Guest Introduction and Welcome

I'm so excited to introduce our next guest. This is the one, the only doctor David Brockers. He's one of the number one health care or health education experts in the world who's been in this space for over 20 years, who's got one of the best podcasts that doctor doctors, doctors, Jimmy Doctor Joggers, Functional Nutrition podcast.

He's a real he's an expert in healthy wellness and he's just helped so many people live happier, healthier lives. It's an honor to have you here, doctor. David. Joggers.

Well, thank you so much, doctor Robert Love. I mean, I really enjoy our conversations and all the great, great education that you're putting out. Thank you so much.

So you've been really helpful in helping people live healthier lives, in part with functional nutrition. I am in full agreement with you that the food that we eat, affects our brain and our bodies, and so, so I'd love to really narrow in on on the brain.

I'd love to hear your input on how does diet affect the brain from your experience. And then what do people need to know about diet to to have a healthier brain?

For sure. Well, all of us want to have great memory, great mental energy. We want to be in a pod. We want to have a positive mood and you know the health of our brain is going to impact the quality of our life.

How Diet Affects Brain Health

And ultimately, when we look at the brain and we look at really all the cells in our body, what is driving the energy within all those cells is something called a mitochondria.

The mitochondria produce cellular energy. Mitochondria also have a sensory function, meaning that they act as sensors. And so when our toxic load is too high or or infectious load is too high, or we're under just, say, an overwhelming level of stress, they start to reduce their energy production.

So they actually start to become what we call hypo metabolic. And so and pro oxidative. So they actually turn up oxidative stress as a protective mechanism.

So the way I look at when I'm thinking about the cells is they're either in a peacetime physiology or a wartime physiology. And so for many individuals that are overwhelmed by stress, overwhelmed by toxicity, overwhelmed by, infectious exposures, maybe parasites, maybe, you know, viruses, bacterial overgrowth in their system, you know, mold exposure, things like that.

They are in a wartime physiology. And so their mitochondria are starting to shut down. And this is really, really important when it comes to brain health.

Because the brain, the neurons are outside of our testes and our ovaries, they are the most mitochondrial dense cells in the body by a significant amount.

Right. The heart comes next after the, you know, after the reproductive organs brain. And then it comes to the heart and then the liver and then the muscles.

Right. And so the brain. So when we start to have mitochondrial, I, you know, I use the term mitochondrial dysfunction, but it's really an adaptive response.

But when the mitochondria aren't functioning and they're not producing cellular energy at a high level, we start to notice it oftentimes in our brain. Right.

For many people, they start to notice brain fog, sluggish memory, their mood starts to go down, right. And we start to create more inflammation in our brain.

And so when we think about things like depression, anxiety, when somebody tells me, you know, that they just don't have much mental energy and they have depression, I think their brain is inflamed.

It's on fire. Right. And so and this is because the mitochondria are not working the way that they should be. When somebody has poor memory, when they're having brain fog on a regular basis, I'm thinking, you know, they have they have brain inflammation.

So this is a big factor. And so when the when, when it comes to our nutrition and how it impacts those mitochondria and impacts the brain, one of the first things I think about, well, there's a number of things.

First thing I think about is blood sugar. And so I'm thinking is their blood sugar stable. So we know that blood sugar should be in a normal optimal zone.

When blood sugar gets too high and stays high, the sugar molecules will actually bind to proteins or create something called advanced glycation end products.

AG these age, when we think about aging, what do you think an age will do to you? Age you. Right. And that's what it does. These sticky proteins, when the sugar binds to a protein, it creates a sticky protein there like shrapnel going through the bloodstream.

And so they drive up oxidative stress and inflammation. You think about somebody with uncontrolled diabetes. These are people with elevated blood blood glucose for long periods of time.

What ends up happening.

Mitochondria, Brain Fog, and Inflammation

They end up with kidney failure because the the eggs destroy their kidneys. They end up with fatty liver disease. They end up with congestive heart failure because, again, these ages destroy their arteries.

They end up with peripheral neuropathy because it damages the nerves. Optic neuritis I can't even see because, you know, it damages their the nerves going out to their eyes and they end up with Alzheimer's and they call Alzheimer's type three diabetes.

So they end up with dementia and Alzheimer's as well. So significantly damages all the different tissues of our body. So you don't want to high blood sugar, but you also don't want too low a blood sugar.

So there's something called hypoglycemia, right? And most of us have probably experienced a mild episode by a mild episode. What I what I mean by that is you've probably noticed a time where you've been hangry, right?

You've been hungry and angry at the same time. Right? This is happens to many people between meals. If they haven't eaten, they start to get angry or irritable.

