

Welcome back everybody to the Rebel Nutritionist Podcast. Today it is yours truly doing a podcast all alone because I wanted to, in the vein of trying to explain the processes that go on in your body give you a little bit of information about inflammation, oxidative stress, what that means.

I've done a podcast on detoxification. And so this follows that in terms of really Getting a sense of what's happening in the body, what's happening underneath all that skin that we have and how to explain these processes in a way that resonate with you, that you can understand all the complexity of what's going on and really help make decisions that support your health.

So why is oxidative stress and inflammation something that we would want to know about? Because it is something that has a profound impact on your health, on your well being. So **when we talk about disease prevention and what is at the root, we have got to address oxidative stress and inflammation.** And a lot of, a lot of us hear about inflammation. We hear, okay, inflammation is not good. But I think a lot of times we also don't really understand what is inflammation.

And so we're going to address that today and you know, I talk about disease prevention and how much control we actually have over our bodies like we have way more control than we think we do and How can we have control, though, unless we really know what's going on?

**And so taking care of ourselves is our responsibility.** Keeping our body in good working order is our privilege, is our right as humans. And so we just assume our bodies are going to function optimally. We just assume that it's a given, like, oh, okay, I'm going to eat food, I'm going to maneuver through life, and everything is supposed to function the way it's supposed to function.

And I'm sure many of you don't even think about what happens, right? We go into autopilot, like our bodies just function, how they're supposed to function. And when we start to think about it and really try and like, unless you have a science degree, if we're trying to understand it, it's confusing and it's confusing and it's complex, complicated.

And as much as I love science, I know you guys, I say this all the time. Science is not sexy to most people. It's sexy to me. But the other thing that I want you to think about is **we have over 87 billion, with a B, 87 billion reactions that happen in our body per minute.** It is a lot going on. And so what happens is in society, in the media, and, and there's books written about one thing or another, like **we do this reductionist view of like trying to break the body down into specific parts and just focus on one thing.**

And what I'm going to tell you is that **our bodies are all connected. Our mind is connected to, and our brain is connected to the rest of our body. And everything that we process through our gut is affected by everything else. And so it's this interconnected highway of reactions and things that are going on that we really, really need to pay attention to.**

And so. Again, if we're trying to break it down into a one-size-fits-all approach, like here, just do this one thing, we're not, it's not going to work. You're not going to be able to take care of your body the way it needs to.

And so we know the world of health. We know longevity, wellbeing, wellness has come such a long way because science and technology Has allowed us to do that.

We can measure things. We can take a deep dive. I mean, ever since the DNA has been sequenced, we are able to really take a deep dive and understand how unique we truly are. I mean, **we're a lot the same, but our bodies. are very, very unique. And we can actually look now into your individual operating system and tweak and look at the nuances that make us very different and that affect our health in different ways.**

And this is what I find so exciting and so empowering is that It's not just, okay, here, eat this one food or look at just heart health. We've got to look at gut health and heart health and brain health. Like it's all interconnected. And so we now know how we can tweak that and go into those individual nuances.

And so when we, **I really like the idea of talking about healthspan versus lifespan**, because we have to look at health, you know. It's not about searching for the fountain of youth, right? We actually have it. We have the ability to, whether it's reverse aging, whether it's kind of stop aging in its tracks, so to speak, right?

How do we support the body? And that's partly what we're going to talk about today, when we talk about oxidative stress. But. When we talk about health span, I want you to know that it is within your reach if you pay attention to how you take care of your body and how you find health and balance, right?

