# Nitric Oxide, the Molecule That Could Save Your Life Transcript

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## Doctor Talks Intro

Welcome to Doctor Talks, the podcast where every episode leads to a healthier you. Join us as we navigate the world of optimal health, uncovering groundbreaking strategies to conquer chronic disease.

In each episode, we'll bring you the latest insights from leading health experts, medical innovators, and wellness warriors. If you're seeking to transform your health journey, or if you're looking for answers to burning questions, you've come to the right place.

Get ready to unlock the secrets of lifelong health and vitality. This is Doctor Talks, real talk from real doctors on the issues that matter to you most.

Good morning, Doctor Brian. How are you, sir? I'm Jaka. I'm great. Good to be with you. Thank you. Welcome to the reverse heart disease naturally summit as something that we think will give good, practical, but very science based information and couldn't be more excited and talk to, you know, an authentic scientist of great renown.

As you know, I get patients that will ask me, what does Doctor Brian say about what you're doing with my supplements or my program? Because I reached out to you a couple of weeks ago specifically for that reason.

And, for those that don't know you, I'll give them the 30s born and raised.

## Introducing Nitric Oxide

I just learned and Brian. Texas, just like your last name. Nathan. Brian, earned a PhD in Shreveport, Louisiana, after other schooling in Texas. Probably of, you know, one of the major notes is you went to the lab of one of the Nobel Prize laureates.

We'll talk about in a minute. Farid Mourad, who, is certainly a legend in biochemistry of keeping your heart healthy, cardiovascular disease. What we're talking about for everybody listening.

And then you've really had a distinguished career. Written many books, many papers. But you're a businessman, too, which is a good thing. And an entrepreneur who started many companies because you're looking for solutions.

And let's talk about the problem, and the molecule, and let's talk about, you know, some of your prior solutions and your current solution. So thanks again for joining this.

I know your time is valuable. You're about to zoom off to another place to educate and heal the world. But tell us, I mean, there could be somebody here that has never heard of a simple molecule, probably the most famous, most important molecule in the body, nitric oxide.

And oh, and tell us a little bit, you know, maybe where you ran into that a doctor marriage lab and just give us a few minutes on what it is and what it does.

Sure. Well, it's a relatively new discovery in the in the medical and scientific literature. It's only discovered about 40 years ago. But I got interested in nitric oxide when I was a student at LSU School of Medicine, working on my PhD and Nobel Prize had just been awarded for its discovery, so we knew it was an extremely important molecule in human physiology.

But at that time, we didn't really know how the human body made it. What goes wrong. And people that can't make it, what are the clinical consequences?

And then how do you fix. So it's really it's a signaling molecule. It's how cells in the body communicate with one another. It's most, widely known as its role as a basal dilate, meaning that when it's produced in the lining of the blood vessel, it opens up the blood vessel and improves oxygen and nutrients.

So, as you know, as a cardiologist, if you don't get enough blood supply and oxygen to the heart or any organ for that matter, and that organ doesn't do very well and develop and organ disease and people die from this.

So now it's recognized that the loss of nitric oxide is the earliest event in the onset progression of cardiovascular. So as you said, it is the most important molecule, produced because, you know, you can't deliver oxygen, you can't deliver oxygen and nutrients and blood supply to every organ, tissue and cell in the body without byproducts.

All right. So I mean, just to break that down and, oh, nitric oxide, one nitrogen, one oxygen, you probably know I don't know how to how are they bound together.

Well that's a covalent it's a covalent bond. It's a free radicals. So it's it's an unstable molecule. So when it's produced in the body it's gone in less than one second.

So it's like this burst of gas that then starts this whole signaling cascade. So and then you know, it's gone. So and I think that's been the challenge in medicine over the past 30 or 40 years is how do you make a nitric oxide based therapy a solid dose of again.

And that's kind of what how I cracked the code and kind of what I'm known for and my discoveries, we were the first in the world to make a solid dose of a nitric oxide.