And this is because their blood sugar is dropped too low and they're not good at burning fat for fuel. And so they get hangry. Now that's more of a mild episode.

The research has shown that if you have one significant episode of hypoglycemia by significant episode, it means you pass out. If you pass out one time in your lifetime, it increases your risk of neurodegenerative disease by 40%.

So it really is good to mention Alzheimer's by 40%. Why is that? Because in order for you to pass out from hypoglycemia, there has to have been enough.

So what that means is that the neurons need sugar, right? They need glucose so they can run off of ketones. And we can come back to that. But they, they they can only produce about 50% of their energy from ketones.

They always need a supply of glucose. And if we're not getting the glucose up into those brain cells, they can't produce energy and they die. And so when a neuron dies, it's like a domino effect.

Will it will spill out contents, different metabolites that actually poison the or overexcited I shouldn't say poison, but they over excite the neurons around it.

You can say that again. That's that's a really important point. Can you, can you But yeah, when a neuron dies, it spills out metabolites that over excite the neurons around it.

We call this neuro excitatory toxicity. Right. And so the neuron gets overexcited. And because of that it, you know, in, in physiology, we say it releases an action potential.

But it can be overexcited to death. And so these metabolites will actually impact the neuron around it and over excite these neurons to death. And it's like a domino effect. Right.

So when when neurons start to go down, they bring down neurons around them. It's a domino effect. And and for you to have a significant episode where you pass out from, from hypoglycemia, there has to have been enough neurons that have been knocked down and died, to have a significant impact.

It's a significant injury on your brain. You think about you have to think about it like a concussion, right? So when you get a concussion, that's a significant damage.

A lot of neurons have died when you get a concussion. Well, that's basically what's happening there when you have, hypoglycemic reaction like that where you pass out.

And so these are significant issues. These are brain injuries. And so, it's really important that we keep that blood sugar stable. We need a blood sugar stabilizing diet.

So when I think about nutrition how it impacts the brain, we need good blood sugar stability to keep the brain healthy and producing energy the way it should.

And we need you know, whenever I think about nutrition, I always think maximal nutrients, minimal toxins. Okay. And we just had a discussion. We talked about all the different toxins, pesticides, herbicides, heavy metals, food additives, all these different chemicals that are in our food.

We can't we can't avoid all of them, but we can minimize our exposure to them by making conscious choices and choosing food that has been produced in such a way that has lower doses of these chemicals and has more nutrients in it.

And so the way that we do that is by choosing organic foods as much as possible. When foods are grown in organic fashion, they use less. You know, they're not using chemicals on it.

Therefore, the soil is healthier and the healthier the soil, the healthier the plants or the animal that's eating the plants. And so, you know, it's it's from the bottom up in a sense, right?

The healthier the soil, the healthier the animal that's eating the the grass on the soil or the healthier the plants, right, that are growing in the soil.

And so that's what we're getting from are choosing organic. And obviously it can be pretty much impossible to go

100% organic. But even if you're going to 50, 60% and do the best you can, Environmental working Group has a list of things they call the dirty dozen.

These would be things that you really want to focus on getting organic. Basically, the general rule is anything you're eating the outer layer of, like a blueberry, for example, you're not peeling a blueberry.

You want to try to do your best to get that organic, as opposed to, let's say, an onion or an avocado. You're peeling the outer. You're not eating the outer layer of that, you're peeling it.

Blood Sugar Stability and Brain Injury Risk

Therefore. And also the peel acts as a protectant against pests getting into it so that it even if it wasn't organic, there's going to be less the less chemicals sprayed on it.

And you're also peeling off that outer layer so there's less chemicals that you'd be exposed to if you get it non-organic. So try to follow that general rule.

If you're eating the outer layer, do your best to get it organic with your animal products. Trying to get organic grass fed as much as possible to reduce your exposure because the chemicals start to bio accumulate in the animal products.

So when you're consuming, like for example, 1 pound of grass fed beef, you know that it's in a sense it's it's it's it's condensed like the animals are eating grass.

If that grass has been sprayed, you know, the chemicals are in a sense concentrated into their tissues and into their dairy products and things like that, into eggs for chickens.

So really, really good, good idea to get grass fed, organic as much as possible, more nutrients, less, less toxins. That's really the goal there with a blood sugar stabilizing priority.

So there's a reason you're the legendary doctor David Joggers is because in six minutes you gave us approximately three hours worth of really big ideas and really important concepts I'm going to go over. I've been taking notes.

I'm going to go over kind of some of the key ideas you shared. So that way people can kind of internalize some of these ideas. And then I have some, some follow up questions for you.

