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TRAUMA
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How trauma causes inflammation

Guest: Dr David Perlmutter

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[00:00:10] Alex Howard

Welcome everyone, to this interview where I'm super excited to be talking with Dr David Perlmutter. We'll be talking about the impact of trauma on inflammation in our body.This is one of the key ways that the experiences that we have in the world result in the impacts in our body and learning to understand how inflammation is caused and more importantly, what we can then do about it.

I think it's a really important piece in being able to heal the impacts of trauma in our physical bodies and in our lives. To give you a bit of background on Dr Perlmutter, Dr David Perlmutter is a board certified neurologist and five times New York Times bestselling author. He serves on the Board of Directors and is a fellow at the American College of Nutrition. Dr Perlmutter received his MD degree from University of Miami School of Medicine.

Perlmutter's books have been published in 36 languages and include the number one New York Times bestseller *Grain Brain* and other New York Times bestseller's *Brain Maker*, the *Grain Brain Whole Life Plan* and *Brainwash*, which was co written with his son, Austin Perlmutter, who is also one of my guests on this conference.

So, Dr Perlmutter, firstly, welcome and thank you so much for joining me.

Dr David Perlmutter

Thank you, Alex. Great to see you again, by the way.

Alex Howard

You too. So I want to explore the area of inflammation and how trauma in its many forms be, that physical trauma, emotional trauma, and so on can drive inflammation. So I think probably the best way to open this up is just to say a little bit to start with around what inflammation is, how that shows up, and then we can follow the path from there.

Dr David Perlmutter

Sure. Well, I think it'd be a good entry way to really let your audience know that inflammation is a really good thing. There's so much going on today targeting inflammation and reducing

inflammation, getting rid of inflammation. The reality is, if it weren't for inflammation, we couldn't survive a day or two.

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Inflammation is one of the body's mechanisms to deal with various types of trauma or infection or other events in the body, allowing the immune system to go into play, to help heal something, to help rid the body of an infection of a bacterium or whatever it may be. So it's a very highly conserved meaning across various species over millions and millions of years, a system that allows us to remain healthy and remain in a place of what we call homeostasis or balance.

And I think a lot recently has been said about inflammation in the context of COVID. People have heard about the so called cytokine storm, meaning the sudden explosion of the process of inflammation in the body, where the body is basically on fire. Which is interesting because that's what the word inflame, inflammare comes from it's a Latin term that means actually on fire.

So, people have heard of this sudden explosion of inflammation called the cytokine storm, and I think that's certainly dangerous. But an explosion can cause a crater in the earth. But similarly, a lower level of activity can dig a hole in the ground, too, if it plays itself out over a long period of time.

For example, the Grand Canyon wasn't built in a day, but it represents the constant effects of the Colorado River digging a hole for a long period of time, and that turns out to be a problem as well. So it's this low level of inflammation, not the cytokine storm, but perhaps the cytokine drizzle that has been related to so many of our most feared issues, like coronary artery disease, diabetes, Alzheimer's, Parkinson's, associated with obesity, for example, even various forms of cancer.

And what we've come to understand is that it is just a little bit of elevation against the normal background that can cause damage over time. And what are the factors that lead to this increase in inflammation? There are many, but I think for our purposes of our time together today, we need to recognize that stress that relates to trauma.

I mean, it's hard to tease stress away from trauma because when a person experiences a traumatic event or has had a traumatic event in the past and then ruminates over it, or it remains active in the background in terms of their day to day thought process, it amplifies this process of inflammation.

We know, for example, that Alzheimer's is an inflammatory disease. Here in America, there are now 6 million Alzheimer's patients, a disease for which there is no treatment. But we know it is fundamentally related to just a slight uptick over many, many years of the process of inflammation. We recognize that individuals who live a very stressful life or individuals who have experienced a severe trauma in their past, whether or not they've been diagnosed with PTSD or not, have a dramatically increased risk for developing that inflammatory disorder.

So let's just deconstruct that for a moment and ask ourselves, what are some of the factors at play that can tick up inflammation just a bit? Not that you're having a huge level of inflammation in your body and brain, not that it's not part of the body, over time but just a slight uptick.