Yeah. All right. And just to break down a little more, what you said in that eloquent intro to signaling molecule, major function is to relax arteries, to improve blood flow everywhere.

And think of brain health. Think of cardiovascular health, think of sexual health. Think of gastro intestinal health.

## How the Body Makes Nitric Oxide

Everybody listening to this would probably want to maintain their healthy production of nitric oxide throughout their life. And then you threw it out because a lot of the audience doesn't know this, that three labs around the world where were racing to understand, discover and characterize what the signaling molecule was that resulted in those three labs and those three lead scientists getting a Nobel Prize in medicine, 1998.

25 years ago. And of course, you were, lucky to get to work with one of those three, recipients, 1998, I think it was 1992, one of the premier journals in the world.

Science called this molecule the miracle molecule. And, I think that probably still is deserving. So, for people that, you know, want to say, well, it sounds like we should have a lot of nitric oxide.

I want that good blood flow. Tell us about how blood vessels make it, because you're going to tell us that there's more than one way to produce N. O.. Right?

So just like what you're doing now, moderate physical exercise stimulates the production of nitric oxide. So when we begin to exercise that causes shear stress in the lining of the blood vessels and that tells those blood vessels, hey, I need to make more nitric oxide because I need to widen that blood vessel to meet the increased metabolic demands on that particular, skeletal muscle or the heart muscle.

And so that stimulates nitric oxide through an enzyme called nitric oxide. And that's the enzyme that becomes dysfunctional with age. So the older we get, the less nitric oxide we make through that enzyme.

And it's it's really complex entomology and biochemistry. But it uncoupled and then it becomes a superoxide or, you know, an oxygen radical producing enzyme.

So we figured out years ago had a couple of that nitric oxide synthase enzyme, so that now when you do exercise or you do RNase of breathing, we can activate nitric oxide production.

But the other way is through diet. You know, it's the mechanism and the explanation for a plant based diet. So we've discovered that inorganic nitrate that's found primarily in green leafy vegetables can be metabolized by the bacteria that live in and on our body.

And then they produce nitric oxide so that that pathway can compensate for loss of endothelial production of nitric oxide. And so when you lose the ability to generate nitric oxide with both pathways, that's when you start to get clinical symptoms of an elevation.

In blood pressure, you develop sexual dysfunction. Mild cognitive disorders, which if not corrected, will develop into Alzheimer's. It's involved in insulin signaling.

You need nitric oxide for insulin signaling. So if you can't make nitric oxide metabolic syndrome type two diabetes. So a number of clinical manifestations occur if you can't make that.

So again just anybody taking notes write down number one your arteries make nitric oxide. But you lose some of that production with age because an enzyme.

And those three starts to, become less and less complex. And and that's under genetic control too. We don't all have the exact same efficiency of our nitric oxide.

Some. So that's correct. That is correct. So there's two primarily what's called single nucleotide polymorphisms or genetic snips. One is in the NOx enzyme.

So there's a disruption in the coding of that protein that is not functional. And the other is, you know, more common which is the Mk4 which is a metal tetra hydrophilic reductase enzyme.

So that Snip, which I think the literature reveals, probably 45 to 50% of the people in the US have maybe a single or double copy of that snip. And then that enzyme is responsible for making tetrahydrocannabinol, which is another important, molecule or substrate for nitric oxide.

So our patients are typically nitric oxide. So before we shift to the second way, we make nitric oxide diet in which you're an expert and which I encourage everybody to take a look at a book you've written in a moment.

You mentioned I'm on a treadmill desk. I'm getting rather light exercise because we're talking and I'm working. I would certainly encourage everybody to do moderate to sometimes vigorous exercise.

But how do we protect our arterial production? And nitric oxide is separate from dietary nitrates. So we'll get to I mean does eating the white rind of a watermelon to get more citrulline.

How does taking five grams of L-arginine powder, like I learned in cardiology fellowship because the Mayo Clinic was doing it at the time for a Mary Fazio spasm.

I mean, at an arterial level, of course. Don't smoke. Monitor your diet. I mean healthy endothelium. Healthy lining is one way to protect your nitric oxide production at the at the arterial endothelial level.

