



## EVERYDAY IMMUNE RESILIENCE

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Okay. Hi everyone. Thank you for joining us in the live session. Today I'm going to talk about and take questions for inflammation and the role inflammation plays with the immune health, immune resilience and so forth. For those of you guys that are new to my books or the webpage we have, it's called Dr. K News. D-R-K news, N-E-W-S, and I have articles on there. I also put together an Immune Resilience program and in the Immune Resilience program we have, it's a free program. You can go online to Dr. K News and it goes into some of the key things that are important for you to do to support your immune resilience.

So some of these things... Let's make sure the videos are working. Hi. Hi Dana. Great, thank you for joining. So anyways, in this Immune Resilience program, we're going to go into lots of different things related to how lifestyle and different factors like sleep, exercise, hydration, really impact the immune system. It's really not about nutritional supplements, but just dietary and lifestyle mechanisms that can really make an impact on your overall immunity.

So thanks for everyone that's joining. Hello Victoria. Hello Jane and Gabby, thank you for being here. So let me talk to you guys just as some general concepts about inflammation. So one of the things that we do know is that everyone has some degree of inflammation that they're dealing with. And when you're looking at the inflammatory cascade, people that have lots of inflammation tend to have lots of fatigue, depression, and pain, and they just still feel like moving and they don't feel like actually engaging in life.

So one of the things that inflammation will do is that inflammation will uncouple a cellular mechanism that's called mitochondrial oxidative phosphorylation. And this is a mechanism in which your cells make energy, they make ATP. So one of the things that first happens when people start to have lots of inflammation in body is just the energy of moving their body, moving their limbs, doing anything, is just compromised. So they really don't want to do anything. The other key thing that they notice is their joints may hurt, their body may hurt all the time. If they go out and exercise, it takes forever to recover. They may actually feel much worse after they exercise. They can't figure how to do it. So those are all signs of significant inflammation throughout the body.

Now, when inflammation hits the brain, inflammation in the brain uncouples... or not uncouples but slows down nerve conduction, just the speed of how nerves conduct. So what happens when people get inflammation in brain is they get this decreased speed of brain firing. So they get what's called brain fog, they just can't find their words, they have a hard time. And they have some issues with depression, they can't focus, they can't think, they can't concentrate. So these are all some of the things that are there.

Okay... So hey Peter. Hey Hal. Hey everyone, thank you for joining. Again I'm just taking a look at some of the comments here. So thank you so much for that. And we've got a few things going on, but let me just talk to you about some more principles of inflammation as people join on.

When you're looking at the inflammatory cascade, your inflammatory cascade is going to be triggered by two things. One of the things about the inflammatory cascade is how much inflammatory triggers do you have. The inverse is how much antioxidant or anti-inflammatory systems you've developed.

So for example, if you have lots of inflammatory triggers: So let's say you're sensitive to different food proteins. For example, the most common ones would be milk, milk protein for most people, albumin egg protein, gluten and soy. Those are the most common. And lectins, lectins would be like nightshades or foods with seeds in them; eggplant, tomato. Those are the most common foods people have an inflammatory reaction to you when you just look at the population entirely.

So when people have a chronic inflammatory cascade, if they're constantly eating those foods, let's say they don't know that they react to eggplant and tomato and they have that susceptibility for that inflammatory response and they keep eating it, then there's a higher degree of inflammation there.

Now, if their anti-inflammatory system is really healthy, then it can calm it down and they may not notice much. But for some people what happens is the anti-inflammatory system wears out over time and then the inflammatory cascade becomes dominant and that's when they get depression, brain fog, muscles hurt, joints hurt, everything hurts. They just basically feel old and worn out and tired.

Now, when that inflammatory cascade hits, one of the things that happens is you get a depletion of your anti-inflammatory reserves if you're constantly having an inflammatory response. Now the inflammatory response can be from other things besides foods. You could have an inflammatory disease — you could have inflammatory bowel disease, or you can have an autoimmune disease and there's just a dysregulation in the immune system that's causing inflammation.

