



Episode 588: Dr. Nick Bitz on Aging, Senescent Cells, Senolytics and Longevity

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Katie: Hello, and welcome to the "Wellness Mama Podcast." I'm Katie from wellnessmama.com. And this episode is all about aging, understanding things like senescent cells, senolytics, and longevity. And I'm here with Dr. Nick Bitz, who is a naturopathic physician who specializes in Ayurveda. And he's a leading voice in the natural products industry. He also currently serves as Senior VP of Product Development at Neurohacker Collective, and his expertise includes nootropics, anti-aging medicine, botanical medicine, clinical nutrition, and dietary supplements.

And we go deep on many of these topics today, things like understanding the multiple theories of aging, and what contributes to more rapid aging. Why aging might actually be a slowed ability to adapt, the three main theories of aging and how understanding it can help you slow it down, what he looks at to determine a

baseline. The nine hallmarks of aging, including things like telomeres, DNA mutations, epigenetic changes, senescent cells, and more. What cellular senescence is, compounds that can improve the body's ability to deal with senescent cells, how fasting comes into play, health span versus lifespan. Why exercise, especially strength training, battles all aspects of aging, the importance of sunlight, especially early morning sunlight, some interesting research surrounding chlorophyll, and so much more. We go deep on a lot of topics in a very fact-packed short episode that I know you will learn a lot from. So, without any further ado, let's join Dr. Bitz. Nick, welcome. Thanks so much for being here.

Nick: Thank you for having me. It's a pleasure.

Katie: Well, we're gonna get to talk and deep dive into a lot of the science of aging and all that that entails. But before we do, I have a note from researching your bio, that you have a daughter named after a Grateful Dead song and I know a couple kids who are named after songs, and I love the names. So, I'm just curious like, what led to her being named after it?

Nick: Yes. So, I'm a deadhead. You know, I grew up a music fanatic, but I've always loved the Grateful Dead. I grew up in Colorado, you know, Boulder area going to Red Rocks, Amphitheater. So, music is a passion of my life. They have a song called "Stella Blue." I always like the name Stella, it's an old, tiny name.

Obviously, there's an old movie reference that everybody likes to bring up, but I just like the idea of naming my daughter Stella. It was relatively new. I didn't know a lot of kids name Stella. Little by little, we've met a number of Stellas, which is always kind of fun.

Katie: Well, it's a beautiful name and a cool story. And you have a lot of knowledge in a lot of different areas, and I'm excited to learn from you today. So, to start broad, I definitely wanna deep dive on the topic of aging, and I feel like there are many theories about what contributes to aging. It seems like every other week, there's new studies coming out that think they've identified the cause of aging.

And I know it's a little bit more nuanced than that, but to mainly start broad, can you just kind of walk us through the theories of aging and anything we need to understand in a broad sense before we start delving into these more specific questions?

Nick: Yes. So, it's a huge topic. And you're right. There is new science every day, every week in this area. We're still wrapping our head around what is aging and really what drives the aging process. You know, we've been studying it, I'm gonna say since the '60s. And in that time, we've learned a little bit, and some of these theories are evolving and they're still emerging, which is really neat.

I think when you step back and you look at big picture, aging is defined by a couple characteristics. And there's a lot of theories. The major theories would be the neuroendocrine theory, which neuro, of course, means like your central nervous system, your brain, your spine, the nerves in the body, and then the endocrine are the hormone.

And so it's the communication of those systems in the body that in theory, lead to aging. And over time, the theory states that we lose the ability to adapt. So, people that are super resilient that are able to adapt, they're able to respond from a neuroendocrine standpoint very effectively. And so, again, the theory is that over time, we lose that ability to adapt and to maintain homeostasis.

And so that's one idea, this neuroendocrine idea. Of course, there's the free radical theory of aging, which is this idea that oxidative stress, whether it's from the environment, from our diet, just internally inside the

body, these can really help to drive aging over time. And so that's the idea of, you know, doing antioxidants, which in theory then can counter that whole process.

You know, the other main theory, there's others too, but the other main theory that I like to talk about is this damage accumulation over time. And so we know that the DNA, the mitochondria, the cells, the tissues, the systems of the body, these things accumulate damage over time. And so I like to look at that one because, to me, that's the most interesting, and I think that's where a lot of the newest research is emerging.

