitric oxide production capabilities are. If you start to see a decrease in nitric oxide production or if you present with any of those clinical symptoms whether it's high blood pressure, ED, diabetes, vascular dementia or circulatory problems, then that itself tells you you're nitric oxide deficient. Then you can implore these strategies to, number one, stop doing things that disrupt nitric oxide production such as don't use mouthwash and stop using antacids. Then number two, start doing things that promote nitric oxide. Eat more green leafy vegetables and get moderate physical exercise. Get some sunlight and detox your body because if you're toxic, even though your body can make nitric oxide, a lot of times the toxins will scavenge before it has a chance to do its job.

Wendy Myers: Yes, absolutely. How is nitric oxide involved in promoting detoxification?

Dr. Nathan Bryan: The body's a remarkable organism because we have to get good stuff in and take the bad stuff out. Every cell is metabolic. We've got to get it what it needs. There's metabolic waste material. We've got to take that out and that's done through the cardiovascular system. The cardiovascular system, the arterial side of things, brings oxygen nutrients into cells. These cells respire. They metabolize and then we take out the waste products.

Dr. Nathan Bryan: When you talk about loss of nitric oxide, you not only lose the ability to deliver the good stuff to the cell but you lose the ability to take out the trash. That's when those toxins build up and then people become sick. There's different types of toxicity, at least in my way of thinking. There's heavy metals, which are critical because they scavenge any nitric oxide, and then there's toxins from infections. The main problems are oral infections from root canals, asymptomatic root canals or even symptomatic oral infections and amputations in the mouth. We have to eliminate the toxins and remove those from the body. We then give the body what it needs and it heals its own.

Dr. Nathan Bryan: I like to say that all chronic diseases are caused by two things and two things only. Number one, your body's exposed to something that it doesn't need. Number two, your body's missing something that it needs. If you take care of those two things, it doesn't matter if it's heart disease, Parkinson's, Alzheimer's, ED or diabetes, everything fixes itself. The body heals itself if you remove the toxins and give it what it needs.

Wendy Myers: Yes, I've been saying that for 10 years. I love that. At what age are people starting to show a decline in nitric oxide production? Can we just simply supplement with nitric oxide?

Dr. Nathan Bryan: That's a really good question. We didn't have an answer until about 10 years ago because there were no bonafide diagnostics, clinically elevated diagnostics that would tell us what your nitric oxide productions are. It's not like vitamin D or cholesterol where you can go to your doc, pull blood and tell you what your

levels are. Nitric oxide's a gas. It's gone in less than a second. Now there's some really cool noninvasive methodical diagnostics or devices out there. They'll give you an insight into what we call endothelial function.

Dr. Nathan Bryan: To answer your question, it's not really age dependent. It's really lifestyle dependent. We've measured some 18-20 year old, obese, sedentary kids that have a vascular age of a 40 or 50 year old. On the contrary, we've taken 50 to 60 year old men or women that are active, are physically fit, eat right, do all the right things and they have a vascular age of 30 year olds. It's not just age but if we look at population statistics, you can see that you lose about 10-12% per decade. By the time you're 40, you have about 50%, but that's the average. Obviously there are outliers in both directions. Here's what the fundamental truths are, if you can prevent that decline in nitric oxide production, you can prevent age related disease.

Dr. Nathan Bryan: When you've got 16 to 17 year old kids that are type two diabetic, hypertensive and obese, that's not an age problem. That's a lifestyle problem. That's a deficiency of nitric oxide. Then you get to employ the strategies to restore nitric oxide production, get them back on the right path and get their vascular age back, to meet their chronological age.

Wendy Myers: I love that. I love that. I'm all about anti-aging. That's why I'm taking nitric oxide. Are there dos and don'ts to nitric oxide supplementation? What are the different options out there?

Dr. Nathan Bryan: Wendy, that's the problem because it's a crowded marketplace. In the so-called dietary supplement space, everybody can say the same thing. 99% of nitric oxide products on the market do not work. They don't do anything. I've tested this. We've got a number of testing modalities and medical equipment where we can test if the products generate nitric oxide and if they simulate endogenous cell production. We find that most of those products don't work.