I think we're starting to really focus in on the gut. And I'm a neurologist. I'm a brain and spinal cord and peripheral nerve specialist. And here, Alex, you and I are talking about the gut. Who knew? I edited a book called *The Microbiome in the Brain* a couple of years ago, which brought to the book

leaders across the world who are dealing with this relationship between the bacteria and other organisms living in the gut and how that influences brain health.

[00:06:34]

And clearly, there are many ways, there are many channels through which the gut and its organisms influence the brain. Who knew? But I think for purposes of our discussion, let's center back to inflammation. So what's going on in the gut is really involved in regulating the set point, how high or low inflammation is going to be in the human body at any given moment.

And there are many reasons and mechanisms whereby the gut is related to that. But one of the mechanisms has to do with permeability or leakiness of the gut. We know that we have to absorb things from the gut, that's how we absorb our nutrients and water that we drink, et cetera. But there are certain things, many things in the gut that we should not absorb, because when we do absorb and when they make their way across the gut, when it's permeable or leaky, that immediately is confronted by our immune system and what happens, inflammation is increased.

So again, to simplify changes in the gut and the function of the gut can lead to increased leakiness or permeability. And that sets the stage for body wide inflammation. Now, in the research laboratory, we can make it happen. We can challenge people with things that will disrupt the gut lining and increase inflammation and observe immediately how that changes various health parameters in a healthy, otherwise healthy animal, can lead to depressive activity, can lead to increased risk for brain degeneration.

All kinds of interesting things, obesity, diabetes can happen when we artificially increase inflammation in, for example, the rodent model or even in primates. So this is happening. And as I present this data, yes, it's interesting to think of the detrimental effects of the changes in the gut in terms of inflammation. But it does open the door for us and we'll circle back to this later on in our discussion to think about, okay, that's happening.

What in the heck can our listeners and viewers do to help fix that problem? Because we know darn well now that whether it's cognitive decline or depression or other events related to previous trauma or heart disease, any of these inflammatory conditions, they can be related back to changes in the diversity and number of bacterial and other species that live within the gut.

Now that is humbling. It's something to really get your arms around. Again for me as a neurologist, to think that your gut bacteria are playing such a role in determining whether you will or won't get Alzheimer's, for example, or diabetes or Parkinson's or heart disease or some forms of cancer. My goodness, we didn't learn that in neurology school, for example. And I would suspect even to this day in neurology residency, there's probably very little being discussed as it relates to that.

But for me it explains an awful lot. It explains why there's an increased risk of Alzheimer's, for example, and stroke on people who have taken various drugs that disrupt the gut bacteria. Now we know why. And it relates to things like the increased permeability that happens when they've been disrupted by antibiotics, by water containing chlorine, by a diet that's higher in highly ultra processed foods, for example, and how there are things that we can do to help offset that and live a healthier life.

Trauma, when we experience trauma, as I mentioned earlier, that's a stressful event or series of stressful events or an ongoing stressful event, as it is with many people who are living in a situation

in which trauma is part of their day to day lives. And what we know what happens when individuals are experiencing that is there are changes in the array of gut bacteria in the speciation of our guts. Higher levels, as you know, of cortisol.

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Cortisol is very disruptive to the lining of the gut, increasing what you asked, inflammation by targeting gut permeability. And cortisol changes the milieu, the gut bacteria as well favoring more pro-inflammatory species. So, gosh, this really is a very new and exciting model for us to first, understand, second, to explore with further research, and third, when we really get our arms around, it does open the door for us to be interventional. In other words, do things based on this premise that can ultimately be helpful for people.

Alex Howard

And I think that's one of the really important pieces, isn't it? Because people can recognize that I've experienced maybe it's physical trauma, maybe it's psycho-emotional trauma, and I have these various symptoms, be those fatigue, be that brain fog, be that impacts upon memory, whatever it may be.

But without understanding the mechanism of how those life events are impacting on the body, it becomes very difficult to do something about those impacts. And so this recognition of inflammation and how these changes are happening is then, as you say, it's the gateway to them being able to address it.