So when we talk about balance, I'm really talking about the five pillars of health and that's how I've deemed it. And this is pretty consistent. You know, some. change the wording and, and the nuances of it. **But it really is about understanding nutrition. What are you putting in your body? How do you nourish your body, your movement?**

**How do you move? So it's not just exercise. It's how do you move? It is sleep. So important for recovery and rejuvenation and Everything that goes on. I always say backs into sleep and stress. That's huge because stress is at the root of so many diseases because stress triggers inflammation. Inflammation is at the root of disease.**

**And then, of course, our relationships, behavior, relationships, emotions, however you want to categorize that. That creates energy in our body relationships, happiness, joy, right? Those that creates joy and purpose and meaning. And those things are hugely important when we are talking about health and wellness and longevity.**

**And so when we look at what health is, it means all of the systems in our body. Are operating in a way that is balanced that is functioning the way we're supposed to because if everything is balanced, then we have great energy.** We can move and breathe and think and live in the way that we want to.

**And so what we know is there are processes in our bodies that I would call the master regulators.**

Why do I call those the master regulators because **if those systems and processes are in balance, then everything else from there will be in balance.** And what am I talking about? **I'm talking about detoxification. I'm talking about inflammation, oxidative stress, and methylation.** So I have already covered detoxification. Actually, we have two podcasts on that.

**Today is gonna be inflammation and oxidative stress because they're so intricately intertwined.** And then the next one will be methylation. 'cause that's the hardest, I think, to understand. But these concepts are not new. This is what functional medicine was built off of. Understanding how the body works and how we keep it balanced is at the very core of functional medicine and functional nutrition. And so when I'm working with someone, It's not, it is about **understanding how these systems are working in your body and how we repair and rebuild those systems if they are offline.**

So think about it this way, and I always use, I try to use metaphors and analogies because it is those 87 billion reactions, there's a lot going on. And no, I don't know all 87 billion, although I'm working on it, but that's a lot going on. So think about it this way. When a car is built, it goes down an assembly line, right?

And at each stage and at each process, someone is responsible for a piece of that car. And then at the end, the car is put together and we're supposed to have a fully functioning, fully operational car, right? Well, what happens when there's a recall something down the line didn't go as planned, someone didn't do something right or there was a piece missing or who knows what, right?

Well, your body is the same way. We have processes. These processes happen all day, every day. And if they are not happening efficiently, then our system suffers for it. And so when we talk about oxidative stress and inflammation, it's We are talking about systems that control the very being of how our cells operate, right?

So, so let's dive in. What is oxidative stress? **So oxidative stress, think about it like this. It's like rust on a car.** Right? You don't want your car or anything else. Rust anywhere is damaging. It's corrosive and it ruins whatever it touches, right? If you have rust on a car, the car ends up becoming deteriorated, damaged.

It's not going to function. I don't know why I'm using car analogies. I think because we all drive cars, right? It makes sense and it's a good visual. But even think about it this way. An apple. Take an apple. If you cut an apple. And you leave it exposed to air. What happens? The apple turns brown. Well, that brown that's happening.

Are the cells being damaged? And when the cells are damaged and they die, they cause that browning. And so. We're like, okay, well, we don't want that happening inside our bodies, right? **We don't want our cells to be damaged and corroded and then die because that causes all kinds of problems. So we want to prevent this oxidative damage.**

So where does oxidative damage come from? Well, **oxidative stress can come from just breathing, right? We produce free radicals.** I'm going to address that in a second, but our

bodies make and produce things that cause oxidative stress that cause damage. The idea is that we have an immune system to protect us.

And there's this nice check and balance system going on, right? But oxidative stress is caused by free radicals. Free radicals are what are known as unstable molecules. And so unstable molecules, without getting, again, here's a good analogy of what is an unstable molecule. **Think of an unstable molecule or oxidative stress like a game of Jenga, right?**

Have you guys played Jenga where you're building a tower? And you've got to really carefully put these pieces in so you can build a tall, high tower that's stable, right? So think of your cells like that Jenga tower and antioxidants. Well, we're going to talk about that, but. Those blocks go in very carefully.

**Free radicals are like the player who's pulling out, or a clumsy player, who's pulling out that Jenga piece. And it creates instability.** And then when too many of those pieces are removed haphazardly, the tower becomes unstable, and it collapses. So we think about a cell that is unstable.