Dr. Nathan Bryan: If you've got a patient with endothelial dysfunction, meaning that they're old in the enzyme or they're getting older and the enzyme in the lining of their blood vessel doesn't work, then arginine and citrulline base product does not work. These patients are never deficient in arginine or citrulline. They've just lost the ability to convert it to nitric oxide. Giving more is like putting gas in a car with a blown up engine. These people aren't out of fuel. They aren't out of arginine or citrulline. They've lost the ability to convert, so I put all those arginine and citrulline based products into one camp. They may work in some young, healthy teenagers, those in their early 20's or well trained athletes. You may get a little bit of NO from those products, but in the older, aging population those don't work. Save your money on arginine and citrulline products.

Wendy Myers: So if you're old like me, 48, that beet root powder is not going to cut it, right?

Dr. Nathan Bryan: Next bucket, we look at beet root powder because lots of products add beetroot in their ingredients. I've tested those and 99% of those products don't work. The only thing was to turn your pee and your poop pink and different. Some people are scared. It does not generate any nitric oxide. In fact, we use a lot of those commercial products as placebos in our clinical trials. They're great placebos but nothing else.

Dr. Nathan Bryan: What you look for in nitric oxide products is patents. At over 200 issued patents, we have products that we brought to market over the past 10 years that are actually nitric oxide active product technologies. Look for patents on products. That's very important. That tells you that there's been something innovative and unique about the method, product or technology that no one else can do. Look for published clinical trials. If a nitric oxide product works, nitric oxide is so profound in the human body that you'll be able to see clinical differences and meaningful imprints like regulation of blood pressure, normalizing of blood pressure, improvement in sports performance, improvement in insulin signaling and all these things.

Dr. Nathan Bryan: Then there's the inventor or someone who's published in the nitric oxide field. I see all these talking heads out there since apparently everybody's an expert in nitric oxide, but there might be a Medline or PubMed search. These people never published a single paper on nitric oxide. So they put the components together, put it in a nice jar, put a label on it and call it a nitric oxide product. Really it doesn't do anything.

Wendy Myers: You have a product out. You have a nitric oxide supplement. Tell us what separates that from the rest.

Dr. Nathan Bryan: We set out to do this. We had a drug discovery program years ago. We were trying to develop nitric oxide based therapeutics. During this entire drug discovery, we found some natural product history that actually generated nitric oxide gas. The whole basis of what we were trying to do was number one, if your body can't make nitric oxide then we have to do it for you. But number two is, we understood the biochemistry of nitric oxide that we could restore the body's own ability to make it. That's the technology that I developed, we have a nitric oxide lozenge. It's an orally disintegrating tablet that when you put it in your mouth, it'll take about five to six minutes to dissolve. It literally takes on about 20 to 30 parts per million nitric oxide gas. That's quantifiable. It's verifiable. I can put a nitric oxide analyzer on and we can see nitric oxide come on.

Dr. Nathan Bryan: If your body can't make nitric oxide, we do it for you. That nitric oxide is vasoactive, we've got six or seven published randomized placebo-controlled clinical trials. If we put an ultrasound on the carotid, within 30 seconds of placing that lozenge in your mouth, we can see the blood vessels start to open up.

Wendy Myers: Wow.

Dr. Nathan Bryan: That's demonstrable evidence that the nitric oxide we're releasing through that lozenge is vasoactive, dilating blood vessels and increasing blood flow throughout the body. Then four hours after that, we see about a 15-20% improvement in the body's own ability to make nitric oxide. So recouple the nitric oxide synthase to where the lining of the blood vessels generate more nitric oxide than normalized, so you can regulate blood flow. There's no other product technology on the market that does that. They can't do it because I have a number of issued patents on that. That's the technology.

