

Dave Asprey ([00:02](#)):

[\(00:07\)](#):

You are listening to The Human Upgrade with Dave Asprey. Today's episode is one that I call a special upgrade spotlight. And what that means is I'm bringing someone in for you who has done core research enough that they believe that they have a product that's really cool. There's tons of supplements on the market right now, and we'll just say there's a lot of varying in quality. So when I find something that is different and new and worth your attention, I ask the end inventor to come on and share the story with you so that you understand, okay, why is this either worth it or not worth it for you? Because not everyone needs the same thing. And our guest today, I met several years ago in London, I believe, and she's got a very unique take on NAD and NAD is one of these well-known longevity supplements.

[\(01:06\)](#):

And I've talked about doing intravenous NAD, and we've had lots of conversations about this because it's a mitochondrial component or it is something that actually carries electrons from your mitochondria in your body, and it's something that you can definitely hack. And our guest is Dr. Nicola Kalin, who's, I would say just a leading authority on cellular health and on longevity. And she's got a very different take on NAD that you might've heard. So you're going to enjoy this episode and you'll learn, okay, what actually works to raise your cellular energy and what you might be doing that doesn't work as well as you think. So welcome back to the show.

Dr. Nichola Conlon ([01:46](#)):

Hey Dave, great to see you again.

Dave Asprey ([01:48](#)):

Alright, let's get grounded. I should say. By the way, Dr. Conlin, Dr. Conlin is so formal. You're the founder of Cheto Laboratories and you make NAD boosting supplements that are not NAD. They do something different. And we're going to talk about why this is worth considering. It's like, okay, is this really worth it? So I want you to teach people on this episode how NAD in cells really work and why people care. So let's start to ground our audience. What is NAD and why do we care about it?

Dr. Nichola Conlon ([02:23](#)):

Yeah, absolutely. I mean, NAD is obviously something we've known about in the scientific community for years and years, but within the longevity and biohacking space over the last couple of years, it's really become a buzzword. And a lot of people are talking about it, but actually a lot of people are really confused by the science behind it. What actually is it full? So I spent a lot of time talking about this in teaching people because it's really important that we understand how it's actually working in our body and what it's actually doing. But basically it's a natural molecule and it's found in every single cell in our body, and it's actually critical for hundreds of different reactions in our cells. But the two things that it's really important for are, firstly, as you just mentioned in our mitochondria. So NAD is part of the KREB

cycle, which is the pathway in our cells that literally helps to take glucose from our food and turn it into a TP, which is the energy currency of our cells.

[\(03:28\)](#):

So it's absolutely critical for cellular energy production. Literally, if we didn't have NAD in our bodies, we'd be dead in 30 seconds because this respiration just simply wouldn't happen. So I guess that's the thing it's always been famous for. But the second thing that has been discovered a lot more recently is the fact that NAD actually acts as a fuel for a lot of cellular maintenance and repair processes in our body. So we know constantly in our cells, our cells are suffering from all sorts of damage, everything from damaged proteins to damaged DNA. Well, there is an army of repair enzymes that are going round making sure this is all fixed without us even known about it, like our DNA repair enzymes, things like this. And NAD is actually being found to act like a fuel for these enzymes, so it powers them to make sure that they can do this repair.

[\(04:26\)](#):

And so they're the sort of two things that's famous for. And as a general rule of thumb, all you really need to remember is if you have high levels of NAD, you are getting lots of energy production, lots of repair, which is good for your cells. But if NAD is low, then energy production is not as efficient. Your repair is not as efficient. You start to see things like tiredness, fatigue, cellular damage. So that's kind of where it plays its important role. But the link with aging is because it's actually been found to decline with age as many things do. NAD has also been found to decline quite significantly. It's estimated that it halves every 20 years, and this is from birth. So even by the time we're 20, we've lost half our NAD by the time we're 40 again. And then obviously this means lack of cellular energy damage. And this contributes to a lot of the sort of signs and symptoms of the cellular processes that are driving aging.