If you have six players in a game, Right. An even number of players in a game. And once one player goes off rogue, that stability, that those six players are five now create instability. And so when there's instability or imbalance in a cell, It allows for damage to happen. And so, what creates that instability?

**Those free radicals create instability. Because free radicals themselves are unstable molecules. They're unmatched molecules. And they're running around looking for a match.** Maybe that's a better way to say that, right? This is a difficult concept. So, I'm trying to say it in a few ways that you can picture.

something that needs a match. It's a mismatch molecule that's looking for a match.

**And where does it find its match in our stable cells? It pulls a cell away from one of our stable cells to try and balance it out. So it creates a match for itself, but then it leaves that healthy cell unstable, prone to damage.**

And then it dies off. So if you have too many free radicals that are stealing healthy cells from our bodies, from your body, now those healthy cells are damaged and they're causing all kinds of issues in your body. And again, tough concept to try and wrap your head around. For so many people, but really it is about trying to create stability in your body.

**And so when you're exposed to these free radicals, where do they come from, right? If they're a normal part of life, we should be able to handle them normally. And we absolutely do. But when the body is overburdened with these free radicals, these molecules want to come in and damage ourselves. That is where the problem starts.**

**So where do free radicals come from? They come from chemical and toxin exposure.** So just going out in the air can produce a high number of free radicals, right? We live in a toxic world. We're exposed to chemicals all the time. And so that can create instability cigarette smoking, alcohol use, drug use, meaning pharmaceutical drugs stress.

**Stress can cause free radical formation because stress triggers a lot of reactions in the body that create instability.** And when, again, you have that instability, our healthy cells are prone to damage. So stress is a big one. **Processed foods, sugars, like processed foods and sugars and those processed oils cause damage.**

Why? Because guess what? If they're processed and the body doesn't really know what to do with them, the body's got to figure out where they go. They're, it's like a lock and a key. Like when you have a processed... molecule. Your body's like, wait, I don't recognize this. This is not food. This is not a vitamin.

**This is not something natural to the processes that go on. What do I need to do with you? And so it really takes the body time. And energy to figure out what to do, let's call it with the garbage.** And so the more garbage we have to deal with, the more our bodies are compromised and creating these damaged cells and these free radicals.

It overburdens the system and when the system becomes overburdened, the immune system starts to get triggered. And when the immune system starts to get triggered, all hell breaks loose. And so remember, these things are happening. It's not like your body is like sending out an announcement, Oh, I have damage. Here's what we need to do to repair it.

**It's those little symptoms that we feel sometimes that are really alerting your body that there's some damage going on. When we start to feel a lack of energy, when we start to feel brain fog, when we start to get some aches and pains, this is your body's way of saying, Hey, there's more damage going on than repair.**

And we got to do something here. And so when. This damage is going on. What I want you to think about, let's think about inflammation for a second and why the immune system gets triggered. Well, if you have all of these molecules that are damaging cells, right? And your body needs to repair them. Well, think about when you get a cut on your finger, right?

That's damage to your skin. **And what happens while your body's immune system has to come to that cut. And a few things happen. It gets red and it gets inflamed. Why? Because those are your white blood cells trying to keep out any bacteria from coming into that cut. So you don't get an infection. So those are the white blood cells.**

**That's our immune system protecting us from bacteria. And then what happens is we start to get that scar, right? That covering over that clotting. Well, again, that's another way that our body protects itself from foreign invaders from any bacteria. And then, of course, it starts to repair that tissue.**

But imagine that goes on inside your arteries inside yourselves in your system, in your body, and **all of that scarring and that protecting where it gets puffy and inflamed. Imagine that on the inside, Well, that's inflammation.** And, and if that happens throughout your body, you've got this inflammation, you've got your immune system that's kicked up and you have your body trying to protect itself.