We're starting to understand what drives aging when you look at damage accumulation over time, that leads to loss of physiology, loss of ability to adapt, and really drives aging in all entities that are known to us.

Katie: And in a general sense, are there any metrics that are helpful to track as a baseline when we're having the discussion around aging? For instance, I've seen studies that grip strength correlates with longevity, and that's an easy at-home metric that someone can track just to kind of keep a baseline. I've read that, you know, muscle tone typically declines with age.

So it seemed like maintaining muscle tone would be a good thing in whatever way you're gonna track that. But what are some of the baseline, things you look at when it comes to aging?

Nick: Yeah, really interesting. You know, right now I'm working with a company called Neurohacker Collective, and it's a biohacking company. And so they like to look at different ways that we can measure health. And from a biohacking standpoint, they like to measure everything. And so there really is nothing that you can't measure.

You know, of course, you can wear a watch, and you can measure heart rate variability, you can follow your sleep, you can check your heart rate. All of those are really important. I don't know that there's any one biometric that I would say correlates the best with aging. I think it really depends on what's unique to you.

Again, I think there's different things that are driving aging in all of us, and so it's important to be mindful of that. So, I guess that's saying a lot without saying nothing. I wouldn't say that there's one biometric, really.

Katie: Got it. And you mentioned the term senescence cells, and I'd love to go deeper on this topic and understand it more because I feel like this is becoming more a part of the conversation, but it might still be a word that many people haven't heard and certainly don't fully understand. So can you give us a primer on senescence cells?

Nick: Yeah, absolutely. You know, so, so far we know that there are "nine hallmarks of aging." And these are the characteristics that we see across the board. You know, we see them in different organisms, whether they're yeast, they're mice, fish, humans, they all display these nine hallmarks. And we know some of them, but there's a lot of conversation around telomere shortening over the aging process, DNA mutations, epigenetic changes as we age.

Those are all part of the hallmarks of aging, but the last one I would talk about is the ninth one because it's just now emerging, is this idea of cellular senescence. And I think this is the most fascinating area right now in the anti-aging aging space. Senescence is really just a term that describes the state of being old. And so cellular senescence then is the process by which cells age in the body.

And so when cells become "senescent," they take on a couple different features. First and foremost, they cease to divide. And so in the '60s, there were a couple scientists that discovered this idea of cellular senescence as it relates to reproduction and replication, cellular replication specifically. And we know that

cells will only divide about 50 times before they "die off" and the body then hopefully eliminates them, replace them with new cells.

And so this idea of cells ceasing to divide is common for all cells. Typically, they divide 50 times. The body then gets rid of them, replaces them with new cells. But senescent cells are unique because they not only cease to divide, but then they stick around inside the tissues, which creates a lot of problems.

They also secrete a lot of chemicals that can really wreak havoc throughout the body, whether it's in specific tissues or just systemically. They tend to be very inflammatory. So, if you have one cell and a tissue, it's secreting a lot of these inflammatory chemicals that are then influencing a lot of other cells to become senescence.

And so they really do wreak havoc within a very small scale as well as much broader scales as well. And so senescent cells, fortunately, we've learned here recently, they're not the end all and be all. There are things that we can do to improve the elimination of these things inside the body. And this is really where a lot of the cool emerging research is occurring presently in the area senolytics.

Katie: Yeah, that's fascinating to understand. And I think good perspective to know that all cells eventually stop dividing. So that's an important thing, but then it seems like our body's ability to remove these cells becomes an important part of the conversation. So, what are some things that come into play with the body's ability to do that?

Because it would seem like that would also contribute to some of these other hallmarks of aging of cellular buildup and DNA issues if the body wasn't properly eliminating these cells once they stopped replicating.

Nick: Yeah. So, you know, we learned...only in 2015, we learned that we have the ability through nutritional medicines, nutritional therapies, to selectively target these senescent cells and improve the efficiency of the body to eliminate those compounds. And so the Scripps Institute along with the Mayo Clinic did research on a drug called Dasatinib plus Quercetin, and Quercetin is kind of a histamine molecule widely used in the supplement industry.