You could have pollutants; air pollution triggers inflammatory responses to people. You could have various types of chemical exposures. So all these different types of triggers can create an inflammatory cascade.

We may have a susceptibility to one type of trigger versus other based on our genes. For example, if you have a celiac disease gene, then gluten's going to be a major source of inflammation. If you have some up-regulation of different — what they call gene types — HLA-DQ gene types. It may not necessarily be genes. It might not actually be gluten, but it could be other types of underlying conditions that can really create an inflammatory cascade for you. So everyone has some uniqueness of their inflammatory cascade and what types of triggers and what types of responses that they can get.

And now when this inflammatory cascade gets up-regulated, your antioxidant system has to calm this down. And your antioxidant system is really based on your body's ability to make antioxidants. So eating foods very high in sulfur and flavonoids. Basically colorful food is one of the key things and sulfur smelling foods like garlic, onions. And then very high flavonoid foods like blueberries, pomegranate, cherries, raspberries, blueberries, these things all create these flavonoids and precursors for us to make our antioxidant systems work efficiently.

And what's interesting is when you look at the Coronavirus, lots of shelves are empty for unhealthy food, but the produce is usually pretty full. The frozen berries and fruits in the freezer section are all full, but all the bad stuff is taken away. So I don't think people are really getting all their flavonoids. But high degrees of flavonoids and high degrees of sulfur-containing foods really builds your antioxidant system up.

And then other things that have been shown to build the antioxidant system up are exercise. So when you exercise and you put a stress on your body for performing, you actually get an initial inflammatory cascade while you're exercising, but then you get this huge antioxidant response after the exercise and even during the exercise that lasts for many, many hours, and then you start to build your antioxidant reserves.

So for the most part, when you're looking at the inflammatory response — the inflammatory response again is a combination of how many triggers do you have that are inflammatory, and then how is your body's anti-inflammatory system responding to it? And if you have an inefficient antioxidant system and your very pro-inflammatory system, then you're going to be constantly inflamed.

And if you're constantly inflamed, you're going to have chronic pain, chronic inflammation, joint pain, brain fog, just going to feel like you can't function and you feel old.

Those are all the things that are involved with the chronic inflammation. Now this chronic inflammatory cascade is going to really determine many things. The more inflamed you are for longer periods of your life span, the faster your brain neurodegenerate, the greater destruction you have to blood vessels, all the negative aspects come down.

Now, how does all that relate to immune function and immune resilience? And one of the key things about that is that the anti-inflammatory system, your antioxidant system isn't only there for you to block inflammation that can make you body hurt and not hurt and so forth. Your antioxidant system is also a key part of your immune response. So when you have a pathogen like a virus or bacteria or some kind of infection that comes into your body, your immune system has what are called two different responses. There's a TH1 response, T helper one response and a TH2 response. And a T helper one response is your immune system's response to producing immune cells and natural killer cells and different types of soldiers of the immune system to destroy the pathogen. And that all has to take place. And then your TH2 response is where B cells come in, make antibodies to find the pathogen better.

But it's also where your antioxidant systems comes in and quenches and calms down the inflammatory destruction so it doesn't get out of hand.

So one of the things that we know that's happening with people for example, that are not surviving with the Coronavirus is that they have preexisting inflammatory conditions and then they get into what's called a cytokine storm where their inflammatory system goes crazy, they can't calm it down and then they get their lung barrier destroyed significantly and then leads into all the complications.

So one of the key things is that when you're looking at your immune system, your antioxidant system, your anti-inflammatory system is a key part in making sure your immune system is in check, that it doesn't go into what's called the inflammatory cytokine storm or that cascade.

So one of the key things is at this point I think a lot of people are just focused in on with his pandemic is how do I keep my immune system healthy? How do I keep my immune system functioning best I can? So once again if you go to drknews.com we have the free program to help everyone that's worried about this called the Everyday Immune Resilience Program. It goes into those details about that.

But then another thing to add to that and talk about today is how important your overall inflammation is throughout the day. So if you're listening to this, just take a look back and just ask yourself, how do you feel? Do you feel totally inflamed? Does your body hurt? Is it hard for you to work out? Do you not recover after? Do you have depression? Do you have brain fog? Those are all things that can point to an inflammatory cascade.