Right. So we have to we have to promote conditions that that prevent oxidative stress, that oxidized those substrates and molecules that are required to make my products.

So our citrulline is a byproduct of nitric oxide production. And arginine is what's called a semi essential amino acid, meaning that we get it from the breakdown of proteins in our diet.

Or and it's also produced in the area cycle. So we're never limiting in the amount of L-arginine that our body has to

make my production. And so the problem is that the body's just lost its ability to convert arginine to nitric oxide.

So supplementing with more arginine or supplements never made sense to me biochemically, because we already have enough in our body, even in the sickest of patients, to theoretically saturate the binding sites of the enzyme.

And there is that one article that scares cardiologists. And in people who've had a prior heart attack supplementing, well, L-arginine may actually have a negative effect.

So I've been cautious about that, particularly in that group of patients. Excellent. So then you've just told us there's this. So, you know, the Nobel Prize was awarded mainly for that L-arginine in nitric oxide synthase pathways at the end of a level.

Right. That's correct. Well, when did we learn that chewing leafy greens. And you'll tell us about that right now. And I will say Doctor Brian has an excellent book that, really supports the role of eating lots and lots of brightly colored green leafy vegetables and, beets and other sources.

And it's just a great read. Functional nitric oxide nutrition. So pick that up. We have a bunch of copies of my office patients love it. But tell us when did we learn about that pathway?

Well, the science was clear. Even back in the early 90s, the kind of the pieces of the puzzle weren't put together until, you know, really around 2010, 2012.

And so, you know, how long ago, not long ago at all. And so, you know, really in the 2012 Olympic Games is when it really became popular because it was recognized that a lot of these athletes were drinking a lot of beetroot juice to improve their performance.

## Dietary Nitrate, Mouthwash, and PPIs

So at that time, there were a number of clinical studies showing that, you know, organic nitrate found in green leafy vegetables and some root vegetables could be metabolized into nitric oxide through the bacteria.

So what happens is when we eat a plate of spinach or kale or any, dark green vegetable, 90 minutes after we consume that particular vegetable, a single molecule called nitrate, which is not three minus, is taken up in the gut and concentrated in our salivary.

So now for the next eight, ten, 12 hours, each time we salivate, which secreting this nitrate and then the bacteria that live on the tips of the tongue use this as a substrate for respiration.

So they then reduce the nitrate in the nitrate in nitric oxide. So now every time we swallow our saliva for the next 810 12 hours, we're getting a burst of nitric oxide in the aluminum of the stomach.

And then that nitric oxide actually acts as a hormone and then goes systemic and listed to a lot of, physiological responses. It can lower blood pressure, they can improve exercise performance.

But the challenge is and this is where people get into trouble when you disrupt the oral microbiome, for example, for use in mouthwash, we and others have published that people use mouthwash, disrupt nitric oxide production, and blood pressure goes up and they lose the protective benefits of that. So that's the first part.

With the first step that gets disrupted. In the other is people on an acid. You need stomach acid in order to convert that celebrate nitrite into nitric oxide.

If you can't make stomach acid, you can't make nitric oxide. And the really the big problem, or this class of drugs called proton pump inhibitors is not only do they suppress the nitric oxide coming from our dietary pathway, but they lead to an increase in an inhibitor of nitric oxide called abecma asymmetric damage.

So PPI is completely shut down nitric oxide production through both pathways and can lead to a number of problems. And you're probably familiar with this.

And I think it was in 2015 or 2016. It was a large database that was mined by Doctor John Cook, another famous cardiologist right now, Stanford, and, and revealed that people who have been on PPI for 3 to 5 years had about a 35% higher incidence of heart attack and stroke.

So this isn't a trivial problem. We have to get people off mouthwash, and you have to get people off of an acid, specifically the PPI. Yeah. And and so you I mean, you said so much of value and again, so we're going to eat our leafy greens.