It's kind of the yellow pigment found in onions as an example, but when you combined this drug with this nutrient, it was shown to be very effective on several different measures in increasing the elimination of senescent cells. And so in animal studies, at least, it was shown to improve the symptoms of frailty, it improved cardiac function, it increased bone density, it improved exercise endurance. It even extended the health span in these animals.

And so it showed that one dose of these two compounds, a really big dose, but one dose exerted effect for up to seven months. So, very powerful in its effects, very broad implications in terms of what that means for aging and what we can do to really grab a hold of aging and to counter the effects of aging over time. And so that really was the birth of this idea of a senolytic.

And again, seno means old and lytic means to destroy. And so anything that senolytic then can destroy these old cells, which then allows the body to replace it with these new cells. And so the implications are huge across the board. Of course, they're huge for life expectancy. They're huge for health span, which is the period of one's life that we remain healthy. But it has a lot of other implications as well.

And again, I mentioned that specific that one study showing benefit for bone health, for cardiac function, for exercise endurance. When you remove these old senescent cells, the body then regains the ability to improve

youthful function and starts to really move towards that non-maladaptive state to kind of a youthful healthy state.

Katie: That makes sense. And it seems like there is an immune system component as well, which you alluded to, but I would love to go a little deeper on this and understand, especially because many of the people listening may have an autoimmune condition. So, I'm curious if that comes into play at all and over how overall immune health factors into the aging conversation.

Nick: Yeah. So, that's a really good question. And typically, we get rid of senescent cells through our immune function. If you have an intelligent immune function, your immune cells will go through the body, and they'll target these senescent cells and then trigger the elimination of them. So, if you don't have a really robust immune system, you then are unable to really get around a lot of these mechanisms that these senescent cells have built up over time, and you're unable to get rid of these things in the body.

And so improving immune system function overall can really be helpful to get rid of and to support the body's elimination of these senescent cells.

Katie: That makes sense. And can you explain also the term anabolic resistance and how this comes into play with the senescent cells?

Nick: Yeah, really good question. So, these senescent cells get lodged in virtually every tissue inside the body. One of the tissues they get lodged in are muscles. And so any tissue that has an abundance of these senescent dead zombie cells in them, they don't function as well or as healthy as we would want them to.

And so there is research showing that if you can get rid of the senescent cells in muscles, you can improve the anabolic qualities of that muscle. And so there's a lot of implications for that. So, if you're using these senolytic compounds, in theory, you're gonna improve the body's ability to build new muscle, which is, I think, really profound.

Katie: And then it makes sense that connection of why muscle typically declines with age, but also seems like it could be beneficial for people who maybe aren't even worried about the aging part of the conversation yet, but are, for instance, trying to get stronger or follow a specific kind of training protocol that these compounds could be helpful there as well.

Nick: Yeah, I think you're spot on. It doesn't necessarily have to be an anti-aging mechanism. It really is just about health and optimization of the body. And so depending on, you know, wherever you fall on that spectrum, the age spectrum, I think you can get benefit from doing these senolytic compounds as witnessed through these kind of the anabolic studies that we've seen with muscle.

Katie: And I know often the aging conversation kind of gets all swept into the, what is a multi-trillion dollar beauty side of anti-aging? And the skin and face aspect especially gets talked about a whole lot. So, I'm curious, are senescent cells contributing to the factors that look like aging on the skin as well? And is that a way someone could actually tell potentially that they might have senescent cells is by the appearance of aging on their skin?

Nick: Yeah, absolutely. Again, I don't think there's any tissue in the body that's not affected by these senescent cells. And so the skin, of course, is the most visible part of the body. And these senescent cells do get lodged in all the different layers of the skin. And so in theory, and I think the science will bear this out over time, but in theory, using the senolytic compounds, you're gonna efficiently get rid of these senescent cells that are in the skin.

And in turn, you're gonna restore the skin's natural, healthy function, its natural structure. I think you're gonna see that on all the different dermal layers.

Katie: That makes sense. And I remember when I was much younger thinking when I was trying to treat acne topically, that it didn't seem very effective and that it seemed like intuitively something internal was maybe causing the acne, not a lack of things on my skin. And I now wonder about that with the aging conversation as well.

You know, we wanna treat it with all of these expensive creams and serums, etc., but it seems like the root of aging is very much internal and cellular. And so perhaps taking that approach might actually be more effective even in the visible signs of aging as well.