**And if it's trying to repair itself and it's in let's call survival, then it's certainly not paying attention to the things that it needs to do like, Oh, digesting food and metabolizing. And**

**concentrating and doing all the things that it needs to do to keep your body healthy. It's just in survival mode.**

And so imagine this going on day in, day out. It certainly takes a toll on your system. So I do hope that that Clears it up a little bit again gets a little complex when we start talking about these operations. And I do want you to have a good sense of like, oh, okay. This is what we mean by that.

And this is why I need to pay attention to the things that. A, how do I prevent as much free radical formation in my body? Right? Well, exposure and controlling the things that we can control is going to be important. So we're going to talk about free radicals in a second and antioxidants, but let's just talk about some of the things that oxidative stress can cause, right? I talked a little bit about. How it happens, what's going on with these free radicals, and I'm actually, **I found a really nice YouTube video, it's literally five minutes long. I will put that link in the show notes** so that you guys can get a little bit of a visual of what free radicals are and maybe it'll help clear it up.

Again, visuals, always really, really helpful. **But oxidative stress, so I mentioned can cause fatigue. It can cause reduced concentration. It will affect your mood for sure. It can cause narrowing of the arteries. So it makes blood flow a little more difficult increased blood sugar levels. It can cause hormonal imbalances.**

So this is really important because we are seeing higher rates than ever of infertility. And It goes back to **there's some really good data showing that oxidative stress is actually at the root of infertility issues.** So that's going to be important. It can cause cortisol disruptions. Again, that fight or flight, that stress response, oxidative stress has a direct impact, impact on how our body handles stress.

**It can cause changes in skin tone, in skin texture, in skin texture. It can create thinner, more delicate skin, prone to bruising and things like that. Can cause aches and pains in the joints and muscles.** It affects your immunity. Again, we talked about inflammation and the immune system. It will affect your immunity.

**It will affect how your body absorbs nutrients from your GI tract, and it can also affect allergies.** And that's just some of the things that oxidative stress can cause. So how do we prevent ourselves from forming free radicals? What can we do to really support this pillar of health that Allows us to fight off these, these free radicals and prevent oxidative damage.

**So the best way that I can give you the example is let's go back to the apple. So if you cut that apple, right, you're exposing it to air. You're exposing it to these free radicals. Well, if you've ever cut an apple and squeezed a lemon or orange over it, we know that by squeezing that juice. it protects the cells from browning as fast.**

Why? Because there is vitamin C in the juice of an orange or any of those citrus, right? Orange, lemon, lime, whatever that is. And that vitamin C is a powerful antioxidant. **These antioxidants actually help squash those free radicals, right? They help stabilize, if you will, or eat up those free radicals.**

That's the point of what antioxidants do. They prevent your cells from oxidizing, right? If we're talking about oxidative stress, they prevent your cells from oxidizing. And so if we consume different types and different quantities of antioxidants. We are now, let's call it fortifying our body's army.

If you think about that apple and that vitamin C, you are fortifying those antioxidants, the body's army, the body's ability to protect itself from these Free radicals from these invaders that want to damage cells. **So the more antioxidants that you have, the more robust your army to protect your cells, the healthier your cells will be.**

And so we know that antioxidants, different antioxidants do different things. In the body. And this is why **when we talk about eating the rainbow, well, we know different foods we hear about anthocyanins, we hear about polyphenols, we hear about all of these different kind of compounds in foods.**

And we need a robust amount of them to protect our body from these antioxidants. **So you want to make sure you're eating blue and purple foods, right? This is why we hear about blueberries and blackberries. But did you know that plums and prunes and figs and raisins and dates and black currants, like all of those things? Also have anthocyanins in them, and they protect us.**

**The reds, the pinks do different things, right? Beets, really, really good with nitric oxide and other kinds of antioxidants that support our system.**

**Same thing, yellow and orange, your squashes have robust amount, and your carrots and all of those things, robust amounts of vitamin A and beta carotene, potassium and all kinds of minerals.**

**And then of course, your greens, right? Don't forget about the white, white foods are really, really important. Your bananas, your cauliflower, your garlic, Jerusalem artichokes, mushrooms, onions, potatoes, parsnips, and shallots.**

To give you an example, These are also so protective, tremendous anti cancer properties, as do all of these things have. So, what does cancer come from? **Cancer comes from oxidative stress, basically. Cancer comes from an overabundance of oxidative stress that causes damage to our cells.** So, it is so important to make sure that you are getting a different variety of these foods in your diet.