We're going to eat our beets. We're going to chew them. We have an amazing system involving a variety gland to produce ultimately more miracle molecule nitric oxide.

But we can mess that up with, antiseptic antibiotic mouthwash. Does that kill bacteria in the grooves? Our tongue. And we can mess it up by taking PPIs, Prilosec and, Pantoprazole.

Nexium and the rest. What about, you know, a little different drug is famotidine. Pepcid, Pepcid, AC. Do you know if it has the same detrimental impact because it seems safer for the cardiovascular system?

And I try and get people out of PPI, and if I have to, that's where I have them land with a histamine blocker. So maddening. It's not as, damaging because it doesn't lead to the increase in the ADM.

Does seem to be specific to TPA. Okay, but it still disrupts the nitric oxide production that's being produced through this material. Celebrate sort of swallowing your own. So I suppose you're, you know, we're supposed to have acid in our stomach to digest our food, to produce our nitric oxide.

It's involved in vitamin B12 absorption. So, the problem is those drugs are labeled for 6 or 8 week juice, and people are on Prilosec for life. And they, you know, I encourage them to talk to their medical team and ask, is there an alternative?

So you've been producing ways. Well, let me ask before we get, supplemental support, of which you are aware, you're probably the world expert, you know, Doctor Brian, this sounds amazing.

If I don't make enough nitric oxide, my blood pressure might go up, my erectile function might go down, my cardiovascular health and endothelium may suffer.

How do I know? Is there 1 or 2 different ways I can at home or at a doctor's office in a lab, get a direct clue? I produce a lot of nitric oxide or not, because there's no simple blood test called the nitric oxide level at quest or LabCorp or Mayo or wherever.

So tell us you, of course know that there's a couple what what can a person do? Well, that was a challenge that we encountered about 12 years ago when we started developing innovative nitric oxide products.

It's the number one question was, how do I know if I need this? How do I know what my nitric oxide levels are? So I developed a salivary test script. So it's similar to a urinary dipstick.

But instead of there you go. Instead of you just apply some saliva to the end of that. And then allow it for 3 to 5 seconds, and then hopefully it'll turn bright pink.

So what we're measuring there celebrate nitrite. So the ability the ability of the body to utilize the inorganic nitrate and convert it to nitrogen. So that's I tell people it's a good tool to have in your toolbox, but it's not the only tool that you should be using.

So this is a biochemical measure. And really the best thing in this guy I mean I got one right here. And you know

people listening you can go on a big seller like Amazon and look at nitric oxide test strips.

You'll find 4 or 5. Do you have a particular one that you, either were involved in? You know, the chemistry? Look, you know, I found those patterns back in 2009 or 2010.

So there are a number of companies now that, that have that the chemistry is all the same. So I don't have a preference. They all do the same. And it literally it took me 10s to put saliva on the tip of this folded over, hold it together for 10s, and it looks like I'm producing a good amount of salivary nitrite.

Correct? That's right. That's what we're measuring. So as I mentioned, it's you know, we're not measuring nitric oxide because it's bleeding. Yes. So we have to measure these more mistakes, more stable metabolites.

So that's a good tool. But you know to measure the endothelial pathway the only way to do that is through what's called flow mediated reality. So there's some FDA cleared devices that will give you the functional production of nitric oxide in the lining of the blood.

So that's really a really good tool for assessing quality vascular risk. And find what's your you know, your thoughts there. You can go to a quest lab and you can get a blood test.

You already said the word a d m a asymmetric di methyl arginine. But it's a simple blood test I think maybe more than quest offers, but that's where I ought to offer and tell us how that reflects nitric oxide production and how you know what the what kind of database we have that it's an important biomarker.

Well, I think it's so it's it's an inhibitor. So it competes with arginine binding to the enzyme nitric oxide. So if you have an elevation of asthma then it's competing for binding to the side of.

So it's a competitive inhibitor that shuts down nitric oxide production. And so the the the manifestation of that is if you can't make nitric oxide then you increase your cardiovascular disease severity or risk.