Nick: Yeah. I mean, it's so multifactorial, right? I mean, if you're doing high doses of Vitamin A, you know, you can stimulate the body's ability to produce new cells, but it is important as well to get rid of the old cells and allow the body then to rebuild itself. And so, yeah, I think that certainly is part of the conversation right now. I think it's gonna become a bigger part of the conversation as we learn more about senescence and senolytics over time

Katie: And I'll make sure that we have links to both information and the products that contain these compounds that you're talking about, but it makes me curious as well because my background being in nutrition, I always think of the diet and lifestyle components that can come into play as well. And I very much come from the idea that when we stack these things and work holistically, everything works better just like you can't out exercise a bad diet, you can't out supplement lack of sleep, etc., that these things work better in combination. So, I would love to go through and ask your take on like a lot of different things I've seen in studies that seem to contribute to slowing the aging process, the first being fasting, which I've experimented quite extensively with myself, both water fasting and dry fasting and intermittent fasting.

It seems like a lot of claims around fasting involve the body's ability to break down senescent cells or cells that aren't being used. There's a lot that is talked about related to that, but what's your take on fasting? Does it have a place in the aging conversation? And if so, in what way would you recommend it from an aging perspective?

Nick: Yeah, fasting is an area of aging really, you know, that deserves a lot of study. And I think it's a whole nother area that we could do a deep dive in. As it relates to senescence specifically, you know, I think a lot of the big minds that are in this space, they're theorizing at this stage that fasting itself or a fasting-mimicking diet, which is similar to fasting, but it's really doing a low-calorie diet over the course of days or weeks, it can help prime these senescent cells for elimination.

And so I think we're gonna see that over time, the science will bear that out. I think fasting is amazing. It really just allows the body to push pause and then it allows itself to regenerate. And I think that that is the most important thing. If you don't allow the body, you don't give the body the opportunity to pause and to regenerate on its own, it won't.

And so that, I think, fundamentally is why fasting is so compelling. It literally gives every system of the body a breather, and then the body can then regenerate, get rid of what it needs to, and move it in a positive direction as it is.

Katie: And I'll link to the post I've written about my personal experience with the different types of fasting. And obviously with the caveat that none of this is medical advice, and nor I recommending anyone fast,

especially if you have any health conditions or are pregnant or nursing. But from my own just anecdotal data, I seem to notice like longer water fast had a more profound effect, at least in what I felt than shorter fast.

I do feel like, of course, there's a time and a place for intermittent fasting as well, but from a strictly aging...the aging side of things, would it make sense that a longer water fast or dry fast would be more effective at specifically targeting those types of cells?

Nick: I would say yes. And again, we know that the body can go a very long time without eating. I've done a lot of fasting myself. I've prescribed a lot of fasting with patients as well. I do think there's benefit in doing a small juice fast as well, whether it's three to five days. But I have seen the biggest gains, especially as it relates to chem panels, which are blood panels looking at the different aspects of the body.

You see the biggest changes with the water fast, especially a long-term water fast. The most critical things that I'll mention really are entering the fast as well as exiting the fast. And so there's a lot of different ways to do that, but if you're not entering it in the right way, and you're not exiting it in the right way, all of the work that you've done during the three, five, seven-day fast is really for not.

And so I think that's really important that you work with somebody who knows what they're doing in terms of fasting, or you follow a very prescribed fasting regimen to make sure that you're doing things in the right manner.

Katie: That makes sense. Another one that I'm curious your take on, we mentioned multiple times the decline of muscle tone as people age. And so obviously, these things that you're talking about can probably help slow that decline as people age, but also I would guess that regular strengthening and maintaining muscle, or even gaining muscle might have that kind of also positive effect in the direction of anti-aging. But what does the science say about that right now, as far as the role of strength training and exercise in slowing the aging process?

Nick: Exercise and especially weights really counters all aspects of aging. We know that very clearly. You know, we know that sarcopenia is a problem...becoming more of a problem with the aging community. And so it is important to maintain muscle tone. It does shift your hormone balance. It does improve strength. It does improve bones as an example.

We know that there's a higher incidence of fracture with people that are not lifting weights as they age, and the incidence of fracture can really lead to a low quality of life. It really shortens the health span. It may even impact lifespan. So, maintaining body weight, maintaining muscle, in particular, is turning out to be one of the most critical aspects of aging well, I think.