So, what is healthy mitochondria. Right. Healthy when we healthy food and we have a blood sugar stabilizing diet, we can have healthier mitochondria. Mitochondria are extremely dense in neurons and our brain cells.

And so we have mitochondria dysfunction in our brain cells. Our brains are not going to work well. That can that can lead to brain fog. And then you shared something that was really scary, which is if we have a significant episode of, we what many of us have experienced hypo, glycine.

But if we have a significant episode, we actually lose consciousness. And that's similar to, I was thinking traumatic brain injury when you said that or stroke.

Right. Stroke. Is we in the shape of stroke lose blood flow to the brain. That means your brain is getting blood or oxygen, or glucose for a period of time.

And that can create brain damage. Stroke is a major risk factor of Alzheimer's disease. Other forms of dementia, as is, you know, traumatic brain injury, these damages to brain increase the risk of dementia later in life.

And then similarly, with having not enough sugar in the brain and in blood and then losing consciousness, that's done damage to the brain. Goodness gracious.

And that's a major risk factor, for, for future, future Alzheimer's disease. The. Yeah. You mentioned they do have exciting toxins. So when neurons get too excited, often it's glutamate glutamates a neurotransmitter.

It's kind of the opposite of Gaba, right. So you got serotonin and melatonin. Those are two opposite sides of the coin. Very similar, chemical structure.

And then Gaba and glutamate, Gaba inhibitory. Generally speaking, glutamate is excitatory. Some famous neuroscientists propose that a lot of Alzheimer's disease is just too much. It's too much. Glutamate is too much excitation happening.

It's actually killing the brain. And so you share that when neurons get too excited, they can, they can die and spill out these exciter toxins. And then that can knock down other neurons as well.

And so you get this domino effect, this cascade effect of death of neurons, which is really bad. And then and then and a lot of people don't know this.

We can grow new brain cells even into our adulthood. And then this is different than what I learned in high school, right? I also learned that fluoride was good for your teeth in high school, and it made sense to put in the water.

I don't know if any other medicine we put in the water. I mean, frankly, if we're gonna put anything in water, it should be magnesium. Seven out of ten Americans are deficient in magnesium and magnesium overdose or magnesium toxicity, I think, is essentially nonexistent if you're not accidentally.

I read a case study. It was when the magnesium bottle, I think it was ten x or 100 x off of what it was labeled. So you have to take ten x to 100 x of a regular supplement to get too much magnesium.

But, you know, we learned things in high school that are no longer true. And as scientists, we need to adjust our perspective and so we can grow new brain cells.

So even though we can lose them, we can actually gain them back by doing healthy things like exercise. I do you can take certain supplements and increase brain derived neurotrophic factor, which facilitates the growth of new brain cells.

Sleep is of course important than eating a brain healthy diet. You talked about a blood sugar stabilizing diet. And then you talked about our health of our soil.

This is such a big idea. You know, the wonderful people who practice permaculture. God bless them. You know, they talk about. Listen, you can't just grow.

You can't just mono crop on the same field every year and expect it to work. I remember when I was a kid, I read a biography of George Washington Carver, who did a lot of work on the peanut, and he talked about mono cropping and how when you monochrome, it depletes the soil of nutrients.

When you rotate crops, it's actually good. Unfortunately, a lot of small family farms have disappeared, and they're now mostly factory farms, influenced by, Big Tobacco, who bought large food companies in the 1980s.

They said sold them, but they influenced food policy. So now we have lots of mono cropping, lots of pesticides, as you mentioned, and the soils lost nutrition.

So a lot, a lot of our food is lacking nutrition and then bioaccumulation. If you're not getting grass fed beef, they're likely being fed wheat. And they're like, you almost force fed wheat.

They actually add you know, the, the antacid Tums. And you remember that, that add tom to tom toms. Yes. Oh it's better for you. It's got magnesia. It's got, it's got calcium. Something my body needs.

And they said the other ones have magnesium. Those are bad. Now it's flipped right now we're like hey magnesium is actually what we need. We actually don't need so much calcium.

But that most of the un acid used in this country, in the United States is used in livestock. They put it with the because the weak will give them, upset stomachs.

And so we're forced feeding cows. Not we, but humans are force feeding cows wheat that's got gluten in it and likely pesticides in it. So it's concentrated those pesticides and and they don't it upsets their stomachs.

So we give them antacids so they will continue to eat it. And then people eat that meat. So that's the non pastured beef. That's the non grass fed beef which is fascinating to me that we're forcing animals to eat food.

They don't usually eat that. Well by the way that's how we fed up catnip livestock. We don't feed them that way we don't feed them actually grass feed them calves feed them wheat.