Dave Asprey [\(05:31\)](#):

I would say the researcher who put NAD on the map who's been on the show and is a friend, is Dr. David Sinclair. And he's been at his lab at Harvard looking at this. And when you look at all the different things you can do for longevity, making mitochondria work better is one of the most foundational things because mitochondria make your sex hormones, which are something that declines with time. Your mitochondrial function declines with time. So you fix NAD, you end up fixing, like you said, hundreds of different problems of aging and there's really good evidence for it. But now we're figuring out, well, what is the right way to fix NAD? And the first and obvious way is well put some NAD in there via iv, which has profound effects on even addiction like alcohol addiction. It turns out when you have low mitochondrial function, you feel like crap all the time.

[\(06:23\)](#):

You want to do something about it. And sometimes self-medicating in a way that isn't beneficial for you is something that happens. So when you fix mitochondria, alcohol cravings can go down, and this is where NAD infusions became popular, but they're very expensive and they're uncomfortable. It feels like someone's sitting on your chest and you can get really nauseous from it. And then there are people who will do subcutaneous injections of it. But again, it's expensive. You've got to stab yourself. So then the idea was, well, maybe we can just take some precursors like NR or NMN has been the thing most people do in longevity. And my experience having been on that stuff for 10 years, I felt it at first and then I stopped feeling it and one of two things happened. Either I just got used to it or it stopped working.

Dr. Nichola Conlon ([07:12](#)):

So in terms of the precursors, yeah, they are probably the most popular way to boost NAD, probably NMN being the most famous example. And they originally were thought to be the best way because as you mentioned, the big N demia molecule is very unstable. It is difficult to get into the cells, people are having to do it with IVs, things like this. Not huge evidence that it can actually access all of the cells in our body. So these smaller precursors, which are like the building blocks for NAD, were thought to be the best way to try and increase intercellular intracellular NAD levels because they can actually get absorbed into the cell. So by trying to be sunny D in this way, it's essentially it's like giving the body more of the raw material that your cells need to make the NAD and then hoping that it actually gets turned into the NAD.

([08:10](#)):

But what we actually now know is one of the main reasons why NAD declines with age is because the pathway, in particular, a specific enzyme that actually takes these raw materials or these precursors like NMM and turns them into NAD that actually declines with age. So I think the answer to your question is probably that yes, you will have got to some degree a boost in NAD, but then the system's pretty much maxed out. You can put all the raw material into the cell you want, but if you don't have the machines working to actually turn it into anything, you're going to reach a limit. And I always sort of get people to think of a kind of factory analogy to describe this. So if you went into an NAD producing factory and you saw that production had gone down because all the machines were broken, the solution definitely wouldn't be to just order more raw material and ignore what's actually happening in the cell and hope that production goes up.

Dave Asprey ([09:15](#)):

So we take a precursor and then it doesn't work that well. We have other examples in the world of longevity for many, many years, people say, well, you can just boost your glutathione, which is a preeminent biohacking and longevity molecule. You can boost that by taking something called NAC, which funny enough, it does work. But again, it maxes out pretty quickly on how much you can get. And then the FDA blocked NAC availability in the US when people needed it most for some weird reason, I don't understand that. But the idea there is NAC doesn't work very well because you only get a little bit and then you run out of enzymes, and that's why people take glutathione directly. So it looks like we're running into the same problem with NADD where you can take NAD directly without injecting it, which is expensive and painful and uncomfortable because of the flushing you get from it. So then, okay, maybe the enzyme would be the way to raise NAD instead of just taking a precursor and hoping that it works. How do you do that with N Cheeto?

Dr. Nichola Conlon ([10:20](#)):

Yeah, because just to add, what many people don't realize is that we don't get NAD from our diet. Our bodies actually make all of the NAD that they need in the cells, and our bodies are very, very good at making it. And the way that they do this is by this pathway, this salvage pathway, which has the enzymes that actually continuously make and recycle NAD. So basically what happens is that every time a molecule of NAD is used up in your cell, it is broken back down into one of the precursors called nicotinamide, and then this nicotinamide is literally scooped back up and recycled back into fresh NAD

again. But what we know is that that process declines because an enzyme that is in this pathway called N-A-M-P-T, that is the rate limit in enzyme, and that is the one that decreases. So really if you want to switch back on NAD production, you need to actually increase levels of this enzyme.

([11:22](#)):

So at nto, what we really wanted to do was actually turn this enzyme back on because the key thing is that our NAD production pathway is there within our bodies. It just gets turned down with age. So how can we reactivate this enzyme meaning that your cells can literally start producing their own NAD like they did when they were younger. So that is what we've done with NTO is actually take a completely different approach, which is based on the latest evidence and the latest science that shows us the reason why NAD declines. And I guess it's probably important to point out at this stage that it's not just this enzymatic pathway that's declining. We also know another really key driver for NAD depletion is actually chronic low grade inflammation. And this is something that's just a huge problem in our bodies and our cells as we get older.