**The other thing that is important to remember is our bodies make antioxidants.** It's, it would be like, if we're talking about inflammation and creating this slow sort of burning fire in your body, because that's what inflammation is like creates this heat, right? How do you want to put out a fire?

Don't you want to put it out with the best fire hose that you can? Well, our bodies. Make its own antioxidants like ascorbic acid is a really powerful antioxidant. Glutathione is a really powerful one.

There's something called catalase and superoxide dismutase. Like these are the antioxidants that really are that fire hose have that fire hose capability to squash those free radicals.

**And so, how do we support our body's ability to make these? We eat foods. There are foods that trigger our body to make these antioxidants. And sure, you can get them in a supplement, but supplements are never as good as food. You cannot supplement away a poor diet. So, because there's other compounds in food that talk to our cells.**

I always say, A good example is if you eat a carrot, your body knows what to do with all those vitamins and minerals and compounds in them that we haven't even identified yet that, that do, that have benefit for our system. But yet, if you were to take a pill of vitamin A, You swallow the pill and your body's like, wait a minute.

Where is the rest of my carrot? Right? Things in food work synergistically. Things in real food work synergistically in ways we have yet to even discover. So we've discovered these things called bioactives and **bioactives are not vitamins. They're not minerals. They're not even antioxidants. They are compounds and foods that we know trigger the body's ability to make those antioxidants.**

**Wow. Imagine that. So, so what are some really, really potent bioactives? Quercetin is a bioactive. We can find quercetin in things like apples and capers in asparagus, Jerusalem artichoke,** and we have a host of others to give you some lists of those. We can add those in the show notes.

**So course it is one very potent bioactive sulforaphane. Sulforaphane comes from your cruciferous vegetables, broccoli, broccoli, sprouts cabbage, cauliflower, those kinds of foods and curcumin. Curcumin comes from turmeric,** right? The turmeric root. So these are really, really potent chemicals that help to fight Free radicals help fight oxidative stress and help prevent inflammation.

So we hear all the time about turmeric. Oh, it's anti inflammatory, it's anti cancer. Because turmeric goes and scavenges and eats up, if you will, those free radicals that want to damage the cell. That is the mechanism of action in the best way that I can explain it. And so when we are Looking at consuming enough antioxidants, we really have to look at not only the different colors and the varieties, but how much we're eating and the source of those things.

And so what we know is. **The deeper the color, the darker the color, the more benefit it's going to have. So for example, iceberg lettuce has very few powerful antioxidants, whereas a red leaf lettuce or a green leaf lettuce, for example, have much more abundant amount of antioxidants.** So the quality of what you're eating is important.

**And then we can get into the nuances cooked or uncooked.** So for example, we know cooked tomatoes have more lycopene in them, more available lycopene. Then raw tomatoes. And we talked about that sulforaphane. Well, sulforaphane has to be activated by an enzyme called merosinase. Okay. And how does that get activated?

Well, by chewing. This is why eating food is so important because you can take the broccoli in a pill. And if you don't have broccoli sprouts, and if you don't have that active enzyme, then guess



what? You're not getting much benefit from that pill. So eating your cruciferous vegetables, chewing them, is what is going to activate it.

And so while we say, well, what about cooking and we're not cooking, this is where again, getting a little bit of raw, getting a little bit of cooked vegetables is going to have benefit because some have benefits in one way, some have benefits in the other. So sulforaphane, for example, if you're going to, you want some raw broccoli and you want to get the benefits of that sulforaphane, chop it, chop your broccoli, let it sit for 10 to 15 minutes and it will activate all of those good sulforaphane molecules.