That actually increases the fat. And then bioaccumulation. And of course, this applies to fish in the water as well. You know, tuna I don't think swordfish is going to be safe as long as you and I are on this planet.

I and I'd like to live to be 120 and good health. I don't think swordfish is going to have swordfish going to have too much mercury for me to eat for the next 100, 100 years.

And so what I want to ask is so, so that's kind of a review of all the things you shared with us. So how can we what what are some of the top things that impair our mitochondria?

Let's let's do that. So that way people can begin to. Yeah. Ideally eliminate some of the things that are impairing their mitochondria for sure. Well a couple things.

So basically blood sugar imbalances are a big factor. We talked about you know we need to make sure that we're eating a blood sugar stabilizing diet high toxic load.

So we're we're all going to be exposed to a certain amount of toxins. And to some degree, it's okay. All of our ancestors were exposed to some degree of toxins.

And so our body knows how to deal with toxins. But once the toxic load builds up, you think about it like a bucket. So if a bucket is filling up with water, you know it's fine if there's like a little hole in the bottom that's kind of draining it out.

But once the bucket fills up to a certain point where it's full and then it starts to overflow, that's kind of like our body. Once our body gets to a certain point where we have so much toxicity that it's overflowing, we call that in, in medical science, we call that a high allostatic load, right.

And so allostatic load is a disease causing load on our, on our body. And so that's what happens with this high level of toxicity. So the best thing we can do is minimize our exposure right.

And also help open up all of our drainage and detox pathways.

Organic Foods, Toxins, and Soil Health

We need to make sure we're moving where we, you know, we we we move toxins out through respiration from breathing. It's actually a number one way we move toxins out.

So, you know, so breathing. And so the better we're breathing. Nasal breathing is really important. But also exercising actually will help us remove toxins also through perspiration.

So sweating, whether it's exercise or through, you know, infrared sauna. Use something along those lines.

Sunbathing. We can also move toxins out through urination and defecation.

In fact, you know, as a joke, when when back when I was seeing clients regularly, you know, they'd always come back, you know, after the first week and say, hey, I feel a lot better, but I gotta go.

I have to pee, like, every hour. And I'm like, that's great. You got to pee and poop your way to good health, right? Oh, that's a great can I, can I rephrase that?

Yeah, I mean, great, a good health. Fantastic. Have to pee and poop your way to good health. That's a key way that we're removing toxins out of the system.

We want things moving through our body. Kind of like a river not staying stagnant and putrefying like a pond. Right. And so, so we want things moving through our system that's so critical here.

So we need to open up those drainage and detox pathways, make sure they're working well, and minimize our exposure to toxins. And then beyond that, nutrient deficiencies are a big factor.

Right. And there's so many different nutrients that we're that many individuals are deficient in. You mentioned magnesium. Some of the other common ones are vitamin D, zinc, omega three fatty acids, protein and amino acids.

You know, you mentioned acids. So many people are taking an acids. That's one that medication, any sort of acid blocking medication that's out there. Heartburn medication.

These are linked with a higher risk of all cause mortality. Right. When you're taking this for an extended period of time, it it increases your your risk of dying early.

The reason why is you need good stomach acid. So when people have acid reflux, it's not because they have too much acid, it's actually too little stomach acid.

And the reason why you actually notice the reflux and it kind of burns and you think it's too much acid, is because food sits when you don't have enough stomach acid, food will just sit in your stomach and rot and petrify.

There's still acid in there. It's just not enough. And so that food, as it purifies, it produces gas, and that gas builds up and shoots acid up into your esophagus.

And so you start to notice that reflux. But if you just take in an acid, it will reduce the acid, but it won't actually improve the digestion. So the issue is you have bad digestion.

You're not actually absorbing nutrients. Well, right. Also that acid in your stomach is key for disinfecting the food you're consuming. So you don't you don't end up with pathogenic bacteria, parasites, different microbes like that.

And so people that are taking heartburn medications are at an increased risk for B12 deficiencies, zinc deficiencies, vitamin A, vitamin D, all your fat soluble nutrients.

You're going to be deficient in those magnesium, right? A lot of the key minerals that that are needed to kill, oftentimes iron, especially with women, oftentimes they'll they'll be deficient in iron, because they're not producing enough stomach acid.

And so all of those things will increase the risk of all cause mortality and obviously cause mitochondrial dysfunction. So for this this is really interesting.

I don't think I've I've heard this or understood it in this way. Heartburn or acid reflux I'm using interchangeably. I don't know if they're interchangeable, but it's two things are often due to poor digestion, specifically slow digestion and potentially not enough acid in the stomach.