With all the social isolations that are happening right now and people stuck at home and being depressed because they're not interacting with their friends and they're not in social groups — those are such necessary parts of just human function. Sometimes people are just eating really poorly and that eating really poorly is then causing inflammation and then they get tired and fatigued because

inflammation shuts down their energy producing cells and then they start to get even more depression. And then as they create this inflammatory cascade.

What they may not realize is that their immune resilience is now being compromised. So if you don't have a proper anti-inflammatory system, then what happens if you have an infection or dealing with an immune response, you have to be able to calm that system down. And if you're trying to calm that system down, your antioxidant reserves are critical for your ability to do that.

So I hope that helps to give you some ideas of what's important. And if you're trying to improve your immune resilience, you can try to look at your triggers, whether it's food, chemicals, or other factors in your life. Maybe you're a smoker, who knows what. And then look at how many antioxidants you're consuming. Foods really high in flavonoids or antioxidants or you can eat super foods then you can really support yourself.

Let me take some questions. I know a lot of you've asked some questions here so let me do my best. I will admit I'm still having a very hard time reading questions and answering so I'll do my best. The only things that I really can't answer is personalized medical questions that are very specific. Just can't get enough information from a Facebook question to answer those. I can just answer general questions here. Okay.

First one here is from Shamshed, "**I've just started taking 1.5 milligrams of low dose naltrexone to help with lifelong constipation that has been very difficult to resolve. Should I start to come off it as soon as I start to get better or stay on it for a few months once they've improved. Does a colon become lazy from medications like this? Also what is the best way to wean off the medication?**" Well, these medication questions and personal healthcare questions, I really can't answer for you because I really don't know enough about your medical history or any things related to that. You really should talk to your prescribing physician about that.

Now, one of the things I will talk about is lifelong constipation. One of the things that people don't understand is that you can end up with degeneration of the gut nervous system. There's a part of the nervous system called enteric nervous system and the enteric nervous system is the nervous system for the gastrointestinal tract and just as the brain degenerates, the enteric nervous system can degenerate. Now things that can cause your intestinal nervous system to degenerate is just chronic inflammation, going back to that topic. So if someone has lifelong celiac disease and it took them 20 years to get diagnosed, they could've had significant inflammation causing degeneration of their nerve plexus in their gut. And the nerve plexus in the gut contracts smooth muscles of the colon so you can have your bowel movements to have a proper timing. So when people get chronic inflammation in their gut from chronic inflammatory diseases of the gut, there's a point where their intestinal tract actually degenerates and when that happens, they just have constant motility and constipation issues. So that's one thing to be thought of.

Then those things lead into something called small intestinal bacterial overgrowth because as they lose the ability to contract their smooth muscles of the gut to move food along, they also lose the ability to close the valve between the large and small intestine and then bacteria from the large intestine moves into the small intestine and they get constant bloating and distension and so forth.

So people that have chronic inflammatory bowel diseases like Crohn's, ulcerative colitis or celiac disease, or people that just have a significant amount of inflammation that's led into brain neurodegeneration, typically end up with degeneration of their gut. And in those cases there is really [inaudible 00:14:56]

permanency and you have to use things like stool softeners like magnesium and even coffee enemas and different types of things to really improve that motility. So that's one thing to be aware of.

So back to the topic of inflammation, if you have chronic intestinal inflammation, then you do have this increased risk to actually degenerate the gut. Most people think, "Oh well I'll focus on this later." Before you know it, 10 years later, you're still eating gluten. You still have a family history of gluten — let's say celiac disease — and now you're having some permanent intestinal degeneration. So there's some things to think about.