Dr. Nathan Bryan: We have a beet product that's advertised all over on mainstream TV. I'm sure you guys have seen it. People like beets and recognize the benefits of beets. We made a concentrated beet extract that we sell direct-to-consumer. It's really a natural form of energy. We overcome the body's inability to reduce the nitrates, nitrite. If you're using an antiseptic mouthwash, these beets will still work. Although, it's still best not to use mouthwash. Again, those are patented technologies that can deliver bioactive nitric oxide in multiple product technologies.

Wendy Myers: Fantastic, the beet extract is much different than just ground-up dried beetroot powder. It's a very different animal.

Dr. Nathan Bryan: It is. There's a lot of science that goes into those beets and how we manufacture and produce our beets. I'm really not a beet fan. I don't like the taste of beets. What we had to do when we brought this to market was, it had to taste good. That was a problem for me because I didn't like the taste of beets. The good thing about this beet product that we sell is that it tastes great. It doesn't necessarily taste like beets and it works. We've got published clinical trials on that product as well.

Wendy Myers: I want to try that. I've seen it before but I haven't tried it yet. I'd love to try that.

Dr. Nathan Bryan: Yes.

Wendy Myers: When someone's taking your nitric oxide supplement, how can they measure their nitric oxide levels? Do you have test strips or is there a way to measure your progress to see if you're getting enough or need to take more?

Dr. Nathan Bryan: Very good question. I developed a nitric oxide accelerated test strip. It's probably been almost 10 years ago, maybe longer. The problem was we came to market with a nitric oxide technology when no one knew what nitric oxide was. No one knew if they needed a nitric oxide product. As I mentioned before, it wasn't in standard labs or something that the doctor was measuring. We had to develop a way for people to know what their nitric oxide levels were. I developed this salivary test strip. They can just apply some saliva onto this pad, kind of like a pH pad. If it turns bright pink or what we call the total body nitric oxide availability. If you're deficient, it doesn't turn pink, it'll change white or light pink when you become depleted. Then you can employ these strategies

that we talked about and see if you can move the needle. You'll never be able to move the needle on that test strip if you're using mouthwash and eradicating the good bacteria. That's part of the recycling process. The body's one way of generating nitric oxide.

Wendy Myers: That's just so interesting. I think you said, millions of people are using mouthwash and have no idea that it's affecting their health so profoundly.

Dr. Nathan Bryan: It's a huge problem. I tell people you have to stop using them because it's better to have bad breath than to have a heart attack. They are now aware of the fact that using mouthwash causes your blood pressure to go up, increases the onset and progression of cardiovascular disease, increases inflammation, instability, rupture and that's a heart attack or stroke. There's a clear mechanism of action of disruption of nitric oxide production through mouthwash and also through using antacids. There are 200 million prescriptions written for Prilosec, Prevacid and Nexium, in the US alone. That's not even counting the over the counter purchases. Proton pump inhibitors and antacids shut down nitric oxide production. There's evidence that people have been on these antacids for three to five years and have a three to five time higher incidence of heart attack and stroke.

Dr. Nathan Bryan: The preponderance of evidence reveals that using mouthwash and using antacids shuts down nitric oxide production. Shutting down nitric oxide production increases your risk of heart attack and stroke. It's very clear.

Wendy Myers: On the flip side, when you start tracking nitric oxide levels and optimizing your levels of them, what are some of the benefits that you're seeing in your clinical trials?

Dr. Nathan Bryan: The number one thing is if you have an elevation in blood pressure, it'll normalize your blood pressure. For the soaring of the main molecule in maintaining normal blood pressure, your blood pressure normalizes. That's the number one effect we see and that's easy because in the clinical trial, it's easy to measure blood pressure as an end point. When you restore nitric oxide production, blood pressure begins to normalize.

Dr. Nathan Bryan: Number two, people see an improvement in their performance. We measure performance a number of ways. We can do time trials and see if you can cover the same amount of distance in a faster time. That's an improvement of performance. We look at lactic acid production. We look at anaerobic threshold. When we restore nitric oxide production, performance improves. We see it in performance on the athletic field. We've got I think 180 or 190 professional or NCAA teams, that use our nitric oxide technology. We see performance in the bedroom improve because you're improving the profusion to your sex organs. Inorgasmic women or men with ED begin to improve. We see improvement in the boardroom, memory recalling and cognitive performance. Profusion to the brain and cognition improves.