([12:23](#)):

And one of the things that this chronic inflammation does is it causes expression of an enzyme in our cells. And this enzyme's called CD 38, and it is one of the most prolific NAD consumers. So it uses so much NAD, it drains our supplies. So this means not only as we're getting older do we have this situation where production's gone down because our cells aren't producing and recycling NAD like they used to. We also have a situation where the demand has gone up. And this CD 38 is literally draining NAD to drive inflammation in the cells. So that was another key thing that we noticed that had a lot of science behind it, but again, just wasn't really being addressed within the NAD space and the NAD booster methods that were out there. So everything that we did was try to actually address these root causes of NAD decline.

Dave Asprey ([13:26](#)):

If you were listening to that and you said, wow, that was a lot of science, well, we have really smart people who study aging and cell biology on the show. So what that means is that if you can take the right combination of things, it's not just one thing that you could raise NAD inside the cells way more than you could from taking a precursor and that it's sustainable so you get higher levels, you get 'em in the right place and it's way more affordable than doing the injections. And this is why it's worth an upgrade spotlight addition to share this new way of thinking about it. And in fact, that's why a new Cheeto time plus is called a second generation N ad booster because instead of just taking a precursor and hoping it works, you're stacking all the right things together. Now, let's say that you succeed, and I've seen your research, so I know that it's real. We've been talking for five plus years, so let's say that it works. Are we going to see a reduction in systemic inflammation? Are we going to see cognitive function? What are the symptoms of increasing NAD?

Dr. Nichola Conlon ([14:35](#)):

So in terms of stepping away from the cells and looking at the whole person, because at the end of the day, that's what we want to improve, what the top reported benefits that we see are firstly an improvement in levels. So this is something that is not surprising given that we know how important NAD is to mitochondrial function. That is the top reported benefit. It's also one of the top things that is

noticed in people that have low NAD levels, this chronic fatigue that they experience. And it's not just physical benefits in terms of energy, it's also the cognitive benefits. We know that cognitive function, brain fog, all of these things are again associated with NAD decline. And by restore and NAD, one of the top of water benefits that we see is an improvement in brain fog. And really interestingly, one of the top reported groups of people that we see this in is actually menopausal and perimenopausal women who really do suffer quite badly with brain fog. That is probably one of the biggest groups that notice it the quickest.

Dave Asprey ([15:47](#)):

Wow. So you've got something that gives energy back to women who are having energy problems during perimenopause via NAD. Since NAD is a broad spectrum anti-aging or longevity supplement. Anyway, if you're getting your energy back, you're also going to be aging less. And this is why instead of calling biohacking longevity called it biohacking, because when you're 20, you probably don't care that much about longevity. At least I didn't, didn't get into that until I was about 27 because I had all the diseases of aging in my thirties, lucky me. But it turns out keeping your NAD levels high, it just makes you feel good and have more energy regardless of your age. So perimenopausal women are the hardest group to work with in the longevity field. All of my longevity doctor friends are okay, these are the most complex cases and it's a weird period.

[\(16:39\)](#):

And if you can go lower down in biology and say, well, let's just have more energy, then you feel better. And the whole point of going through perimenopause is a do your hormone testing, get on bioidentical hormones. The evidence is very strong for that. But support energy production at the same time. And I think men go through andropause as well. It's just a 10 year period and the documentary on that is called Grumpy Old Men. It's a movie from the nineties or something. But we also go through it. It's just not, it doesn't hit us in the face quite as hard. It, it's less rapid. So I look at adequate NAD and other compounds like adequate sex hormones, adequate thyroid and adequate glutathione is very basic longevity biohacks that I've been talking about for a long time. I just haven't really had a chance to talk with someone who's using unusual compounds in a stack that's scientifically validated. I think you have two clinical studies now.

Dr. Nichola Conlon ([17:43](#)):

Yeah, we did one pilot study and then we've done one full double-blind placebo control crossover study that's been published in a really good journal, a nature agent journal. So for a commercial supplement that's pretty rare to have that level of evidence supporting something like that.