And then what happens is, the food sits there, the gas gets created and that comes up in our throat and that that burns. And then so we think, oh, too much acid, right?

We got to take the acid down. Really. It's not enough acid. So this would make sense. Why? Apple cider vinegar is a natural, healthy way to improve digestion and help with heartburn.

Adding more acid because it helps it facilitates digestion. Correct. And apple cider vinegar works on multiple mechanisms. So you don't want to take it straight up, right.

That's that's too strong. It'll burn you. Yeah. So you dilute it. Right. And when you dilute the apple cider vinegar now apple cider vinegar when it's concentrated is very strong acid when you dilute it, it's more of a milder acid. Right.

So it's not enough to like actually. So when we think about the the actual physiology in the stomach is a little off topic, but I think you'll find this really interesting.

At rest. Our stomach acid pH is around 3 to 3.5 now. Neutral is seven right seven point. You know our yeah it's basically seven. So you know like your average cup of water is seven okay.

Now it's a huge difference 3.5 to 7. In order to to metabolize something like for example a steak, we actually need to get our stomach acid down around 1.5 to 2.2.

So that's a big it's actually takes a lot of energy to produce that stomach acid. And the major main driver of that is our vagus nerve. So that we have a nerve cranial nerve ten that comes down from our brainstem Vegas is Latin for wanderer goes into our all of our visceral organs and into our stomach.

And signals the release of stomach acid and goes into the liver, signals the release of bile and into the pancreas to help activate all the digestive juices.

And so with with a good vagal tone, we should be able to produce enough stomach acid. Okay, as long as we have like nutrients like zinc, chlorine, chloride, I should say, you know, in our system, sodium is needed for, for the production of stomach acid.

And then we have good vagal tone. Most people are eating on the go, and so they're eating in a, you know, more of a stress state, and they don't have activation of their vagus nerve.

Can you explain vagal tone. Yeah. So vagal tone. So basically in our part of our nervous system we call the autonomic nervous system, which means automatic. We don't have to think about it.

Like our heart beating, our producing digest, you know, digestive juices. We don't think about that. We have two wings of that. Right. So we have a sympathetic fight or flight wing, and then we have our rest digest and heal wing.

That is the parasympathetic branch. And so that parasympathetic branch, the main nerve that drives that is called the vagus nerve. And the vagus nerve helps slow down your heart rate and helps to dilate your lungs and help you breathe and take deep breaths and helps to stimulate digestive juices so we can digest our food effectively.

Digestive Health, Stomach Acid, and Vagal Tone

We want to be in, or we need to be in a relaxed state where our nervous system doesn't feel like we're at a threat, you know, under threat, in order to be able to have good vagal tone and to be able to produce those digestive juices.

But so many people are eating on the go. They're eating, you know, in stressful environments, loud restaurants. Right. Places that, you know, or they're, they're working while they're eating or they're watching a scary movie or something, you know, the news the news is watching the news, right there, signaling they're sympathetic.

Yeah. You turn on the news. I mean, you're getting your sympathetic nervous system is going to be activated. Very scary right here. Hearing people argue, right. And stuff like that.

And so now your sympathetic nervous system is activated and you're not getting the digestive juice production. And so that's really key here. So you need good vagal tone to produce the right amount of stomach acid to be able to digest your meal, to be able to produce that acid, to get the acid low enough to break down that protein effectively.

So you can actually absorb the amino acids, the minerals, the B12, all of that, and also disinfect the stomach environment, kill off bad bacteria and bad microbes that are on there, and then also you we call the the the food that's broken down by the stomach acid as it moves into the small intestine. We have a term for it.

It's called a bolus. We need that bolus to be real acidic and it hits the proximal or the front part of the small intestine. And it activates certain receptors there that signal the release of bile.

Bile is alkaline. The small intestine actually needs an alkaline environment. So bile not only is that a more surface fats, but it also is very alkaline.

So it helps alkalis the small intestine along with bicarbonate that's released by the pancreas to provide the right environment for the small intestine.

And that helps. Actually, those are also disinfectants because there are certain acid loving bacteria that can survive the stomach acid but don't like the bile and the, bicarbonate in the small intestine.

So it helps regulate the microbiome. And that bile is critical for for absorbing fat soluble nutrients. We do not get a good bile release or bicarbonate release and digestive enzyme release.

If we don't have a very acidic bolus moving into the small intestine. So when the stomach acid is not good, we're not going to get good bile flow and we're not going to get good digestive enzyme and bicarbonate production that's going to cause large, undigested food, food to be in the small intestine, where it can be broken down by primary feeding bacteria.

Larger bacteria that sit up above the gut mucosa. And they're going to produce a lot of different endotoxins. Right. And those endotoxins can be really inflammatory and damaging.