Dr David Perlmutter

And for me, I like to say once you appreciate this, that it becomes a situation of really focusing not just on the smoke, but on the fire. And what I mean by that is not just treating the symptoms of, for example, depression by giving an antidepressant drug, because that's the smoke, that's the manifestation. Let's get to the root of the problem, let's get to the fire and realize as it relates to depression, for example, we know that inflammation is playing a central role and that gut changes are really contributing to that.

So now we're really getting to the causation of these issues as opposed to simply doing the band-aid approach of helping people get through their lives. And let me just for a moment expand upon that, because this premise of treating symptoms is really incredibly pervasive in Western medicine, whereby we talk about having drugs to treat diabetes, for example.

And I remember a couple of years ago, I gave a lecture in New Jersey and I asked these mainstream doctors and why they invited me, a little bit unclear, but anyway. I said, well, what's your go to treatment to actually treat diabetes? And various hands went up and people said, well, sulfonylurea drugs, metformin, all these kinds of things.

And I said, the reality is that you're not treating diabetes with any of these drugs. Anybody who raised their hand and offered up their drug treatment, please realize you're not treating diabetes because we don't have any drugs that actually treat diabetes. When you give the drug, yes, the blood sugar, the smoke is improved. Take that drug away, and sure as heck, in two days or three days, blood sugar goes back up. Why? Because you've never addressed the problem. You've never addressed the underlying fire, which is the diabetes.

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High blood pressure. How do you treat high blood pressure? Yes, we have an incredible array of highly effective drugs to bring the blood pressure down, take the drugs away and sure enough, the blood pressure is going to go right back up because you haven't addressed the problem. And now we know, for example, that elevation of uric acid is one of many factors that can be modulated with diet that can help with blood pressure control.

So I think, as a bit of a sidetrack, but I think importantly, we should really open up the notion that so many of the so called treatments that are offered to people today aren't really treating the disease that we think they are. They're treating the smoke. They're treating the symptoms. Now, there's nothing wrong with that, in my opinion. We've got to get your blood sugar down. We got to lower your blood pressure, that's for sure. But at the same time that we're treating the smoke, we should start to pay attention to the fire. We should offer up ideas, for example, that can help you actually reduce your risk of keeping that diabetes.

A ketogenic diet, for example, has been demonstrated by Dr Sarah Hallberg to be incredibly effective at actually treating the diabetes and getting people off their diabetes drugs. We know that techniques to lower inflammation are effective in helping people who are experiencing depression. Treating the smoke and not just...treating the smoke, yes, but not just paying attention to, but looking at the fire, the underlying cause as well.

So, yeah, it's a different approach. I think it argues with the mainstream approach. Why? Because it ultimately gets people off of their drugs, and that's not favorable for an individual who's involved in making sure people take a lot of drugs.

Alex Howard

It's also worth saying, I think, something to highlight and amplifying what you're saying, Dr Perlmutter as well, is that sometimes the symptoms can be in a bodily system, which is not where the root of the issue is.

So, for example, you're speaking about kind of mood issues or Alzheimer's, and so, which are primarily defined as issues of the brain, but actually, inflammation in the gut may still be at the root cause of that. And so there's a certain piece of detective work, in a sense, in what you're saying.

Dr David Perlmutter

That's right. I mean, we tend to look, and I say we but I don't want to include myself in that, I guess so be that as it may use whatever pronoun you want. But the notion in modern medicine is one of reductionist approach to the human body, that the lungs, the heart, the brain, the kidneys, et cetera all function independently and nothing is further from reality.

Our bodies are an integrated machine that the function of everything depends on the function of everything else. If you have liver failure, you can't think straight, your cognition is affected. If you have inflammation in the gut or disruption of your microbiome, it's going to affect your joints, your skin, your brain. So it's a very good point. And we have arrived at this work from the reductionist view of Descartes. And the so called cartesian model of reductionist that the brain is he didn't say computer, but these days we think of the brain as a computer, the heart is a pump, the lungs are a bellows, and these are independent parts that could be swapped out.