So with that and now we're finding that I'm not sure there's outcome data showing patients with an elevated AVM and outcomes in terms of cardiovascular events.

But biochemically, it's clearly not a good molecule to have because it inhibits nitric oxide production. You know. So it's a it is a blood test available.

And when it's elevated it reflects nitric oxide production is suppressed. Suboptimal I am challenged. And that's what I called you about a few weeks ago trying to improve it in my patients.

I've actually found your new supplement is assisting that. There is data.

## Testing Nitric Oxide and Endothelial Function

There's several thousand papers in humans on DMA and prognosis. If you're a heart patient and you get the blood test and it's elevated, you should work a bit harder.

And everything we're talking about, what I'm not aware of is does dropping it into the normal range. Has anybody tried to do an interventional study big enough, long enough to say we don't only treat blood pressure and blood cholesterol, but we treat a DMA levels and we intervene.

I do, because I want endothelium to be pop in little nitric oxide molecules all day long at their maximum. But, I do have the Indo pat device in my clinic to measure directly.

Endothelial function. Simple, little safe, noninvasive test. But, you know, it's a pretty much a specialty. So tell us, you you have, Brian, and I think you call it nitrous ceuticals, right?

We we termed a new, coined a new term, nutraceuticals. Right. So, I mean, a play on the word not everybody knows the word nutraceuticals, which are pharmaceuticals from nutrition and, often used as a synonym for a vitamin or a supplement nutraceutical.

But you got a nitrous oxide, and it's now, name of a company, and you have, I don't know, for the last 4 or 5, six, seven, maybe a year now. But tell us what you put in this.

Endothelial support, nitric oxide support, lozenge, which I've been using twice a day, which I think hopefully is the appropriate dosage. I will tell you, it is a delicious little lozenge, but tell you tell us about what you did and why you formulated it and what it might offer people who are, you know, endothelial focused.

So over the past 20 years, we've learned a lot in terms of nitric oxide in both patients, kind of the enzyme ology and the biochemistry through all of this.

So our whole concept and really I got on this path to develop safe and effective drugs. I mean, that's what we as drug discovery chemists and biochemists do, was develop safe and effective drugs that physicians like.

You can, confidently, prescribe to your patients. But when we started figuring this out, we realized we did need a drug application for this because everything we were doing was recapitulating physiology.

And we could use, you know, natural substances or natural products. So the design of that laws was if your body can't make nitric oxide because you have endothelial dysfunction or maybe you have you're on an acid or use mouthwash.

And so if your body can't make it, we do it for you. And then we also put some components in there that we couple that nitric oxide synthase enzyme. So we can actually improve the body's own ability to make life.

So in order to do this what are those that are in here that cause the enzyme to be more efficient or functional. Well, it's complex. And what we use is a redox potential.

So everything in the body is electric. There's a certain amount of voltage needed to prevent to transfer electrons. So I know that's very complicated, but sodium nitrite is one of these substrates that we use.

So is that matrix falls apart in that laws. And these active components come together and generate nitric oxide. Yes. And then we use, you know, vitamins or magnesium is essential in an essential cofactor to make nitric oxide.

And then vitamin C is really there's a certain redox potential of vitamin C that allows for extending the biological half life of nitric oxide now from one millisecond out to tens of minutes and hours.

So that's the design of it. So if your body can't make nitric oxide. So in that laws and just dissolving in your mouth now for 5 to 6 minutes, we designed it to have a certain resonant time.

You're liberating about 30 parts per million nitric oxide. Yeah. And then we're finding about four hours later your endothelial function can be improved by about 15 to 20%.

So this is this lozenge supporting both sites of nitric oxide endothelial and the oral prodded gland. Dietary. It's both. That's right. It's both. And so that's the beauty of it.

So if you're compromised and either that lozenge overcomes both of those deficiencies. So it doesn't matter if you have the right bacteria. It doesn't matter if you you can make stomach acid.

If your own and acids that lozenge will always generate nitric oxide in the exact same way in every single patient that puts it in your mouth. And of course, you know, it's not a, FDA approved drug.