And that's going to cause more gut inflammation. And that's going to open up the gut junction and cause what we call leaky gut or intestinal permeability.

And then those bacteria and their toxins are also going to get into the bloodstream and drive up overall inflammation and autoimmunity. So really big deal.

We need to make sure we're getting that stomach acid right. The idea of taking antacids I mean maybe acutely if you're having like significant pain, I can understand that just taking something acutely and actually baking soda works just as good.

A little baking soda and water. But we shouldn't be doing this regularly. Now back to apple cider vinegar. Apple cider vinegar. That's why it works like apple cider vinegar.

How do you like to use that to improve digestion. Yeah, so so absolutely you can dilute it like take a tablespoon and like four ounces of water and drink it before your meal.

And what that actually does, it stimulates the vagus nerve. And so the tartness of it will stimulate the vagus nerve. You can also chew on ginger root that works well or take ginger tea or something like that.

That will stimulate the vagus nerve. And that's going to help to produce the stomach acid, right? That's key. Also, apple cider vinegar has post biotic compounds like acetic acid that help to actually strengthen the intestinal cell.

Mitochondria. And then the healthier, the stronger, more stress resilient the the intestinal cell mitochondria are, the better they're going to be able to regulate the gut environment.

And that's a whole nother you know, we talk about oxygen anaerobic anaerobic bacteria, but it's a whole nother, pathway that for the benefit of apple cider vinegar, is that the taste that then causes the release of digestive enzymes, the bitterness of the acid that goes into our stomach because.

Because the opposite of it is actually acid. Exactly. So I would say to a, to a lesser degree, it's the actual acid that's benefiting our, our system.

It will benefit. And if you have a ulcer in your stomach and you drink apple cider vinegar, like diluted like that one one tablespoon and four ounces of water, you'll notice pain. Right.

And so it's actually a test to see if you have a stomach ulcer as well. So there is acid in there. But it's not at the level of pH that like it's not in that 1.5 to 2.2 range, right where it's actually getting that stomach acid that low.

But the key there is it's getting a trigger for that vagus nerve okay. We need to trigger the vagus nerve. The body will create the stomach acid. Do you like it before or after a meal?

I know it works. Both. Do you have a preference? I think before the meal is the best way to do it. But you can also do it after a meal. You know, that's fine as well.

Also, when you take it with a meal, the apple cider vinegar also has a great impact on blood sugar release. Right. And so actually has been shown to lower the glycemic impact of a meal by up to 40%.

So again, I think this has to do with the post biotic effect that it has, you know, on the gut, right? And its ability to reduce gut inflammation, which will actually help improve the blood sugar stability there.

So, yeah, real powerful effects that you get from the apple cider vinegar. So I want to tie a bow on this, and then we're, close. I want to get your thoughts on your favorite foods and supplements for the brain.

So for apple cider vinegar, you like one tablespoon and four ounces of water, either before a meal, maybe 20 minutes before a meal, maybe ten minutes.

Or you can also use it after meal if you have heartburn or if you'd like to lower post-meal blood sugar or, if you want to facilitate digestion, you can use it either way, but please dilute it because it can harm your your throat tissue or can harm your teeth over time.

That can be improved digestion. So many benefits. Any, any. Great. So what are what are some of your, what are some of your favorite supplements and, and foods to it to enhance brain health?

Yeah. So for foods I like grass fed beef I think it's phenomenal. You've got zinc in there, you've got vitamin B12. You've got Khan casein and carnitine which are Khan casein actually is you know, when we think about meat, most people don't think about antioxidants.

They think antioxidant. It's when when it comes to plants. But actually there's a really powerful antioxidant that is in meat. And it helps protect glycation of muscle tissue and, you know, glycation throughout our body.

And it's called carnitine. Carnitine is a really powerful natural antioxidant that's found in meat. Particularly grass fed meats can have higher levels than grain fed.

And so that's really healthy for your body. Carnitine CLA, conjugated linoleic acid, which is really good for your body. Omega threes that are in there.

So 100% grass fed beef wild caught salmon. So we think about wild caught salmon I think about two main nutrients

I think about long chain omega three EPA and DHEA.

Very high in that powerful, you know, tons of research on the benefits of that. But I also think about Astra Zanten, which is this antioxidant that gives it a pink coloring.

And, Astiz Anthon is one of the most powerful antioxidants that you can possibly consume. And you think about salmon, they are actually able to swim upstream.

So against the current and jump out of the water like up to ten feet. That's incredible mitochondrial energy production. In order to be able to do that, it's like the most elite human athlete, right?