[00:17:23]

That's not reality. I mean, we talk about the gut brain connection, we can talk about the mood gut connection, psycho-neuroendocrinology, for example. So everything is related to everything else. Everything is connected to everything else. And so it's time we realize it. There's new research coming out that shows that chemicals secreted by your muscles when you exercise impact the brain in a positive way.

We call these myokines and cathepsin B and things like BDNF coming from muscle actually are good for the brain. And that also helps explain why people who exercise, for example, in my opinion, have a significantly reduced risk for developing Alzheimer's. Now we're starting to tease apart those mechanisms relating exercise to the brain. Again, it requires a deep breath, it requires that we step back and take a broader view and realize that we've become so myopic in our approach to human physiology and that has not necessarily served us well.

Alex Howard

You touched a bit earlier, Dr Perlmutter, on some of the causes of inflammation. I'd love just to break that down a little bit more. Obviously we've talked about a little bit about trauma, but just say a few words in a bit more detail than before about some of the things that can be driving inflammation in the first place.

Dr David Perlmutter

Many of our lifestyle factors are being looked upon these days as levers to control inflammation, recognizing, for example, and maybe we'll unpack each and every one of these things like diet, sleep, exercise, stress and even exposure to air pollutants. What we call 2.5 micron particles are all dramatically associated when they are aberrant with increasing inflammation. So let's take them apart one by one.

First diet. We know that diet because, one of the reasons, it so incredibly influences the gut health, plays a role in inflammation. As I mentioned earlier, ultra processed foods increase the risk of permeability of the gut. Both products in the gut getting across the barrier and then stimulating the immune system and lighting up inflammation. Some things in our diet are really good to help quell inflammation.

Things like bioflavonoids, quercetin, one of my favorites, lots of nutritious prebiotic fiber from fiber rich foods like jicama, Jerusalem artichoke, you name it, nurture the gut bacteria and can help us control inflammation. Fermented foods are naturally rich in good bacteria that can help seed the gut and help reestablish better balance, better diversity. So the gut bacteria can do what they need to do to keep that lining intact.

Sleep. Having not enough restorative sleep is a powerful factor that increases inflammation. May explain why not getting enough restorative sleep is clearly and dramatically associated with things like diabetes, insulin resistance, obesity, Alzheimer's, from various forms of cancer, and even coronary artery disease, all inflammatory issues. So it's not just getting enough sleep, but making sure that the sleep that you do get is restorative.

How would you know that? By using a wearable device. And then in the morning you download that into your smartphone and it says, yeah, you got 7 hours of sleep, but you were up three times

and you didn't really drop into deep sleep. Why is deep sleep important? Deep sleep helps rid the brain of pro-inflammatory chemicals. Deep sleep is critical to help reduce inflammation, vis-à-vis our topic today, in the brain.

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So various lifestyle factors are really very, very important. And the good news is they target the fire. When we change our diets, we recognize that foods that are ultra processed and the amount of sugar in our diets increases our blood sugar. When our blood sugar increases, guess what it does? It changes our gut bacteria for the worse. It also changes the physical three dimensional appearance of various proteins in our bodies.

Now, this may sound a little bit out there, but I'm going to relate it back for all your viewers in just a moment. When blood sugar is elevated, it has a tendency to bind to various proteins in the body. And that is something that's characterized by the term glycation. When we glycate or bind sugar to our proteins, it changes how they look. Then the immune system sees these proteins and says, that's not exactly normal, and it becomes activated. Next thing you know, inflammation is increased. And in addition, free radical chemicals are increased as well.

Now, this may sound way out there, but I would challenge your viewers to recognize that they've probably heard of something called A1C. That's the blood test you see advertised on television that people tend to use as a metric of their average blood sugar. A1C is simply a glycated, meaning bound to sugar, protein. In this case, it's hemoglobin. And you can measure the amount of sugar binding the amount of glycation to hemoglobin and the higher it is, correlates with higher blood sugar over time.