Dr. Nathan Bryan: In really everything we've looked at, if we restore nitric oxide production, we see improvement in that particular organ system. It makes sense because chronic diseases are caused by insufficient blood supply and perfusion. You're not getting enough oxygen and not getting enough nutrients to the cells of the body. When you restore nitric oxide production, you open up those blood vessels to oxygen and nutrients coming in. Metabolic waste products go out and cells actually perform and do what they're designed to do.

Wendy Myers: You have a skin cream also, correct? It makes sense that you're applying something to your skin and you increase blood flow, your skin is going to look better and age less fast.

Dr. Nathan Bryan: That's exactly right. My objective now is to bring nitric oxide to the masses, across every market segment around the globe, because I know how to make nitric oxide and now the patents protect that. We can actually introduce that product technology into any market segment. For me, the low hanging fruit if you will, was anti-aging because aging to me is really a loss of blood flow. The older you get, the less nitric oxide you make. When you lose perfusion to the cells of the dermis, you lose collagen, you lose hydration and your skin begins to sag. You get fine lines and wrinkles. If you restore nitric oxide production, you perfuse those cells and you increase your hydration. You prevent loss of collagen and fine lines and wrinkles go away.

Dr. Nathan Bryan: What we developed was a dual chamber, nitric oxide topical serum that when you combine these two components, they generate nitric oxide gas. You take one pump from one side and one pump from the other and mix it together. Then you apply it to the face. You'll actually see it turn pink. You never have to guess if this skin product is working because you can actually see it working. You get capillary recruitment perfusion and that pinkness will last for several minutes. Then your face feels fully hydrated. It's an evaporative, cooling effect. We've got four published clinical trials now on that topical serum. It's really a fantastic product. In fact, it's a new product category. There's nothing in skincare and beauty that does what this product does.

Wendy Myers: Well, Nathan, sign me up. Where is my bottle of that?

Dr. Nathan Bryan: I'll send you some of that.

Wendy Myers: I actually had someone ask me about it, but at that time I didn't have any awareness of what it was doing or the efficacy. I'm so glad I had you on the show because it sounds like this is that panacea that people need, if they're trying to increase blood flow. You can do things manually, like women go get facials and get facial massages and things like that. But like you said, if you're not making nitric oxide or not making enough as you age, it's going to show on your skin.

Dr. Nathan Bryan: Yes, we know that aging on the inside occurs. The lining in your blood vessels ages. There's an outward appearance of aging and that is the fine lines and

wrinkles. Even in acne, infections and dermatitis, all that's really a loss of regulation of blood flow. We're seeing the profound effects of that. It goes back to this very simple concept that if your body can't make nitric oxide, then we do it for you. We think what we're seeing is if you treat internally with our oral nitric oxide products and you treat externally on the face or on the neck, you will see some transformative results within as little as 30 days.

Wendy Myers: What does the nitric oxide supplement that you develop look like? Is that a pill that you swallow? Is that something you take orally? What is that?

Dr. Nathan Bryan: It's an oral lozenge. I prefer not to mention it by brand because I'm educating on nitric oxide and don't want to promote a particular product. You can find it if you Google me. Nitric oxide is a gas. It's not a pill that you can swallow. What we do is we create an oral disintegrating tablet, really this matrix whereby when you put the lozenge in your mouth, it's designed to slowly dissolve. You move it around kind of like a Sweet Tart. You don't chew it. You don't swallow it whole. During that dissolution time, we're generating and liberating nitric oxide gas. We want to deliver a certain amount of nitric oxide over a certain period of time, to get the maximum effects.

Dr. Nathan Bryan: It's a round, disc-like lozenge that tastes like an orange-berry flavor. It's very tasteful. That's the product. We'll provide a link on here that your listeners can go to and find the nitric oxide products that we talked about.