Dave Asprey ([18:04](#)):

What did the studies find?

Dr. Nichola Conlon ([18:05](#)):

So for the study, I mean obviously the first thing we wanted to do was prove it actually increases NAD level. So that was a primary outcome, which we demonstrated after just seven days, we were seeing a significant increase in NAD that continued to rise across the course of the study. The study lasted 28 days, but the second major thing, and I guess probably the most important thing for us was are we actually fixing the root cause of NAD decline? We wanted to prove that this was not just putting a precursor in there, but this was actually switching back on that key enzyme that is actually producing and recycling NAD in our cells, so that N-A-M-P-T enzyme. So we measured levels of this actual enzyme in the cells of the participants and demonstrated, again, after 28 days, we saw a significant increase. So for us, that was really exciting because it proved that actually you can switch back on your natural NAD production. And this is the first evidence in a human study that shows that you can do this with a dietary supplement. You can literally switch it back on again.

Dave Asprey ([19:17](#)):

Alright guys, because it is the show, I always get you a discount new cheeto.com/upgrade and Nicola will give you a 10% off if you want to give it a try. The other thing you didn't mention from the study, the reason I wanted to have you on is in your study you found reduced glycation. And if you read superhuman, my big longevity book, it's a very accessible book about here's what to do. And it's not one of those, oh, you just have to exercise until you drop sort of mindsets. This is about how do you make your cells younger, which makes your body younger? I talk about glycation as a major problem, and this is something that happens when your blood sugar levels are high, then the sugar binds to the proteins and it makes a permanent bond that is a hallmark of aging. If you can reduce glycation in tissues, you're actually making younger tissues, and that's one of the seven pillars of aging. In the book. You found reduced glycation, but a reversal of biological age by 1.26 years in 28 days.

Dr. Nichola Conlon ([20:26](#)):

Yeah, we did.

Dave Asprey ([20:28](#)):

At this point, I want to reduce the speed of aging and reduce biological age as much as possible. My extrinsic age in this kind of study is 19 and a half years younger than my current age, and my speed of aging is 73% of normal because I stack all of these things. I also have, I'll just be frank, pretty much an unlimited budget, maybe not as unlimited as Brian Johnson, but I've spent \$2 million over 20 years. I don't spend \$2 million a year, but similar results. And what you'll find is that getting NAD levels up does also reduce the speed of aging, not just reverse biological age, but did you study that? Did you look at the speed of aging or did you just look at biological age?

Dr. Nichola Conlon ([21:14](#)):

In this study, we just looked at biological age. We didn't look at the speed of aging, but we are, as a scientist, I am a complete geek when it comes together and data and stuff. So we have other studies that we've done that we are doing that we're going to be publishing. So never say never on that bit, but you are right. It's like we showed it increased NAD, but we really wanted to know what is the actual result? What are we doing to biomarkers of aging by increasing our NAD and switching back on NAD production? So glycation was a really obvious thing to measure. It's a leading cause of many aspects of aging, everything from our skin aging to our cardiovascular agents. So the fact that we again saw in 28 days a reduction in glycation was brilliant. We also looked at levels of inflammation.

[\(22:10\)](#):

Again, we wanted to prove that all of the NAD that we were increasing in the cells was actually not going to towards power and CD 38, because some studies using NMN alone have showed that it can actually drive inflammation. And in our study on the other hand, we saw a reduction in inflammatory cytokines. So again, really having an impact on another hallmark of aging and the biological age result was kind of like the cherry on the top because it's to see an impact in a short time really shows that this ad is actually doing something useful in the body.

Dave Asprey [\(22:51\)](#):

Who would've ever thought that increasing mitochondrial function would reduce your speed of aging and reduce your biological age, be the primary hypothesis in my longevity and my cognitive function book, it goes down to mitochondria. And this is such a profoundly important mitochondrial, we'll call it part of the mitochondrial process. What's really different is instead of focusing just on precursors here, you're looking at these other compounds that most of us have just never really heard of. Things like N-A-M-F-T and NMNT, and then CD 38, which you talked about. And we don't have to go into what each of those is in detail, but instead of looking at just NAD, it's like, well, did it give you what you wanted or not? I look at this as core biohacking because the idea of biohacking is

[\(23:45\)](#):

You're going to do something that you think works. In fact, you're going to do everything that you think works and then you're going to measure it to see if it worked. And if it didn't work, you stop doing it. So if you're increasing your NAD because you think it's going to give you results and you measure the results and you're not getting those results, even though you increase NAD, then it didn't work or maybe work for a little while, and you went through all that and the formula includes some unusual things. And the way you think about this I know is because we talked about it privately and on a previous episode is something that just makes me happy. It's this belief in big pharma, which is there must be one cause and there must be one substance. And this flies in the face of life.