Okay. Moving on to next question here. Hello Jacqueline. Hello Maria. Maria from New Zealand. Hello Jennifer. Hello Linda. I got people from Germany and Sweden and New Zealand. It's fantastic. Okay, Tata, **I'm immune-compromised. Are supplements okay?** I take vitamin C, zinc, magnesium, probiotics, and vitamin D. So typically things like vitamin C, zinc, magnesium, probiotics and vitamin D are very baseline nutrients. They don't seem to cause any significant side effects even with autoimmune diseases and really chronic inflammatory immune dysregulation conditions so it's pretty safe to take for the majority of people. There could be some weird gene uniqueness with a certain individual, but for the most part, vitamin C, zinc, magnesium, are all great things to just consume on a daily routine.

Okay, let's go into here. Micha from Germany. Thank you for joining us. Diana, **"Dr. K, my 13 year old boy who is a competitive gymnast for eight years now has been complaining about right shoulder back area. Doctor says nothing structural and inflammation is going on. He also drinks a lot of milk. Can milk be causing inflammation or is this growing pains or just overusing muscles?"**

Listen, if you have your boy or anyone with a chronic inflammatory condition and you want to start with diet, milk is definitely on top of the list. And milk has a protein in there called casein. So let me explain some positives from a milk. There's a sugar portion of milk, which is called lactose and then there's a protein portion of milk, which is casein. And some people are lactose intolerant so when they can't digest the sugar portion of milk, they get really bloated and distended and they have to be lactose free. And that's completely different than the inflammatory reaction from milk, which is generating not against lactose but against the casein.

So casein is a protein, it's very, very inflammatory. And there was a study that was published where they looked at different types of milk, cow's milk, goat milk, sheep milk, and then almond milk and soy milk and coconut milk and all these different milks. And cow's milk was without question the most inflammatory milk, the least reactive milk with people was actually human milk but who drinks human milk. And then some of the plant based milks were much less inflammatory. So unrelated to an allergy, casein is a protein that tends to really promote inflammation to some degree for most people.

So if you're going to try to determine if milk is an issue, one of the best ways to do it is just to do an elimination provocation diet. So just eliminate the food for two to three weeks and then you see if the symptoms go away and then you reintroduced the food and see if there's any adverse reactions.

So many, many, many kids have sensitivities to casein and casein is also found in goats milk and sheep milk. So sometimes people think, "Well, I'll just use other types of milks." But that's not always the case. Even though they may be less inflammatory than cow's milk, that you can still have some significant inflammatory reactions. So be aware of that. The least inflammatory animal milk was found to be camel milk, but cow's milk is definitely the most inflammatory version of milk. It has the highest amount of casein in there as well.

Okay. I hope that answered your question, Diana. So definitely consider going on a milk free diet for two to three weeks as an elimination and then trying milk back in the diet with your boy and see if his pain and symptoms come back.

Okay. Question from Paula. Wait, Paula, thank you for joining. Judy, thank you for joining. Okay. Julia, thank you. Rose, "Dr. Kharrazian, please tell me how I can lose... Oops, sorry. This is [inaudible 00:19:38]. Wish I could... Hold on one second. Oh, here we go. Find Rose's question again. Sorry guys. I'm still trying to read through the questions as they come in. [Editor's note: Here the question feed was moving so fast he could not see it any more].

I think one of the questions Rose was asking was **how do you lose weight when you have Hashimoto's?** And there is no simple answer that. One of the key things to understand about Hashimoto's and hypothyroidism is this is an inflammatory response and there's a field of immunology called immunometabolism and they found that inflammation actually shuts down the pathways to burn body fat. If a person has an autoimmune disease like Hashimoto's, then the inflammatory cascade from Hashimoto's will do a few things that really get in the way of people having efficient metabolism to lose body weight if that's their goal.

The inflammatory response has been shown to do several things directly to the thyroid. One of the things that the inflammatory response does to the thyroid actually to the physiology of thyroid function, is that inflammation disrupts the thyroid receptor sites. So normally your thyroid gland produces thyroid hormones, or if you're taking thyroid replacement, those thyroid hormones bind to receptors and they cause a response, they call it a proteomic response that changes the metabolic rate and your metabolism speeds up. And then if your metabolism speeds up, you have more calories to burn.