So the A1C is a measure of this process, the glycation of a protein. It's also a powerful relationship to inflammation in the human body. There's a direct and powerful correlation between the A1C, a marker of blood sugar over time, and another marker of inflammation called C-reactive protein. Many people have had their C-reactive proteins measured. Good idea. Why?

Because that's a much more direct measurement of the level of inflammation in your body at any given moment. But again, please understand that there's a direct correlation between the A1C that diabetics frequently have measured well every three months, and C-reactive protein, and as such, the level of A1C and inflammation.

Another surrogate marker of inflammation is using a very, very complicated medical device that's called a tape measure. If you take this very sophisticated device and you put the tape measure around your waist, it's a very good surrogate marker of the level of inflammation in your body. The larger that number, the much more likely it is that inflammation is amped up in your body. And as such, you are at risk for all the things that I've already described.

As it again relates back to our discussion today, a single event of trauma is a pro-inflammatory event. Multiple events of smaller levels of trauma, be they physical, be they emotional, are also going to increase the production of these inflammatory damaging chemicals in the human body. And so we see this in football players who end up having evidence in their brains of an inflammatory change of their blood vessels. But it's not restricted to football players, it's anybody who has trauma affecting any part of their body and even affecting them emotionally.

[00:24:57] Alex Howard

And in terms of how we start to reduce inflammation, of course, there's a fairly simple part to that answer, which is the things that you've been describing that drive inflammation up, of working to address those, we can talk about that.

But also for those where perhaps they may have done a certain amount of that. So let's say, for example, there's been a psycho-emotional trauma that is now no longer an active thing, but the impact on their body is still there, the inflammation levels are still high. What are some of the ways, particularly in that instance, that we can work to bring inflammation back into balance?

Dr David Perlmutter

I'll answer that question just one moment because I want to just comment on the question and then I'll answer it. And that is, you said, well, the psychosocial event is no longer happening. How do you bring inflammation back into balance? And the reality is that though the stressor may no longer be present, it does set up a situation whereby it's still perhaps an app running in the background.

Alex Howard

Yes.

Dr David Perlmutter

And it's still influencing our conscious lives day in and day out. So unless the work is done to identify how that's nuancing day to day mood, I think it's clear that that still has a strong propensity to affect an individual by ratcheting up the production of stress hormones and increasing inflammation in the body.

So that was a very good lead in and I'm glad you said that, because many people don't tend to consider that, the person that was so difficult in my life now moved out or I finally got a divorce or I finally was able to pay off my debt that was keeping me up at night, or whatever it may be. These things do have childhood trauma, especially sets up paradigms by which we then live our conscious lives and they're active in the background, they have to be dealt with.

Now, how are they dealt with? Through psychotherapy, a variety of cognitive behavioral therapy, perhaps the use of psychedelics. These are techniques that help us recontextualize those earlier traumatic events that clearly may still be powerfully influential, though they may not be in the forefront today. I really wanted to make that point because just because you've gone through these events now and they're no longer happening doesn't mean that they're not still influential.

Those therapies need to happen. Other things that we can do then is to pay attention to some of the factors I've already elucidated that are involved in ongoing augmentation or increase of inflammation. And they're lifestyle related. They involve things like meditation, exposure to nature, for example, paying attention to the quality and quantity of the sleep that you get every night. Diet is hugely important. Reestablishing a healthy gut microbiome. Physical exercise couldn't be more important, then various types of supplements are important as well, and we can talk about those.

We now know that there's a new player on the block that relates to inflammation. And when I say new, uric acid, when I say new this was only just described in 1898 by Dr Alexander Haig. And Dr

Haig wrote a book about it back in 1898 saying, you know what, we know uric acid is important for gout and kidney stones but guess what, there's a lot of other stuff going on with uric acid that people need to know about that really manifest as downstream effects of inflammation.

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That said, we now know that it's actually very important to include measuring the uric acid along with measuring the blood sugar, measuring blood pressure, body mass index, et cetera, as being a critical metabolic marker that ultimately expresses itself downstream by dramatically increasing inflammation.