[\(24:31\)](#):

There is no one cause of bread. You have to have the right ingredients and the right ratios with the right temperature and time, otherwise you just baking yeast with no water and no flour, and that's what they would do. So you got into the big pharma industry earlier in your career, and this doesn't work very well. Let's look at more of a poly pharma approach, which means taking multiple drugs that all do the same thing to get the results. So being results driven instead of one cause driven is what makes biohacking different from industrialized medicine. And so you took the big pharma mindset that you learned in the industry and said, this doesn't work very well. Let me go over to supplements. And then you did the big pharma style trials. Doubleblind, placebo controlled is still considered the gold standard, but some of these ingredients are pretty rare, like Sephora, japonica. Tell me about that ingredient.

Dr. Nichola Conlon ([25:29](#)):

Yeah, you're right. I mean one of the main things that apart from the single target, single molecule approach, which is just stupid, one of the other things that really annoyed me was half the time we were testing all these molecules in drug development. And the things that worked the best weren't even the drug molecules. They were these natural molecules. So for example, *Sephora japonica*, it actually contains something called rutin. Now, lots of people might not have heard of rutin, but the one thing they may have heard of is a molecule called quercetin or quercetin, how I say it in my accent. But quercetin is a very powerful compound, and we use it in the formula because it actually, it is one of these compound that switches back on this NAD producing enzyme. And a lot of people say to me, but Nicola, why have you not included pure quercetin in your formulation?

[\(26:32\)](#):

Why use it as this extract? Surely it's better to use the pure molecule, but actually it's not because you can put the pure molecule on a cell in a lab and it may work, but when you try to take it orally, this is something that never existed in its isolated form in nature, so it's just not absorbed. So rutin, which is derived from this *Sephora japonica* flower, is actually a Quercetin Glycoside. So it's like cetin, but it's got the little sugar molecule, the glycoside attached, and that means that as it's absorbed through the body, it's protected, it then actually goes into the blood, it's absorbed, the glycosides cleaved off, and then the cetin can go off and do its job in the cells where it was intended. And there's a lot of examples of the ingredients we use in there that are the more, shall we say, the more raw versions. Another one is we use parsley powder. This contains something called epigenic. Epigenic is used as a CD 38 inhibitor. Again, you hear of people taking pure epigenic, but it just doesn't work like that. And one of the reasons I'm so particular about this is before I even started drug development, my PhD was in the bioavailability of nutrients and drugs. So it's like how do we take them orally and how do they actually get absorbed? And this is another major issue in not only drugs, but in the supplement world,

Dave Asprey ([28:00](#)):

It drives me nuts. I mean, there are companies out there who will sell you a supplement that gets a hundred percent broken down in the gut and doesn't work at all.

Dr. Nichola Conlon ([28:08](#)):

Exactly.

Dave Asprey ([28:09](#)):

It's all about delivery. And I know several different technologies that can drop the amount of supple that you need by 75%. You wrap it in a liposome, there's actually a whole bunch of different ways of doing it. So the delivery system matters more than what's in it.

Dr. Nichola Conlon (28:27):

Absolutely.

Dave Asprey (28:28):

The way to think about this is if you had some important molecule you wanted to take and it was wrapped in a glass bubble and you swallow that pill, it's going to come out whole. And the other thing you could do is, well, you take it and then everything in your gut digests it, and you took some expensive drug that had zero effect and that's why injections are still useful. But the fact that you've done your science on that and you studied it, it allowed you to create something that's new, like you said, a second generation NAD supplement. And again, it's new Cheeto, N-U-C-H-I-D o.com/upgrade, or you can just use code upgrade 10 if you want to. I think this is a pretty good deal if you're reversing biological age by 1.26 years and 28 days. And it's also a really good deal for women in perimenopause.