In Hashimoto's or in just systemic inflammation, what happens is the inflammatory response dysregulates these thyroid receptors, so when thyroid hormones actually bind to the thyroid receptor to change the metabolic rate, they don't work very efficiently. So one of the things that several papers have published is that chronic inflammation dysregulates thyroid receptors, which then changes the metabolic activity.

So the key thing when you're looking at Hashimoto's, one of the things that really gets in the way for people to have a recovery is to get that inflammatory cascade down. Now with Hashimoto's, it's a complex web. There's lots of different things that are causing it. I'm personally teaching a 12 hour advanced course designed for healthcare professionals on Hashimoto's on May 16 and 17 through live streaming through the Kharrazian Institute [[www.kharrazianinstitute.com](http://www.kharrazianinstitute.com)], and I'm going to go into all the research and all the different mechanisms of Hashimoto's. It's really very fascinating of how all of these complex systems work together.

But one of the key things with chronic inflammation and Hashimoto's is it uncouples the receptors. It also slows down the conversion of T4 to T3. That happens to some people that have Hashimoto's and then the inflammatory cascade shuts down an enzyme called hormone sensitive lipase, which is used to burn body fat. So when people have Hashimoto's and they're really frustrated, maybe their goal is weight loss, with their Hashimoto's, it's going to be very hard to do that until you can get the systemic inflammation down. Now what gets this systemic inflammation down is how well you can modulate your immune system and really improving your immune tolerance. I created an online course called the Everyday Immune Tolerance Program where we go into depth of how to calm down the autoimmune response through diet nutrition lifestyle. You can check that out at [drknews.com](http://drknews.com) and look into those

strategies. But at the end of the day the goal has to be to calm down the inflammatory cascade with whatever mechanisms are involved.

Next question, Michael [inaudible 00:23:16], **Does EFA help with information?**

Yes, essential fatty acids are critical for dampening inflammation, so let me talk about that as well. So when we look at inflammation, inflammation isn't just caused by foods you're sensitive to from a dietary perspective. Another cause of inflammation is what type of fats that you have in your diet. And one of the things that we know is you have to have certain fats in your system that are called essentially fatty acids in order to calm down the inflammatory response. The word essential comes in because your body can't make these fatty acids, you have to get it from your diet. And essential fatty acids are things like fish oils, they're things like oils you get from flax seed, flax seed oil, evening primrose oil, olive oil. These things will help you make these anti-inflammatory prostaglandins that really calm down your inflammatory cascade.

The things that really promote the pro-inflammatory prostaglandins in your body to cause inflammation from a dietary perspective are shellfish, red meat, fried foods, and anything that uses partially hydrogenated fats. So any food you eat that's in a bag, like chips, or in a box, cookies, processed sweets, anything like that, if they have partially hydrogenated fats that will initially trigger an inflammatory cascade.

So another key mechanism when we're looking at diet besides food sensitivities that causes chronic inflammation is your prostaglandin-ratio balance. And in the clinical setting we can take a patient's blood, send it to a lab, and we can measure the prostaglandins and see if they make more of the twos and fours which are more inflammatory, or more of the one and three prostaglandins which are more anti-inflammatory and kind of make so adjustments to their diets and make a big difference.

But if you don't have any complex laboratory testing the key thing is things like olive oil, avocados, healthy flax seed oil, fish oils, they'll help calm down, they'll help you get more anti-inflammatory prostaglandins to calm down pro-inflammatory prostaglandins that you may get from processed foods or partially hydrogenated fats and so forth.

So in addition to really improving your antioxidant systems by eating really super foods like pomegranate and blueberries and raspberries and acai and things like that you could also increase your intake of anti-inflammatory fats which would be like olive oil, flax seed, fish oil to really calm down the inflammatory mechanism.

Question, Jennifer, **How do we learn the information you are teaching medical professionals in May? Sorry, I forgot the name of the conference.**

Oh, Jennifer, the name of the conferences is — well, the name of the educational website is the Kharrazian Institute. Really it's my last name. It's very long, [kharrazianinstitute.com](http://kharrazianinstitute.com). And I have lots of different courses there. Some that we've done in the past through “on demand” and then we have — when we first teach a course we do it live stream and then it's on demand. But we do have one coming up on Hashimoto's that's great.