Katie: And another one that I feel like is often controversial, and I would argue it shouldn't be is the role of light and especially sunlight in the aging conversation and how that impacts our mitochondria. I feel like the sun has been unfairly demonized in the past few decades, but I'm curious what you see in the research on this and anything specific related to sun and light exposure that you recommend.

Nick: Yeah, I think that's critically underserved conversation. It's incredibly basic. And I think that because it's so basic, I think people miss that very important foundational aspect of aging healthy. You know, there's a lot of conversation right now in the biohacking community about getting the early morning sunlight in the eyes. So, you know, if you're out at 8:00, you're driving to work or you're going for a walk, don't put on sunglasses.

You know, allow that early morning sunlight to reach the back of the retina, which then has huge implications for the body in terms of just sinking, timing, circadian rhythm, hormone cycling through the day. So, it's

critically important that we get sun exposure as it relates to the eyes in particular, but also to the skin. Of course, there's a growing conversation around Vitamin D activation.

There's actually some really interesting research around chlorophyll, and when we consume chlorophyll in the diet in greens, leafy greens, as an example, the sunlight will actually activate it through the skin, and in turn, the body converts that into ATP cellular energy. And so it's a really interesting combination that sunlight chlorophyll, plant chlorophyll, activation of cellular energy and ATP function.

Katie: That's fascinating. I hadn't heard about that particular study. Another thing that a couple of podcast guests have talked about is how, especially in America, we tend to undereat at least quality sources of protein. And that it seems like protein is also a key in this maintaining muscle mass and stopping sarcopenia.

But I'm curious your take on that because it's certainly, that's also a little bit tiptoes into the realm of controversial with obviously a lot of differing dietary approaches out there, but it seems as though perhaps a lot of Americans are not getting enough protein or at least enough quality protein.

Nick: Yeah. There's a couple different schools of thought. You know, I don't look at protein the same way I think that most people do. You know, my background's in Ayurvedic medicine, and they put a significantly less emphasis on protein in the diet. It's not a primary need that most people need. And I think that people are getting, in my view, they're getting plenty of protein, perhaps not quality protein. But too much protein can have, you know, negative effects on the body as well.

And I think it's important to acknowledge that. It does take a lot of energy and capacity to eliminate protein. So you need to have the digestive capacity, first and foremost, but you also need the kidney capacity to get rid of those compounds through urine as it is. And so if there's any kind of compromise in the area of kidney health, it can be really hard to move protein through the body.

And so, you know, I look again, I look at it from an Ayurvedic perspective, and they generally just recommend doing a minimum level of protein on a daily basis. The exception here is when you start exercising. And so if you are breaking down muscle, then, of course, you do need more protein, more quality protein, to make sure that you are rebuilding protein muscle mass. And that becomes more critical if you are exercising.

And there are ways to get around that. You don't necessarily need to boost your protein consumption overall by eating more chicken or more meat or more soy, you know, whatever protein source that you recommend. I'm a big fan of leucine. And leucine is one of the branched-chain amino acids. There's really good research showing that three to five grams per day can amplify the protein that you're consuming, and it can stimulate the body's own muscle production.

And so I think if you focus on either the branched-chain amino acids at a good dose, or you focus on just leucine, I think you can get that benefit that you're looking for, which is really offsetting sarcopenia or muscle loss as we age and making sure that you're building and rebuilding muscles, especially with exercise.

Katie: That's a great tip. I've definitely seen some of that research showing that leucine specifically might be one that we're not getting enough of in general. And that it seems to, like you said, balance out a lot of protein requirements there. I feel like the protein conversation's also worth mentioning mTOR because that's a concern that some people have related to consuming too much protein. So, I'd love to get your take on, is that a concern when it comes to mTOR and protein consumption or how do you think of that?

Nick: Yeah, I mean, it certainly is. It's a concern. You know, I'm certainly not an expert in sports nutrition. I always come at it from the kind of the yogic perspective. And again, it's really the Ayurvedic perspective. And

so I'm really less concerned with some of those mechanisms. I'm more concerned with the energetic properties to make sure that you're aligning the food energetics with the body energetics.

And if that is in alignment, then you don't need to look at these other possible negative sequelae or consequences of eating a high protein diet or eating the wrong foods.