(29:18):

End of the day, it's how much money and how much pain and how much time are you willing to invest to reverse your age? And this is a relatively small amount of money a supplement, and it's a relatively large effect in the study you had, and it isn't painful to take it. And if I compare that with a thousand dollars NAD infusion, which takes three hours and makes you want to throw up and your heart's racing and all that, this and probably doesn't work as well. Anyway, this seems like a really good idea. And the idea is as we age, we want to address all of the different seven pillars and probably some other stuff we're still discovering. We want great mitochondrial function, we don't want glycation, we want our blood sugar to drop and we don't want to spend all of our money and time on that.

(30:10):

And this is one of those things where it looks like it's worth it. And in American we'd say it's got pretty good bang for the buck. And the benefits to cost and pain are really, really good on Cheeto, which is why I'm interested. And your approach on this is different than you'll find from most supplement companies. It's a cool idea. It's cool work. And you mentioned your accent earlier. If there was a Siri that had your accent, I would totally do that because you're like the coolest sounding doctor we've had on the show by far.

Dr. Nichola Conlon (30:44):

Thank you, Dave.

Dave Asprey (30:46):

You're welcome.

Dr. Nichola Conlon (30:47):

Polite British accent.

Dave Asprey ([30:49](#)):

Now, what's the most dramatic effect you've heard from a customer?

Dr. Nichola Conlon ([30:55](#)):

Oh wow. I guess the most traumatic effect was someone who had been suffering from something that, well, it was Lyme's disease. It caused real chronic fatigue. And this person literally emailed us and said, you have changed my life. You have changed my business, and please can I invest in your company because more people need to know about this. So I think as far as someone that is just absolutely sold, I think that has been the biggest. I think a lot of, for me, the whole reason I started NTO was I was so frustrated that there was all this amazing science. There were molecules that were there that could be put in the right combinations that actually had impact and nobody knew anything about it. And my aim was just how do we get this out there to people so it can actually change people's lives and help them? So every time we get any sort of feedback from the smallest thing, it's helped my brain fog or all the way through to some, it's changed my life. My life was terrible and I didn't believe this was going to help so much, but it actually has. That just makes everything worthwhile because these molecules can really have an impact. They just need to be out there for people so they can access them.

Dave Asprey ([32:21](#)):

I'm glad you talked about Lyme disease. I was diagnosed, had an active Lyme infection, was diagnosed with it many years ago, and it turns out the underlying cause of that was toxic molds. I also had doctors diagnose me with fibromyalgia and chronic fatigue syndrome in my twenties and early thirties, and it sucks. The brain fog, all that sort of stuff. What's interesting in in the world today, there's a lot of people who have long and you guys all know what I'm going to say except for some reason. When you say that magic word that starts with a C, then magically for some reason, I don't know, no one ever hears it, so I'm not going to say what it is, but you know what I'm talking about. There's about 30 million Americans who are having chronic fatigue syndrome, which was caused by a viral infection. Who would've thought, right?

([33:10](#)):

It's one of the many things that can cause this. And a hallmark of this is elevated CD 38, which we were just talking about. Since CD 38 eats all of your available NAD, it sucks your mitochondrial energy. So if you can take something that reduces CD 38 and simultaneously increases your ND levels, it would make sense that at least some of your chronic fatigue like symptoms after having this viral infection, those could get better too. I'm not saying anything about treating or curing any sort of social media popular illness. What I am talking about here is if you have low energy levels after mold, after Lyme, after insert name of anything like Epstein Bar virus, maybe dropping CD 38 is a good strategy and raising NAD at the same time, and that's what you're doing with cheto. So it's a pretty cool stack. And I started out as a biohacker because I was fat, I had chronic fatigue, my brain wasn't working.

([34:14](#)):

I was a mess, chronic inflammation everywhere. And I learned longevity from people in their eighties running a longevity group, a nonprofit, and I ended up running the group. And I am so fortunate that I completely reversed my chronic fatigue syndrome, and I'm certain that I suppressed every kind of inflammation I could, including CD 38. I just didn't have a single pill that was designed to do it. No one had designed it yet. So I think this is worth sharing with the world, and I appreciate that you're giving discount to people. It's new [cheeto.com/upgrade](https://cheeto.com/upgrade) or use code `upgrade 10`. What else do we need to talk about? I think I managed to not say anything that I'm not allowed to say, right?