The most elite human athlete, Usain Bolt or whoever, you know, whoever it would be. They have incredible mitochondrial energy production. That's what salmon are able to do.

And I think it has to do with this combination of omega threes. And as the Zanten, allowing their mitochondria to function so well. And so because they eat red algae and so wild caught salmon, you know different types of seafood that, you know, could be wild caught would be be beneficial.

And then also, I think pasture raised eggs are phenomenal as well. You've got choline in there. You got, phosphate that'll serene in there. So powerful for, for cell membranes and for brain health.

Choline is a precursor to a of choline, which is our main neurotransmitter for memory. Right. It's in our temporal lobe for memory. Memory recall. That's really key there. So eggs have fat soluble vitamin A retinol, which is really good for the body.

Vitamin D, vitamin K2 in there. So you got so many great nutrients in those three foods. So that's what I'm typically thinking about. You know, there's other good ones.

You know, herbs like rosemary I think are really good. Rosemary, has a form, it helps to boost. It's been shown to help boost acetylcholine in the in the brain.

Right. Which helps again with memory. It's got antioxidants. Rosemary snack acid. Very very good. Antioxidant rosemary is easy to add, right. You can have, you know, put it on meat smells good.

Taste good. It's easy to grow too. You can grow, you know, big stocks of rosemary, right? Right on your porch or whatever. Even if you're in apartment, like, on your windowsill. Right.

And just kind of pluck it off and put it on your food. So I think rosemary is really good. Curcumin. Which is in the, you know, it's an active compound in tumeric, the Indian spice tumeric.

Brain-Healthy Foods and Supplements

And so that's really powerful, have been shown to help down regulate inflammation throughout the body, including the brain. So that's really, really good.

We can go on and on. So many great, great brain supportive herbs and foods and nutrients. But that's a really good place to start. And then do you have any other, specific specific supplements that you like for the brand?

You mentioned a lot of things that are in food, for example, xanthan, omega three fatty acids, curcumin and any other specific supplements you like that are that are, good.

Yeah. The one that I think that I've seen people just notice the biggest improvement quickly is magnesium is actually a really good magnesium form. And I think it has to do with the fact that so many people are deficient in magnesium and magnesium is almost like a it's a really powerful adaptogen in the brain.

And so we talked you talked earlier about glutamate to Gaba. And the importance there. Glutamate is like the, the, the gas pedal in the brain. So it helps us to think sharply and quickly.

Gaba is the brakes. And so it's great when you have a car with really good gas. Right. Like that. That speeds up quickly. But you better have those brakes.

And so for most people, when that when the brain gets inflamed, it skews towards excess glutamate and low Gaba. And so for some individuals, they also have a poor functioning Gad or gamma.

What is it. Gamma. The carboxylate enzymes that are what convert the glutamate to Gaba. Right. So it's very similar compounds. The Gad enzyme helps convert glutamate to Gaba.

You can get antibodies. Some people have antibodies to their Gad enzyme. And so they're not able to have that conversion real well. Also other people, if you're magnesium deficient, magnesium and B6 are the big co-factors in that guidance.

I'm, conversion from glutamate to Gaba. And so, for some individuals, like if I, if I'm looking at blood work and I see liver enzymes very low under ten, alt ght, if they're under ten, I'm thinking this probably person probably has a B6 deficiency.

Also, if I see a micro stick or anemic pattern, but normal iron and normal ferritin, that's common with B6 deficiency and B6 deficiency is more common than most people think.

And so B6 is something to consider and look at. There are some individuals that just need higher amounts of B6. And then, you know, all your meats are healthy sources.

And we talk about the grass fed beef, things like that. It's all good sources of B6. So if you're eating a healthy diet, you should be getting enough from your diet.

But some people just genetically need more B6. It's good to look for a form of B6 in your supplements, like if you're taking a good quality multivitamin, look for P5P.

That is the activated form of B6, and you want to get 10 to 20mg that for most people that's going to do really well. 10 to 20mg of B6 in your multivitamin I think is really healthy.

And then magnesium, a good form of magnesium like magnesium Gleason eight, magnesium three L3 and eight magnesium, let's see, what are some other good forms?

Magnesium malate is another good form of magnesium. So magnesium citrate is another good form. So those are all good forms of magnesium. So making sure you're getting, I would say at least 100mg of magnesium in a good multivitamin or supplementing it on the side, maybe an electrolyte formula or just a standalone magnesium formula.

I know I have one called brain com magnesium and it's our bestselling product, and we just get review after review after review where people are saying, I took this.

And I was like, I could sleep through the night. I took this and I could focus throughout the day. And so I just see so many people notice right away.