I mean, one of the most obvious things is the development of gout, which is an incredibly painful inflammatory disorder. But uric acid increases inflammation not just in the great toe, in the manifestation of gout, but throughout the human body well before gout crystals are formed. So that's actually very important. And we can target that elevation of uric acid with a diet that is lower in sugar, for example, lower in chemicals called purines, and use supplements like vitamin C and quercetin to help bring that uric acid down as well. Quercetin is also a powerful modulator of the activity of the gut bacteria, helping to, through that mechanism, reduce inflammation.

Alex Howard

One of the things also that strike me as you're talking is that there's often a vicious circle that the body and mind get into with inflammation, which is that inflammation drives certain symptoms. Those symptoms then often drive impacts in one's life, limitations in one's physical capacity, mental capacity, which then causes more stress, which then causes more inflammation.

And I think particularly people that are living with and hopefully working on healing from complex chronic illnesses, sometimes what caused that person to be ill in the first place is less of an issue than what's stopping them from healing now in these kind of vicious loops that they get into, I was curious as to your thoughts on that.

Dr David Perlmutter

Sure. So we call these vicious loops feed forward processes whereby something in the body actually makes itself worse over time. We like to have feedback mechanisms that shut things off. For example, if your blood sugar goes up, then your pancreas secretes insulin, and then the blood sugar goes down, that's a great thing.

But as it relates to inflammation, it tends to worsen itself over time. Let me explain. As mentioned, one of the biggest inroads to inflammation are making bad lifestyle choices. Not going to bed on time, eating the wrong foods, not exercising, not engaging in things that are stressful, et cetera. These things all tend to increase inflammation.
We make bad choices but our choice making depends on the balance of two important areas of the brain. The prefrontal cortex, which is behind your forehead, is the adult in the room. It's the choice maker that says, we're going to go to bed on time. We're not going to be drinking that soda, it's got too much sugar. We're going to exercise tomorrow, do all the right things. That's what the adult in the room tells us to do. That is connected to another part of the brain called the amygdala.

Now, this amygdala is a much more primitive area that is really an impulsive child in the room, kind of a decision maker. It says, I want it, darn it, I want it now. I'm going to eat the candy, eat the cake,

and then I'm going to watch TV till it's really late. All the bad decisions that we can make, very pro-inflammatory behaviors tend to be favored when the amygdala is in charge.

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So who's in charge? Is it the prefrontal cortex, the adult in the room making better decisions? Or is it the amygdala, the child in the room that's impulsive and wants it now because that's what I want. Well, it turns out that the prefrontal cortex, the adult in the room, can control the impulsivity, the amygdala. They are connected.

But getting back to your question, that connection that allows us to make better decisions is broken down by inflammation. So as we start to make bad choices. And increase inflammation in our bodies because we're staying up too late, we're eating crappy foods. All the things that increase inflammation, we've had trauma. All the things that can augment inflammation, it severs the ability of that adult in the room to help make better decisions.

So then the amygdala is in charge and we continue to act at that level and make even worse decisions. Which does what? Fans the flame, quite literally, of inflammation. That's a feed forward cycle, that's a downward cycle cascade that really ends up in a crisis. So I think that may be where you were going with that question.

And the good news is that we can intervene, we can make changes, we can force those changes upon our bodies to really let the adult come back in, unlock the door, mom and dad are back in charge, and we're going to start making better decisions. And as such, inflammation then is reduced.

Alex Howard

So the question everyone wants to know the answer to is how do we do that?

Dr David Perlmutter

There are many on ramps and any of them can get you started. It might be as simple as for people who are sedentary to walk down the street or even to the mailbox each day for people who didn't do anything, start somewhere. I mean, for people who are unhappy with the current situation, there are things to do.

Pay attention to your sleep. No TV or being on the computer after dinner, for example, and space dinner, so it's earlier. So you can have about a three hour block of time after dinner prior to getting in bed and find out about your sleep. You don't have to go off to a sleep lab and have a bunch of wires connected to your head and EKG and all those things. I've done that in the past, but you don't have to do that anymore. You can get a wearable device and the very next morning determine what in the heck is going on with my sleep? I want to know.