Wendy Myers: If any of you want to try Nathan's nitric oxide lozenges and skincare, go to DSSorders.com/nitricoxide. You guys can enter the code nitric oxide and get 10-15% off your order. Definitely try that. Your product is a lozenge. Most of the products out there are capsules. They're capsules that you swallow and they're supposedly supposed to absorb in your intestines. What's wrong with that formula?

Dr. Nathan Bryan: Most of these capsules contain precursors or substrates that the body can use to make nitric oxide, but these endogenous pathways are dysfunctional. They're not able to make nitric oxide so giving more of those precursors or substrate isn't going to give any more nitric oxide out the other end. This is unless, of course, you fix the enzyme that makes nitric oxide and that's what we do. None of these other products that I have found on the market, and I test them all, have been shown to recouple that nitric oxide synthase.

Dr. Nathan Bryan: Through normal metabolic shuttling in the cell, you already have enough of these substrates and precursors to make nitric oxide, if that enzyme is working. Giving more doesn't give you more. In fact, there are several clinical trials showing if you take high dose L-arginine or L-citrulline, you can actually make things worse. People get worse. In fact, some clinical trials have actually been stopped halfway through because the patients were getting worse by taking high dose arginine, because of the underlying endothelial function.

Wendy Myers: It's interesting, a friend of mine was doing that, and he had been doing it since the '90s. He was taking L-arginine with the goal of increasing performance. When you take megadoses of an amino acid like that, you are preventing other amino acids from absorbing and causing an imbalance.

Dr. Nathan Bryan: That's right. The human body is remarkable in that it regulates things. If you give too much arginine, it increases an expression of an enzyme arginase, and then you divert that arginine away from nitric oxide and toward urea excretion. You can get a nitrogen imbalance if you take too much of it. You actually activate the urea cycle, and you excrete the arginine through urea in the urine. You basically shuttling the arginine away from nitric oxide production and through urea disposal.

Wendy Myers: So many people suffer from hypertension, high blood pressure, especially my mother and my father. So many people have metabolic syndrome and fatty liver. There are millions of people dealing with this or will deal with it. Tell us, can people get off their medications? Can people slowly wean off of those by using nitric oxide?

Dr. Nathan Bryan: I'll make two qualifying statements. The products that we have currently on the market are dietary supplements. They're not intended to treat your diagnosed preventative disease. We always recommend people talk to their physician, their prescribing physician. I think it's a very valuable conversation to have. Talk to your doctor about how to get off medications because the way medicine is practiced today, that conversation never happens. Your doctor's always, "Well, come back and if you're not better, I'll put you on more medications." Let's start the conversation about what if you give your body what it needs, what I talked about earlier. If you're toxic or your body's missing something it needs and you remove the toxins, and give it what it is missing, the body heals itself.

Dr. Nathan Bryan: In that model, there's no room for drug therapy because our bodies are never missing synthetics and drug companies, right? If we restore nitric oxide production, then we normalize blood pressure through the body's natural means of regulating its blood pressure. There's no need for ACE inhibitors, AR beams, diuretics, or calcium channel antagonists. That's not the means of the underlying hypertension. In fact, now we're finding that the primary means of hypertension in a lot of people, is just some horrible dysbiosis by either using mouthwash or having an active oral infection.

Dr. Nathan Bryan: I think it's worth mentioning that in this age of COVID, the data is very clear now for the past six or seven months that people who have underlying symptoms of nitric oxide deficiency whether it's high blood pressure, heart disease, pulmonary distress syndrome, KD disease or obesity, these are the people that are more susceptible to infection with COVID. These are also the people that rapidly progress to hospitalization, ventilation and death. There's a huge need and a major impact of nitric oxide based therapies in this new pandemic of COVID. It's not just coronavirus infection, it's any viral infection because even the

seasonal flu infects the same population. It's the feeble, the weak and the people with underlying comorbidities. Those are the people who get sick. Those are the people who are hospitalized. A lot of those people will expire from the underlying disease.

Dr. Nathan Bryan: We have an active effort now to address this nitric oxide deficiency in COVID patients.