And so these are the tips and these are the things that we talk about when we work with people in really understanding the nuances of how do we support your antioxidant levels, right?

**Because My genetic ability to protect myself from these free radicals, right? My susceptibility to oxidative stress is going to be different than yours.**

**And this is how we do this personalized nutritional medicine. We really look at your DNA.**

Where's your susceptibility to make glutathione? Like, can you make glutathione? There are certain genetic missteps in our bodies that can prevent our bodies from actually Making glutathione, how do we help support that?

**And the only way we know that is A, if we're doing your DNA and B, if we're validating that. So we can make general recommendations. And of course, consuming these antioxidants in robust quantities is going to be super, super important. But if you don't know where you sit with that, how do you know how to support your levels?**

And this is the beef I always have when people say, well, I'm taking a multivitamin. Great. I love that. But the fact is, is if your multivitamin is only giving you 15 milligrams of thiamine, right, a vitamin that's tremendously important then it's a B vitamin. How, if your, if your multi has 15 milligrams, but we do the testing and it shows that your body actually needs 50 because you're deficient.

Well, that multivitamin is missing the mark by, by a good number. **So it's about if you're going to supplement, don't you want to supplement the right way and. First and foremost, let's talk about how we get that nutrition into you through food.** Because like I said, remember the carrot. You can take all the vitamins you want, but food gives our body information.

There is so much power in what food can provide more than any supplement. And this is why... Making your own food, preparing your own food, knowing what is going into your body is crucial because all of that processed food that we're eating is not providing information, right? The more processed a food is, the less vitamins it has, the less nutrients it has, the less fiber it has and all of this, then the less it's talking to our cells and our cells need that protection.

Like I said, Your, your cells can't protect themselves unless they have these nutrients to do so these antioxidants and these minerals, all these other things that that work together to protect us. So, really important information. Again, knowing your own makeup, knowing where you sit with this is the beauty of, of the work that we do, but without even doing that, **if you take a look at what is your diet like right now, are you consuming even four cups? Of fruits and vegetables a day**, different colors a day, a variety during the week that allows you to get this array of nutrients. That is what you need to think about first and foremost. And the other thing

that is important to know is the longer these foods sit out whether you cook them or if you're not getting them as fresh, The antioxidant capacity gets reduced pretty quickly when foods are either cooked or left out.

**So this is getting fresh and as fresh as you possibly can is going to be certainly your best option. I will tell you frozen vegetables, frozen fruit, happen to have a good source of nutrients because they are frozen. right when they are ripe. And so that's usually the best bet there, but fresh is always best, frozen, never eat canned foods, please.**

There's definitely, the nutritional value is like almost defunct in, in canned and processed vegetables. So, Think about that when you are putting your plate together, when you are thinking about wow, what do I want to eat during the week, how do I want to nourish myself, what are the foods that I can't commit to putting in when I make a salad, it's not just putting in the same old like lettuce, tomato, cucumbers, okay, those are great, but you are not going to get enough Antioxidants.

You're not going to get enough fiber. You're not going to get enough of the nutrients if you do those same things day in, day out, day in, day out. And how do you, at the end of the day, protect your cells in the best way possible? And most robust way. And that is how we beat up those free radicals. That is how we prevent our body from oxidative stress and inflammation.

And if you want to know more about that, please reach out to me. And if you want to know more in the podcasts about that, please let me know because I do these topics come from what you guys share with me. And I love, I love that. And I love that you want to know about what's going on inside your body.

And again, try and bring the science to you in a way that is easy for you to understand because it is important that we know how to take off, how to take care of our bodies. Again, it's, it is our responsibility. And the more we know, the more we can do and the healthier we can be, and that's going to be truly important.

So. With that, this is your Rebel Nutritionist signing off. Make it a great day, everybody.