Katie: Got it. That makes sense. Are there other components in this conversation that we haven't touched on related to the Ayurvedic side that you feel like maybe the Western world doesn't quite exactly get right?

Nick: Oh, boy. It's endless when you start looking at Ayurveda and yoga. You know, I look at senescence and I look at senolytics in the same view frame as a detox therapy as it is. You're shedding parts of the body that you don't want. When you're detoxing, you're shedding these toxins that you don't want. Ayurveda doesn't use that language. They come at it again from a very different perspective. They focus on what's called Panchakarma. And Panchakarma is their detox therapy.

And there it's really kind of an Ayurvedic cleansing regimen. Pancha means five, karma means action. And there are these five actions for getting rid of these things that you don't want in the body, whether they're toxins, they're imbalances, they're, you know, senescent cells. And so it's a very scientific way about how to best cleanse the body.

And this idea of Panchakarma, it's been used for 5,000 years. I worked in a hospital in India with some of the most desperate populations, and I've seen over the course of two weeks, three weeks, four weeks of Panchakarma, people can absolutely reverse their health state and really effectively move in the direction of health. And so it totally works. It's an amazing philosophy. I really love it. So, that's one aspect.

Panchakarma is really core to Ayurvedic philosophy, but Ayurveda also looks at Rasayanas, which are rejuvenative therapies. And they are, in my opinion, the best anti-aging therapies overall. And a Rasayana is a Sanskrit word that means the path of juice, which...so in essence, these therapies, these nutrients, these botanicals, they're all aimed at nourishing, restoring, and balancing the body's tissues.

And so they are really core to the science of longevity, which is one of the major branches of Ayurveda. And so there's different ways to go at it. You know, in a clinical setting, Panchakarma in conjunction with Rasayana therapies are very effectively at countering effects of aging.

Katie: Those are some new terms for me. I took notes for the show notes, and I'm excited to do more reading about those.

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And we've talked a decent amount about the things we can do that help slow the aging process. I would guess, especially in America, that there are many things that we're doing either unintentionally or intentionally that are actually speeding up the aging process.

And it's, of course, no secret that all chronic diseases are on the rise right now. And we're seeing record rates of cancer and autoimmune disease and diabetes and heart disease. But what would you put as some of the top factors that are actually contributing to aging faster that we can avoid?

Nick: Oh, boy. I mean, I look at, how effective are you at getting rid of toxins? You know, there are different...they're called the montries, that these are the pathways that you normally get rid of toxins through the body. And I think we're compromising those left and right. One of the ways is through the skin. And a lot of women, in particular, are doing a lot of these cosmetic products that are really backing up their skin pores, they're getting into the body.

So you're actually introducing toxins rather than expelling toxins through the skin. And the skin is one of those montries that the body gets rid of these toxins naturally. And so I think it's critically important to make sure that you're mindful about what you're putting on your skin. It's also important to think about the microbiome, and we now know the science in terms of the microbiome and how it impacts the skin, how it impacts the brain, they're all related, but it all starts in the gut.

And so when you look at all of these old traditional forms of medicine, they're really built around gut first. And so when in doubt, treat the gut is always the kind of motto that you hear all over the place when you talk to alternative practitioners or integrative physicians. And there's a lot of truth because all of that is geared around the microbiome.

And so if you can shift the microbiome in a positive manner, you can get a lot of benefit. And we know that a lot of the synthetic sugars, as an example, will shift the microbiome in a negative direction. And so, in part, I would highly recommend avoiding a lot of like aspartame as an example, or sucralose. These things, they can really shift the microbiome in a negative direction.

And so whether you're prebiotics, probiotics, postbiotics, which is kind of an emerging field right now, there's a lot of different ways that you can influence the terrain of the GI tract in a positive manner. So, I think we do ourselves a disservice when we don't focus on that in the right way. It's also as basic as, you know...I can keep going, it's as basic as blood circulation.

You know, I think that people aren't moving their blood, which improves vitality, it improves mood, it improves blood flow in and out of the brain. It's really critical that we're moving our blood. You know, my favorite form of exercise is walking. I think that if you're not lifting weights, you're not practicing yoga, you're not running, just get out and walk.