Yeah, I would say probably if I have four people take a magnesium product, three of them will have a noticeable difference, right? I noticed the change there.

Can you tell us the different magnesium in your I mean, can you read the label for us? Yeah. The ones that I mentioned, you know, these are good forms to look for.

Magnesium, glistening magnesium citrate. Magnesium Mally. Those are all good forms. Magnesium L3 and eight

magnesium. All three is one that's most marketed for brain health, right?

Although I think all those forms are going to get into your brain and have an impact on your brain that may have the most impactful, maybe the most impactful on the brain is the L3 and eight, though.

And then what's your total amount of magnesium in that. Yeah. So you're going to look for, you know, supplemental let's say 200 or 400mg. Most people are going to do well with that. Right.

There are some cases where we need a magnesium load. Right. But that would be good to work with a health practitioner. Or you know, I have an article on my website about how to do magnesium loading properly.

I wouldn't just do it. Unless you, you know, unless you can be around a bathroom, all day. I wouldn't just, load your system up with magnesium, without having detailed instructions on how to do that.

Because if you take too much magnesium, this is a good. It's a good problem. If you take too much magnesium, it's not like you're going to pass out, right?

Take too much magnesium. You're going to end up with loose stools. And so if you have two loose stools you back down on your magnesium. Now there are some forms of magnesium that really have very little impact on muscle physiology, on on nervous system physiology.

But they will have more of a laxative effect. That would be magnesium oxide. In particular. Magnesium oxide is a form that we don't we don't we don't we don't absorb very well.

But it does move your bowels. Right. So if your supplement has magnesium oxide, the only benefit you're getting there is better about perhaps better bowel movements or maybe loose stools, maybe too much.

So we're not the best one unless you're dealing with constipation. Fantastic. And then where can people get bring home? Yeah. Just that my doctor jokers.com on on our store.

Fantastic. And so the just some of the supplements that you like, pieces together about the foods and the, the supplements that you mentioned. You like omega threes, specifically the long chain, fatty acids.

And for, you mentioned curcumin for humans, both the great supplement. Or you could get turmeric as a spice. Both are really good. And then, B vitamins specifically mentioned B6.

I like a whole b-complex because they're involved. Making B6, B9 be involved in making neurotransmitters also helps lower homocysteine. And so so B vitamins you like the P5P B6.

Now is that methylated? How is that different. It's what we call pre activated. Yeah. So when you're looking at the pre activated forms of B vitamins you're looking at methyl koba.

And for B12 methyl folate for B9 that's your folate. You know your folate form. And then P5P for your B6 okay. So these are methylated B vitamins. And then then magnesium.

So many benefits using over 300 enzymatic processes in the body very much involved in mitochondria health and brain health. And then the research on dissection studies of Alzheimer's patients, those Alzheimer's brains, if you look at them under a microscope, that you know, the section them they have a deficiency of magnesium and they also have more aluminum than, healthy brain.

So magnesium deficiency and over exposure to aluminum, these are risk factors for Alzheimer's. And, you know, magnesium helps to protect the blood brain barrier.

So it helps to keep the blood brain barrier intact. And so when we're magnesium deficient the blood brain barrier actually becomes more permeable. So things like aluminum different toxins from our environment will will seep in.

So many of them also, if we're also if they're hypoglycemic too, it'll also happen. So, you know, we talk circling back to what we talked about in the beginning, if, you know, if we don't have good blood sugar stability, we're actually blood.

Sure, the more stress our body under, the more we use magnesium, right? Magnesium is to the body what oil is to a car. And so the more stress we're under, blood sugar imbalances are are major stressors on the body, then the more magnesium we're using.

And so when blood sugar goes down, blood brain barrier becomes more permeable. Toxins like aluminum can get across. Also, infectious microorganisms oftentimes can get across as well cause more damage in the brain.

And so magnesium and blood sugar stability, getting enough magnesium on board get having good blood sugar stability are the keys to lock down that blood brain barrier.

So that way, you know, we we reduce toxins from seeping in there. Fantastic. Well, doctor jackers, where can people find you? You have a tremendous online education platform.

Where can people learn more? Yeah. Doctor Joker's dot com is a place to find me. And on my podcast, Doctor Joker's Functional Nutrition podcast, where I talk about all the kind of stuff that that, we're talking about here today.

So definitely check out the podcast. I'm on it. I'm a guest on your podcast. That'll be coming out at some point. And then, your newsletter, love your newsletter.

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Just really easy to share. Lots of great free education on living a happier, healthier life with functional medicine. Doctor Juncker's doctor doctor Dave joggers, thank you so much.

Thank you so much. Doctor Robert.