Wendy Myers: You have a clinical trial going on right now in that regard, correct?

Dr. Nathan Bryan: Yes we do. We have an IND approved, which is an investigational new drug for the treatment of COVID patients with nitric oxide therapy. Nitric oxide has been used for the past six months, inhaled nitric oxide in intensive care units for patients that are already ventilated. Patients are getting better. To me, it's too little too late. We need to get to these patients early on, right when they get a positive diagnosis before they develop symptoms or even mild symptoms. Let's restore their nitric oxide production and see if we can't prevent the progression of disease.

Dr. Nathan Bryan: Mechanistically, everything we know about coronavirus in the infection and severity can be explained by nitric oxide. In fact, nitric oxide actually inhibits coronavirus replication. Even if you get exposed and your body can make nitric oxide, you'll activate your immune system. Your immune system generates nitric oxide and you'll kill the viral replication. Even though you may have a positive test, we've seen it, these people don't get sick if their body can make sufficient nitric oxide.

Dr. Nathan Bryan: To the contrary, if they're sick, they're hypertensive, have heart disease, kidney disease or lung disease; if they're exposed to coronavirus, these people are the ones that get sick. They rapidly progress in the severity of disease, hospitalization and need for ventilation. They have a 10 time higher mortality rate than the normal population.

Wendy Myers: Wow. That's just so profound. One silver lining of this pandemic is that people are focusing more on their health. When people are faced with their mortality and they've been dealing with a lot of fear in these lockdowns and everything that's been going on, I think it's the great awakening. They're waking up. They need to get their act together or their end is going to be faster than they intended. That's the silver lining. That's just amazing that you're doing this work.

Wendy Myers: Thank you so much for coming on. Is there any parting thoughts or anything else we haven't covered that you wanted to mention?

Dr. Nathan Bryan: I think in 45 minutes, we've covered a lot. There's a lot to know about nitric oxide. I find most people know very little about it. That's why I can't thank you enough for the opportunity to reach your audience and to educate them on the importance of nitric oxide. It's the number one cause as a killer of men and

women worldwide. It's the cause for a worldwide pandemic that's shut down the global economy. There's one thing you can do to improve your health. It's to understand your nitric oxide production and then employ these strategies that we talked about. Stop doing the stuff that disrupts nitric oxide production. Get rid of mouthwash, get rid of antacids and do the things that promote it. Eat a good balanced diet of lots of green leafy vegetables, get moderate physical exercise and then if you need to supplement, there are clinical proven, patented nitric oxide technologies on the market.

Dr. Nathan Bryan: I've got a book called *Functional Nitric Oxide Nutrition* where we talk about this. I've written and edited several books, but that's the latest. Then I've got an education website called DrNathanSBryan.com. There's a six minute video on there that will tell you a lot of what I spent the past half hour talking about. It'll tell you that in six minutes. I do a monthly blog. I try to make it practical and timely. Things people can implement into their daily practices to improve their nitric oxide production. I try to really create awareness around nitric oxide. It's important in health and longevity.

Wendy Myers: Fantastic. Well, Dr. Nathan, thank you so much for imparting your knowledge on us today. I'm sure it's very eye-opening for a lot of the listeners. If you guys want to start testing and taking nitric oxide, go to DSSorders.com/nitricoxide and use coupon code "nitric oxide" and you can get 10-15% off. Check that out.

Wendy Myers: Nathan, thank you so much for coming on the show. I very much look forward to having you on again.

Dr. Nathan Bryan: Thank you very much, Wendy.

Wendy Myers: Everyone, thanks so much for listening today to the *Myers Detox Podcast* where we explore all types of subjects related to health in general and how to detox and optimize your detox. Nitric oxide is certainly part of that conversation.

Wendy Myers: You can learn about detoxification, detoxing your home, your life and your body at MyersDetox.com. We have hundreds of podcasts and hundreds of articles there. There is tons of free information for you about how to optimize your health through the power of detox.

Wendy Myers: Thanks so much for tuning in. I'm Wendy Myers and I'll talk to you guys very, very soon.

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