Get outside, get some sun exposure, even 10 minutes per day can improve blood circulation in a very significant manner. And then, you know, nutrition, I think that we're not getting enough colors in our diet. And I think you're doing yourself a disservice when you're doing a lot of white foods or beige foods. Really, start to see if you can focus on the reds, the orange, the yellows, these plant pigments that are protective in plants are also protective in humans.

And again, in part, gets to that free radical theory of aging. So, if you can introduce these really powerful antioxidant pigments into the body, you can in part really directly impact that aspect of aging.

Katie: Well, that was a great list. And you've mentioned the senolytics a few times, and I know we're gonna have a lot of people wondering, how are these dosed? How do I get them? Are there any things to be aware of or cautions on not too much too fast? So maybe give us an overview of where to start with senolytics.

Nick: Yeah. It's a top-shelf list of senolytics right now. Again, it's an emerging field, so we don't know all of the compounds that are, in fact, senolytic. Quercetin was one of the first studied ones. Fisetin, which is another antioxidant compound that's found widely in plants such as strawberries, that now falls at the top of the list. And it's considered perhaps the most powerful senolytic overall. But other compounds are as well.

When you look at turmeric as an example, when you look at Piper longum, which is...it comes from long pepper, which comes from the Ayurvedic tradition. There are a number of compounds that we know that are senolytic. And so it's important to focus on those. The key is to make sure that you're doing a big enough dose, that you're getting that full senolytic property from that compound.

And so where the research is right now, they recommend doing what's called a hit and run protocol, which means doing a very big dose for a very short amount of time and then giving your body a break. And so the recommendation, in general, is to do about one or two days of senolytics and then to give it a break for about four weeks before you do it again.

So, it does take time for your body to re-accumulate those senescent cells, but you don't need to do it day in and day out. So, they've shown that doing one dose, a big dose of a quality senolytic can have effects for up to seven weeks or longer. And so that's critical. It is also important to do a variety of senolytic compounds. I wouldn't recommend just doing one compound and expecting results.

The literature to date shows that these compounds tend to have a very specific effect on the body. So, as an example, we know that quercetin focuses specifically on fat, whereas fisetin focuses specifically on bone

marrow or vice versa. So, it's important to do a variety of them to make sure that you're giving the body a full senolytic effect. You're not just focusing on one tissue as it is.

Katie: That's really, really helpful advice. And we've talked about so many different things that brings me around into a question I love to ask, which is if we were gonna kind of 80/20 this or minimum effective dose this, and someone is wanting to both visibly not age very quickly, and also make sure that his or her cells are aging slowly. What would be the things that you would say are top of the list as a part of a general routine that someone could start integrating to help that?

Nick: Yeah, I mean, so the basics, right? I mean, you got to look at diet, you got to look at sleep, you got to look at stress management. I mean, those are absolutely core. In terms of other things to be looking at, you know, I'm a big fan of Abhyanga, which, again, comes from the Ayurvedic tradition, and it's daily self-massage.

And again, doing a daily self-massage with a body type appropriate oil, whether it's coconut or whether it's sesame, whether it's mustard seed oil, it really stimulates a lot of hormones, a lot of the feel-good hormones. And it really helps to tone the skin over time. You know, if you look at a piece of leather and you put a piece of leather out in the sunlight, over time, that'll dry out and wrinkle and perhaps crack, right?

But if you oil that piece of leather every single day, it'll maintain its integrity and its shape and just its juiciness over time. And so one way to maintain your juiciness is through Abhyanga massage. I often like to talk about this idea of the human body as drying out over time. This is core of the Ayurvedic philosophy. And so if you look at the human body, and we're drying out, the tissues are drying out over time, it's important to, at some point, insert juice or water in order to get back to a more youthful state.

And so I liken the human body as a grape when we start out, and then over time, we lose water, we lose water, and eventually, we become raisins. And so all of Ayurveda and the rejuvenative therapies, the Rasayana, the self-massage, it's all geared at injecting moisture or the water property back into the body, so that you then convert a grape...I'm sorry, a raisin back into a grape.

And so, you know, in theory, that is what you should be trying to do from a diet, lifestyle, cosmetic. All of those things should be geared at making sure that you're increasing the juiciness inside the body. You know, there's so many different things that you can do.