Dr. Nichola Conlon ([34:54](#)):

Yeah, no, I think it's great. I just think a key thing in the NAD space is it's something that has been around for a while, lots of different people talking about lots of different ways to boost it, but it's a new area as anything is in the biohacking, the longevity space and the science is constantly changing, and that means that the ways that we need to be boosting our NAD are changing as well as we learn more about the science behind why it's declining, and we now know there are ways to actually fix the root cause and with anything in terms of our health, if anything's declining in our body, it's definitely better to look at the root cause and try and affect that rather than ignore it. So yeah, I think that's an important point.

Dave Asprey ([35:43](#)):

The other thing about CD 38 that it is an issue that I've dealt with personally is autoimmunity. When you have high CD 38, it appears to cause autoimmunity. Do you think it causes autoimmunity or do you think it's correlated with autoimmunity?

Dr. Nichola Conlon ([35:59](#)):

I think it's correlated with autoimmunity, and I think it's probably a vicious cycle where it's kind of a chicken and an egg situation, but everything, it's all driving everything. In terms of CD 38, and especially with the link with NAD, it is probably the most prolific NAD consumer. So for every one cycle that it does, it uses a hundred molecules of NAD, which means that even if you have a little bit too much CD 38, it's going to massively have an impact on not only inflammation levels, but also UNAD levels. And it means that just by inhibiting it even a little bit, you can have a major impact on inflammation and NAD levels as well. So yeah, I think it's something that's not spoken about as much as it should be, and it's definitely an important thing to raise. The other thing about it is as enzymes go, so it's got what we call a very high affinity for NAD.

([37:05](#)):

That basically means that if there's any NAD available in the cell, CD 38 will literally grab it before any other beneficial pathways that rely on NAD even get a look in. So things like the repair enzymes or the ser, all of those things will literally get the NAD grabbed off them. CD 38 will use it and it will go towards driving inflammation. So this is another really important thing to consider that if you are in boosting NAD by any manner, you want to make sure that CD 38 is inhibited and shut down because you don't want to be in directed there because again, we've seen in the studies this will grab it and use it before

any of the beneficial pathways get it, which is exactly what we're not trying to do when we boost our ad levels.

Dave Asprey ([37:52](#)):

One of the members of our live studio audience called the Upgrade Collective, by the way, guys, go to our upgrade collective.com if you'd like to be here on Zoom with me and chatting in a chat window to help ask questions. One of the guys said that he started taking a precursor two months ago, his energy levels went up and then his inflammation went up because he's feeding his CD 38, which is really interesting. You talked about that. And we have people who are experiencing it right now. So, oh, I started taking it, I feel good, but then I had a side effect basically.

Dr. Nichola Conlon ([38:22](#)):

Yeah, this is not theoretical. There are studies with NMN that show that it actually drives CD 38, it can drive senescence. So it is a real problem, and again, it's just because we've ignored the reason why it's going down and not really looked at the root cause.

Dave Asprey ([38:42](#)):

Is there any risk of over suppressing CD 38

Dr. Nichola Conlon ([38:47](#)):

Because it's got such a high affinity for NAD, it means you just need to inhibit it. Even a small amount. We'll have a profound effect because of the amount of NAD it uses. So as I mentioned, it's like a hundred molecules of NAD for every one sort of turn of its enzymatic cycle. To put this in a comparison, something like the serin use about seven. So there's a huge difference. So even inhibiting it a little bit will have a big impact, bang for your buck as you put it earlier.

Dave Asprey ([39:17](#)):

It's a fascinating story, and I don't see a lot of people saying straight up NMN or nr, these, well-known NAD enhancers can drive systemic inflammation. And it's important to understand that difference there because I think a lot of listeners are probably taking just plain generic NMN or nr, and they may be doing exactly what you talked about, and this is why the new Cheeto formula makes sense because you address that big effect. If I wanted to drop my CD 38 and I didn't want to buy a new Cheeto, what would effective strategies be?

Dr. Nichola Conlon ([39:58](#)):

So I mean, you could eat a lot of parsley to get your epigenetic in, but actually when we were first designing this, we actually calculated how much parsley you'd have to eat to get enough epigenetic to actually do this, and it was like a shopping basket full. So it was definitely not something sustainable, but I mean any other strategies to just generally reduce inflammation, chronic inflammation across the body are going to help to reduce CD 38 because predominantly driven by chronic inflammation. So any lifestyle strategies that would do that would be helpful. One

Dave Asprey ([40:40](#)):

Of my favorite that I've only written two books about is called intermittent fasting, which does reduce CD 30 against studies. So there are lifestyle.