You can wear a continuous glucose monitor, for example. They're available everywhere now. And determine, gee whiz, what is my blood sugar doing in response to eating this or that food? That's extremely empowering to have that level of bioinformation.

You can do that even with uric acid, which also is dramatic in terms of increasing inflammation. Find out which foods tend to be fanning the flames of inflammation by raising the uric acid. So

however you want to do it. There are many on ramps to this highway that can then reduce inflammation, allow the adult to take the reins of command once again, and then other changes in the behavior and daily choices can happen to really allow you to regain your health, regain your ability to make good decisions well beyond as it relates to health.

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These are decisions left, right and center that we make every single day. Should I do this? Go there, invest in this company, all the decisions that we make really in the presence of inflammation are much more impulsive and not thought through. When we can bring our gift, the prefrontal cortex, I call it a gift because 40% of the human cortex of the brain is prefrontal cortex.

That's huge in comparison to other animals, other primates even. So, we have the gift of having an incredible supercomputer up top that allows us to make really wonderful informed, patient decisions, not just about ourselves, but about how our decisions affect other people, how they affect even the planet.

Alex Howard

What I'm hearing, in a sense is, it's turning those, what I was labeling as those, vicious circles into virtuous circles right. That as one makes some changes, perhaps reduces inflammation, is more able to engage in the prefrontal cortex, is then more likely to make perhaps changes in their sleep. And so in a sense, what I'm taking is that it isn't necessarily that one has to fix everything at once.

Dr David Perlmutter

That's right.

Alex Howard

That small changes can then lead to bigger changes.

Dr David Perlmutter

That's right. Nor do we, as in writing books and clinicians, expect everybody to jump on board with the entire program at first blush and hope for miracles to happen. We know that that's not going to happen. We know that some people are just going to have a tough time with changing their diets. Okay.

Or maybe the diet is something easier for them to change for whatever reason, but they just really like to stay up late at night and watch really aggressive television. Who knows? But I think if we can identify one or two levers to pull, then we can strengthen that ability that that individual has then to make better choices in other arenas moving forward.

Alex Howard

You mentioned earlier, and we touched on it, but I just wanted to loop back on it just as we get towards the end around some of the supplements that people can take to help reduce inflammation. I know that the frame this is within is if all you're going to do is just take supplements, not deal with the other things, you're not really dealing with the kind of core issues.

But as part of that bigger jigsaw, just say a few words about some of the things that you've seen to be most effective.

[00:38:16] Dr David Perlmutter

Well, first, let's unpack the term supplements. What does it mean? It means it supplements something. In this case, the diet. So the notion of just taking the supplements and thinking you're home free, I think is a little bit narrow. They supplement making sure that you're eating the right foods, avoiding those ultra processed foods that are going to be very threatening on multiple levels. But there are a suite of supplements I think are really very valuable in this context.

First, I would say that eat a diet that's very high in fiber, but add some supplemental prebiotic fiber that you can buy online or the health food store. The sources I like include acacia, that's an African tree that secretes a resin. That resin is made into a powder. The tree isn't harmed. Baobab fruit is made into prebiotic fiber as well.

So those are two sources of prebiotic fiber and again eat foods that are rich in prebiotic fiber. I've mentioned several times quercetin, I'm very fond of quercetin. It helps nurture the gut bacteria, it helps actually change their activity in terms of what they do. It lowers uric acid, incredibly, about 8% in four weeks in one study, a British study at Oxford.

So it's very valuable in that context. And it also helps lower blood sugar by acting in a similar way to a drug called metformin. So it targets for those of your viewers who are a little bit more involved in this, it targets something called AMPK and amplifies the function of AMPK and as such helps reduce blood sugar and helps our bodies clear themselves of defective cellular debris.