And something that I do love to talk about is this idea of grounding as well. I use a grounding or an earthing pad on a daily basis. And so I think it's important to look beyond the chemical aspect of the body, to the energetic aspect of the body. And so to make sure that you're taking off your shoes, you're walking on the concrete, you're walking on the dirt, you're walking on the grass, you're walking on the beach. That's critically important to create balance from an energetic perspective inside the body. And so I think that that is important to look at all of those aspects, not just the physical aspects of the body.

Katie: Yeah. And I think that speaks to it being, like you said, a whole body approach and not just, unfortunately, I think we can take a pill and solve, but that's also encouraging because all of these things together can really help with that term you used earlier healthspan. Not just lifespan and not just the idea of living a long time, but living functionally and happily for a long time.

And as we get close to the end of our time, a couple other questions I love to ask, the first being, if there is a book or number of books that have profoundly impacted your life, and if so, what they are and why?

Nick: That is such a good question. You know, I would have to say at the top of that list is "The Power of Now." I would bet that a lot of your guests have probably referenced that, but that's probably, you know, the book

that I've read the most. I've listened to it on tape at least 20 times. For me, that was really the start of my journey.

It really moved me in the direction of meditation and just being more mindful and doing the inner work. Profoundly simple but super impactful overall. I've recommended that book to all of my friends and family, and a lot of them have thanked me. I do love that book, and I'll continue to revisit it as I age. I'll say, another book that I really love would be Ken Wilber's, "Grace and Grit."

This book crushed me when I first read it, but I've continued to read and reread it over the years. And if you're not familiar with Ken Wilber, he's a philosopher. And this is about his journey with his wife, Treya. Over the course of five years, they dealt with her breast cancer illness, the treatment, and ultimately, her death.

And so Ken Wilber, because he is a philosopher, he's able to interweave a lot of his philosophy and commentary, and then combining that with his wife's diaries or journals during that five-year process. And it's really profound to show, you know, where they started, and then where they ended in the end, and a lot of commentary and metaphysical musings in between.

And so that is, in my opinion, one of the most amazing, heartfelt, deeply moving books that's available. So, I often recommend that. And I like the wisdom in that book a lot. It really touches upon a lot of the religions and spiritualities that are out there, and it brings all of that together in a very practical, tangible way.

Katie: That's a new recommendation on this podcast. I'm excited to check it out myself, and I just added it to my cart. And lastly, any parting advice for the listeners today that could be related to any of the things we've talked about or entirely unrelated?

Nick: Oh, boy. Yeah. I mean, you know, something that I've been working on, so I have my 9-year-old daughter, and we've been talking a lot about inner work with her. I'm really drawn to this idea about not comparing yourself to others. You know, Teddy Roosevelt once said, "Comparison is the thief of joy." And so, you know, it's often quoted, but I love it. And I think that is critically important in this time, especially with social media, people compare themselves to others all the time.

And I think it's really critically important to really recognize that you are your own person, you're on your own path, and really you have your own trajectory in life. And so just own it, you know, be yourself, become the best version of you, do the inner work so that you're not impacted by everything around you. And then just nurture that inner knowing, that inner self, and just become the most authentic and real that you can.

And so, you know, I have a little notepad here next to my desk that says, "Be Yourself." And so it's that idea of just owning it. Just be yourself, don't compare yourself to others. I think there's a lot of wisdom in that. It's incredibly simple, but right now I'm really harking on that with my daughter so that she can really start to look inwards, rather than outwards. And I think that's critically important in these days.

Katie: I love that. I think that's a perfect place to wrap up. And at her age, especially such a gift to have that perspective from a younger age. I feel like many of us take a lot of our adult years to get to that mindset. And so that's beautiful that you're hoping her establish that early, and I'm sure that will have positive ripples through her whole life.

And I'm so grateful for your time today. I'm really glad we got to deep dive into some of these topics around aging. And I know you talked about a lot of different things related to it. I'm gonna put links in the show notes to some further reading on a lot of these topics, but thank you so much for your time. This was a great conversation.

Nick: Yeah. I appreciate your time. It was a lot of fun. Thank you.

Katie: And thanks as always to all of you for listening and sharing your most valuable resources, your time, your energy, and your attention with us today. We're both so grateful that you did, and I hope that you will join me again on the next episode of the "Wellness Mama Podcast."

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