So we don't say it treats anything. We talk about what it supports. I imagine if somebody added in a lozenge twice a

day, and I gotta say, I've not been good about 5 to 6 minutes.

## Nitrousceuticals and the Nitric Oxide Lozenge

The thing tastes so good it doesn't last. But I will start doing that. I mean, a person's not seeking a new pathway to support. Of course, we always encourage the green leaves, the beets.

And I want to ask you another food question a minute. A person could get test strips and just show that they are now apparently producing and showing a lot of dietary nitrate, but what do you mean it could support healthy blood pressure levels?

Give us that list of supportive activities that, and nitrous suited go like this might do well, we've got that same technology we're now developing into two drugs, FDA approved.

We went through FDA approved clinical trials. Different company. Obviously, these are drug trials. But I'll tell you what we're finding in the drug studies is we've got a drug in phase three trials now for Covid that we improved blood oxygen saturation.

We're seeing patients with severe Covid with blood oxygen saturation of 78 improved to 96 within eight minutes of taking up. So when you generate nitric oxide you just gotta realize what is nitric oxide doing.

Well, it's dilating the blood vessels. So if you have an unsafe elevation in blood pressure, it'll reduce your blood pressure and normalize your blood pressure.

We're seeing an improvement in insulin signaling so you can improve glucose uptake, reduce the amount of insulin that the body secretes. So it's the hyperinsulinemia hypoglycemia.

It causes a lot of the inflammation in the body. So if we can normalize that we decrease inflammation. In fact one of my injury patterns is I'm a method of reducing systemic inflammation through C-reactive protein.

And as you know, inflammation is really the silent killer. That's the problem in people, you know, whether it's a vulnerable plaque, it's the inflammation that causes that plaque to rupture and causes heart attack or stroke.

So we improve circulation, improve oxygen delivery, decrease inflammation, oxidative stress and immune dysfunction. It's really the hallmarks of cardiovascular disease.

I want to ask you a very, you know, specific questions. A lot of the listeners to this summit well have heard from others speakers at various places, not just this summer, that it's best to chew your leafy greens, and you may be robbing your body of benefit if you were to take out a blender, but a handful of kale and some blueberries and ground flaxseed in and, you know, oatmilk and make a smoothie, it goes past your mouth too fast to participate with these, facultative anaerobic bacteria in the grooves of your tongue.

You know, your thoughts. I mean, you know, it's better to have a green smoothie than a donut and a rapid fino. We all know that. But because of the recycling, do you think you still capture most of the nitric oxide benefit?

If you were to just pound a green smoothie down? I always encourage people to take some time and chew a smoothie. I haven't given up on the idea that they're a waste of time, but any thoughts that look, the more resident time you can have in the mouth for the food?

I mean, the mastication of food is really essential because the more surface area you expose then when you swallow that, the more efficient the digestion is going to become.

And also it allows those bacteria more time to respire on that nitrate to generate the nitrite, nitric oxide. But even if you drink a smoothie, you know, the body's a pretty efficient system whereby you can absorb that nitrate in the duodenum, in the proximal gut, and then you'll concentrate it back in our celebrate.

So it's been recognized secreted. You may slowly secrete it on your tongue for a number of hours to try and get, you know, it's not of no benefit. You even estimate that pathway of not residing in your mouth.

Do you think it's half as efficient as slow chewing? We haven't never we haven't ever quantified that. But, you know, you're certainly losing the efficiency of it because everything we do, we try to recapitulate physiology because that's how the body's designed to work.

And so so that's why we designed that laws and have a certain resident time to mimic that slow mastication that one would have from, from chewing their vegetables.

And as I said, I encourage patients that ask me to, you know, run the blender for just a couple seconds. You end up, I call it a chewy. And, you know, you almost have to spend a little time on the kale, on the walnut and the flaxseed, because it's not like going to the, the smoothie shop where they blend it down to, you know, pure liquid.

And, you know, you're probably somewhere in between in terms of efficiency. I hope I remember to do this with every, honored guest. But just tell us in your own life, people don't know you.