Dr. Nichola Conlon ([40:48](#)):

Yeah, exactly.

Dave Asprey ([40:49](#)):

Yeah, there are lifestyle things you can do. And when you stack a lifestyle intervention, oh no, you skip breakfast or have an earlier dinner, and then you take N Cheeto, which drops CD 38 and increases cellular energy, you might find you feel really different. And your study found people did over 28 days, and I don't actually know off the top of my head, what is the retail price for Cheeto?

Dr. Nichola Conlon ([41:14](#)):

So it's \$65 for a month's supply or on a subscription, it works out at \$55 a month, and then we have the discount as well on top of that,

Dave Asprey ([41:25](#)):

Not bad for 1.26 years of age reduction. Do I have to keep taking it every month? Should I do every other month? What's the deal?

Dr. Nichola Conlon ([41:34](#)):

What we found in the study with there been a crossover design, there was a six week washout because every single person took both the placebo and the real thing. And we found that in the six week washout period levels of the enzyme and NAD did go back down the baseline. So we wouldn't suggest

stopping it for that long if you want to have a break from supplements with say, a couple of weeks, but really this is something you want to try and keep high and keep your NAD levels high to prevent the damage, et cetera, building up in the first place.

Dave Asprey ([42:05](#)):

And one thing that I do want to raise for listeners is you're using piperine, which is a black pepper extract, and you're using a dose that's equivalent to the amount that you would get from eating a normal amount of black pepper in your diet. And so it's not a big dose, but it's possible if you're taking several different supplements that have this ingredient that you could get a high dose of it. It's also known that certain pharmaceuticals will absorb much more quickly in the presence of piperine. These are small molecule pharmaceuticals. And so I think just make sure that if you're taking different things with piperine, that you either space 'em out or that you account for that, because I wouldn't want to see people getting 20 or 30 milligrams of piperine because that's going to probably raise inflammation in the gut, right?

Dr. Nichola Conlon ([43:04](#)):

Yeah. So for that, we always say double check because a lot of people are taking so many different ingredients and not looking if they're actually doubling up on things. The amount of the piperine in our product is small in terms of compared to any studies that are associated with things like leaky gut, you're talking about hundreds of times less than what we used in any of those studies.

Dave Asprey ([43:32](#)):

It's funny, I was very strongly against the use of piperine. In fact, we talked about this early on, and then I sat down with Christian who's been on this show from STEM Region. This is another supplement that I take that contains piperine. And he went through it in a lot of detail with me in a way that was really impressive. And the reality is you don't get leaky gut from piperine, you get membrane fluidity, and the kind of membrane fluidity does not allow toxins like lipopolysaccharide through the way that classical leaky gut would. So it increases what can cross, but only super tiny things can cross. So if you're taking, I don't know off the top of my head examples of drugs that are super small molecules, but it's probably a Google, actually, sorry, Google doesn't do health information anymore. It's any search engine, but Google a way to find that. So in the interest of being complete with our audience, I think this is in terms of bang for the buck, clinical efficacy, studied for longevity, and getting your energy back. I think it's kind of brilliant. And I'm using the American brilliant, which means smart versus the uk. Brilliant. Which means cool. It's neat, and I appreciate that you did all this work and that you're such a big nerd on this. It's really cool. So thank you.

Dr. Nichola Conlon ([44:59](#)):

No, I appreciate that. Thank you so much, Dave. Thank

Dave Asprey ([45:02](#)):

You. And guys, one more time. It's new [cheeto.com/upgrade](https://cheeto.com/upgrade) or use code upgrade 10. And if you liked this episode, then thank you for subscribing on YouTube or for subscribing on whatever platform that you're watching this on. It really helps others to know the S is a source for detailed longevity information, for biohacking information, and I am only going to talk about the things that have good evidence behind them. And if it's a theory, I'm going to tell you it's a theory. This stuff isn't theory. It's very well clinically validated, and this problem of driving systemic inflammation with common NAD precursors, it's a thing in the longevity field, and I think it deserves more attention, and you're the leading voice on this. Appreciate you.

Dr. Nichola Conlon ([45:50](#)):

Thank you.