So quercetin is one of my favorite. I'm certain that others will talk about turmeric and its role in terms of inflammation exceedingly valuable. The medical literature on the effectiveness of turmeric in terms of reducing the fire in the body, or pita as it was called in Sanskrit, dates back a couple thousand years. So that's how long people have recognized how turmeric really does its magic. Now we can unpack much more the depths of the biochemistry, but it was even described in the Vedic text as being able to calm the fire in the body that was related to things like joint problems and other inflammatory disorders back then. So I'd say that along the lines of the essential fatty acids. I like both EPA and DHA.

I'm a huge fan of DHA. DHA is natures, what we call COX-2 inhibitor, meaning that it acts to reduce the activity of a certain enzyme that's involved in inflammation. So lots of DHA as well. There is anti-inflammatory effect of melatonin and even vitamin D. So I think considering those as well, I think we're less sure about what is the safe and effective dosage of melatonin than we are with vitamin D.

So vitamin D really should be titrated based upon an individual's vitamin D level, which is easy to get. I personally take about 5000 international units a day and that gives me a vitamin D level where it needs to be. There is another bioflavonoid along with quercetin, called luteolin. And the dosage of that is around 100 milligrams per day.

So these are the core supplements that are really involved in helping lower inflammation in the human body. But again, they're supplemental to both diet and other lifestyle changes that really are involved in the lion's share of why we're so inflamed in general.

[00:41:58] Alex Howard

And Dr Perlmutter, for someone that's watching this that feels like they've tried a lot of things and perhaps they have some quite complex ways that the information is playing out for them. I'd love to hear, in closing, some of your thoughts around the potential that we have to heal, even if that inflammation may have been going on for many years.

Dr David Perlmutter

And that's a real step back, because we've been kind of convinced to live our lives, come what may, and that modern medicine is going to help us. And who wouldn't love modern medicine? The advances we're making day to day in medicine in so many arenas are incredible. And I'm not here to derogate those, but I am here to say that as it relates to many of the chronic degenerative conditions that are, according to the World Health Organization, the number one cause of death on our planet.

Not some kind of infectious disease, not war, not trauma, but it's the chronic degenerative conditions, the Alzheimer's, coronary heart disease, diabetes, obesity, et cetera, hypertension, that are the number one reason we die. That these are situations for which, yes, we have some interventions that are helpful as it relates to symptoms, we've covered this already, but that the most valuable tool we have targets the actual disease process itself. And that tool is the choices we make every single day. Those are the most powerful levers we can pull in terms of reducing our risk for having one or more of these chronic degenerative conditions. The ball is in our court, not the doctor's court.

He or she will help you with the symptoms. But in terms of reducing your risk, which is really where the money is, it's up to what we do day in and day out. And I think we've kind of overviewed what we need to be doing day in and day out and the scope of these chronic degenerative conditions. And I think we've also circled back to how they relate to trauma in our lives. It's all about prevention.

John Kennedy said that the time to fix the roof is when the sun is shining. And I would say for many of the people participating in our time together today, they're in pretty good health. But the clouds do seem to build on the horizon. It will ultimately rain, and we need to have our roof fixed in anticipation of that so that we can be in the best situation to deal with the storms that may come our way. And that is a position we get into by recognizing that we are the arbiters of our health destiny, not the developments in modern medicine that can pull us out of a stitch when we get one. But we chart our health destiny by the choices we make every single day.

Alex Howard

That's a great place to finish. People that want to find out more about you and your work, what's the best place to go, and what's some of what they can find.

Dr David Perlmutter

My website is drperlmutter.com. We post every single day to the website. I'm on Instagram and Twitter as well. My podcast, which I think is very helpful, I'm hoping it is, is called The Empowering Neurologist, and that's a podcast we put out very frequently, interview a lot of incredibly

interesting people, and really, as the host, I try to do my best to unpack what they're talking about and really make it actionable in terms of people who are listening to it.

[00:45:41]

And, okay, I get all these complex ideas, tell me what to do. That's usually how we end that program, by giving you that the take home message in terms of, how do I change my life tomorrow? Why wait, today so that I can be a better arbiter of my health destiny.

Alex Howard

Fantastic. Dr Perlmutter, I really appreciate your time, as always. Thank you.

Dr David Perlmutter

Thank you, Alex. Great to see you again.