I married kids, dogs, horses. What you got? I do, I'm married. I've got, three boys. We lost our oldest son, Grant, in a car accident several years ago.

So we've got a 14 year old Lincoln and 11 year old, Conley. But I live in Texas of, I have about 800 acres. We're out in the middle of nowhere. I have horses, cattle.

We raise our own food, grow our own vegetables. So we're pretty self-sufficient. So I've been very blessed in order to do to do that and live that kind of lifestyle.

I also want to ask, as most people, what's, You've got 30 minutes to exercise. What, are you out there, baling hay or what? What do you do in your own personal, busy life?

Well, you know, it's discipline, right? So I try to get at least 20 or 30 minutes of some type of exercise every day. I travel a lot. I'm on an airplane, you know, every week of my life for probably the past, certainly three years.

But I always go to the gym. I like to exercise outside. So we're exposed to direct sunlight, you know, certain wavelengths of light. The can stimulate nitric oxide production.

And then I like an infrared sauna, you know, because it's very important that we sweat because they're ammonia oxidizing bacteria that live on our skin.

So every time we sweat, they're oxidizing that ammonia to nitric oxide.

## Lifestyle, Fasting, and Supplement Strategy

So and that's a problem with Americans today nobody sweats anymore. You know we get in our air conditioned cars and drive to our conditioned office and and sleep.

But I have conditioned home and nobody sweats. And it's a major source of detoxification. So I try to sweat every day. But, you know, trying to maintain an 800 acre ranch, there's always something to do in in Texas, especially now.

It's extremely hot. So sweating is never an issue. Not so many things come out of your mouth. Yeah, there are such pearls, but the fact that sunlight is not just a vitamin D generator, but we're a little bit like plants.

Sunlight makes production of nitric oxide. We don't know for sure. Sunlight makes energy in our body. There has actually been one report that that may happen in mammalian cells, but sunlight can be very therapeutic.

And I share with you an infrared sauna in my house that gets used quite a bit. And we'll have a interview segment on the cardiovascular benefits of infrared sauna, during this summit.

So people will learn more. What about real quick. And we are diet. It's a plant forward summit. But, we're not, limiting it to discussing, exclusively.

But what's a breakfast? Lunch? Dinner? Just your optimal day as a scientist that understands the food is medicine pathways. Well, I typically don't eat breakfast.

I'm a big believer in intermittent fasting and caloric restriction. I think the data are pretty, pretty solid on that. So I eat my last meal of the day at 530 or 6 p.m., and so I do a 16 hour fast every day.

I have one cup of coffee every morning, and then for lunch I try to eat something like a good balanced meal. So I'm not a big fan of a straight, you know, carnivore keto diet.

Everything in moderation, a balanced diet. So I always try to eat a salad before there's a reason for that, because we're priming the body. You know, there are certain foods that are inflammatory.

So I do avoid a highly processed, meal or processed carbohydrates. So I do I do kind of limit the amount of carbs. But for me, I think it's very difficult to apply a one size fits all because, you know, if you're burning a lot of calories, you can afford to eat a lot of calories, but it's the people who don't burn it.

And then it's stored in spare, developed metabolically. And then for dinner, I'll eat a light meal, and usually have one glass of wine or one glass of scotch with it.

But again, for me, it's about the intermittent fasting and a balanced diet in moderation and physical activity. Really, I think that works. I mean, we've known diet and lifestyle can prevent chronic disease for, what, hundreds of years?

It's applying those principles and trying to understand the mechanism of that. So then we can make it more efficient. Great. Yeah. And we will be, sharing thoughts with Doctor Joseph Van Toon, CEO of al-Nusra, during this summit and talking about the variety of approaches to fasting and calorie restriction and benefits.

So, you know, people, are looking for, you know, a lot more than most, including, as I say, you've written, how many people have written a book on nutrition at a very high level, but I encourage me to look this up, look up. And where do they find information?

They can read about this product and not to. EW.com. And then I've got a, an educational website, doctor Nathan S bryant.com. I do a monthly blog and try to, you know, keep up with the literature and try to bring some practical, timely, you know, common sense approaches on how you can make some very simple choices and very simple changes.

It will have a dramatic influence and change in your health and overall well-being. Last question. On a personal level, how many supplements a day would you estimate you take?

I probably take 10 or 12 different supplements because. And there's a reason for that. Because it's there's it's known that since 1948, there's a 78% decline in the nutrients in the foods we eat.

So the foods we eat today are missing certain minerals and vitamins. So we're not getting what we need for optimal performance through the foods we eat.

And you can try to eat clean. You can eat organic. But the facts are those plants and vegetables and food are deficient in certain minerals. So what I do is I do a micronutrient analysis and figure out, okay, what exactly am I missing?

And then I supplement that. You know, the one thing that I think is the biggest bang for your buck is, I don't know, I

don't it's critically important we don't get in the American diet.

We need it for thyroid function. We need it for stomach acid production. And so that's a very it's a routine test in my clinic is urinary iodine. And, we live, in Detroit, where we live in a salt mine.

Not everybody knows that, but nobody touches, I don't know, salt anymore. I as a plant eater and seek help. So this is my little. I get a dietary source of iodine.

Plus I do rotate. It's interesting. Doctor Valter Longo suggests taking a really broad multivitamin, multi mineral about every third day. Just kind of plug the holes that might be there if you don't do a micronutrient test to directly measure.

So there's different approaches to it. And I don't think supplements are always expensive here. And I think they are often a good support to health. But you know we do fight that idea that they are.

All right. Well I want to wrap it up and just thank you. I think the audience has learned what is the miracle molecule, how we make it in our arteries, how we make it through a dietary approach we've only known about for a dozen plus years.

We can support it through good diet, good fitness, all the lifestyle messages, even your comment about the methylation pathway might have far been so important in nitric oxide synthase.

That's actually new to me, because I've been testing and supporting and correcting methylation defects in the clinic. But I wasn't aware about the, nitric oxide aspect.

I read more and thank you for that. And then, of course, your contribution solutions. I mean, we can talk all day long about Nobel Prize winning science.

I will say for those listening and you know, this, doctor O'Brien, I mean, the average interaction with a primary care doctor or a cardiologist will never bring up the word nitric oxide.

That's right. Because it hasn't really been addressed directly by the pharmaceutical industry. And the supplement industry is generally disregarded by physicians.

They're not unintelligent, but they don't believe there's a role to discuss what we've just talked about. I mean, if this were the only interview for this summit, people would have walked away with tremendous advantages.

## Closing Thoughts and Future of Nitric Oxide Medicine

So thank you for what you do. And I think the future is bright. I think we will have doctors saying your blood level of nitric oxide, as measured by a DMA or salivary or some other, creation you're going to come up with in the next ten years, you know, is as important as your LDL level, your blood pressure level, your blood sugar level.

And now we have, you know, better and better tools to correct. Well, which we're in the process of changing that. You know, we've got an A and B which is an investigational drug application in for a schema heart disease ischemic non obstructive pulmonary artery disease which is you know a microvascular disease.

And so we're developing those now to give physicians even you know contemporary allopathic physicians who want to prescribe a drug. We're working to give them the tools they need to not only better diagnose nitric oxide deficiency, but as we finish and complete these clinical trials, actually have a bona fide drug on the market that's safe and effective, then it will become part of the primary conversation, because the right nitric oxide in the right position at the right time, there's not a single indication that nitric oxide would not be beneficial.

So I think this has a chance to change the face of of health care and how we treat patients for the next hundred years. And we need it. We need we need advances.

All right. Well, thank you. Much gratitude fly safe today. And hopefully you're back in beautiful Brian soon amongst your family. Thank you. Doctor God.

Thank you for tuning in to Doctor Talks. We hope today's episode has enlightened and inspired you on your path to optimal health. Each day is a new opportunity to make choices that empower your well-being.

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