Okay, question, Cheryl O'Brien. **What is recommended for constipation?**

So constipation can be caused by different things. Constipation can be caused by, for example, they've got the nervous system degenerating we talked about, that'll cause chronic constipation that people just

don't recover from. And one of the key findings with that is nothing's helped and when they take fiber they get worse. Those are all signs of a neurodegenerated gut.

Constipation can happen from lack of, let's say thyroid hormones. Thyroid hormones impact the motility of the gut.

Constipation can happen because you're not getting enough water, which is actually the most common cause of constipation is lack of water and a sedentary lifestyle. So you need to have water to change your bowel concentration and you need have to have movement. And when you exercise and move what actually happens is you get increased activation of your vagus and then as that vagus system is activated in your brain stem, it then coordinates your gut function, and you start to have improved motility.

So I would definitely ... Sometimes the easiest thing with constipation is just the more water and exercise, and sometimes it's not just more water, it's just that the person's drinking too much coffee and too much tea and having a diuretic effect and not counteracting with enough hydration. Those are a major cause of constipation.

Pathogens in the gut can create change to the environment — a cascade to cause different types of constipation. When you're looking at things like different bacteria and the gut if you have dysbiosis and negative bacteria then you can release things like methane, and methane gas will slow down the motility of the gut.

So sometimes it's the bacteria in the gut that are causing chronic constipation, they're dysregulated, sometimes you don't have enough hormones to your gut to make the smooth muscles contract like in hypothyroidism, sometimes it's the nervous system that is an issue, that's causing the smooth muscles to not contract.

So it's a combination of those various things. Sometimes you just do not have enough digestive enzymes to help you. You have to have, for example, when you eat food, your stomach has to release hydrochloric acid and your bowel has to get acidic enough to then trigger the gallbladder to contract and then really just turn that cascade of events that are taking place from chewing all the way down to producing bowel movements. So it's not one thing. Chronic constipation can be caused from all those various mechanisms.

Next question here from Donna. **If your diet is clean and you're still inflamed what should you look at?**

If your diet is clean and you're still inflamed then you should definitely look at environmental triggers. Environmental triggers can be pollutants in the air, it can be just your antioxidant reserves. Sometimes again, like I was trying to explain with the first part of this video was that when you look at inflammation there's triggers versus your antioxidant reserve systems. You just may need to really boost up your antioxidant reserve systems.

Now you can do that with diet, but you can also just start taking antioxidants. Especially you can take things like pomegranate extract, acai extract, superfood extracts. Those can really help you increase your antioxidant reserves pretty quickly. You can really increase your good fats and take things like fish oil and olive oil that can really increase your anti-inflammatory cascade. So sometimes it's not that your diet is too inflamed, it's just that your body has not enough reserves or your prostaglandins are shifted in an abnormal way.

You should also be aware that some people have sensitivities, very extreme sensitivities to mold and they have very high mold antibodies when you check their blood and they have this immune reactivity to mold. Sometimes a damp building will cause this intense rhythm. So it doesn't always have to be food, it can definitely be environment.

There are some people that have chronic pathogens. Like you'll check a person and you do a routine blood test and you see their white blood cells are really low and their lymphocytes are high and they tell you, oh, that's always been that way, no one knows why, then you find out that they have a chronic virus and you treat their immune system and their inflammation goes away.

So inflammation can be caused by foods, by chemicals, by pollutants, and it can be caused by infections. So at the end of the day you just want to go down that cascade. And at the same time you want to try to look at antioxidants in your diet and foods that have anti-inflammatory effects and the combination of those are really the big picture.

Okay, **Can you comment on bloating from food and slow transit times?**

Well again, slow transit time is related to the constipation issue, I think those are all the same concepts. And then if you have a hard time moving your food then your foods are normally — your bacteria is effectively fermenting your food and that can really cause bloating. So if your transit time is slow you may experience that fermentation that's happening slowly because of lack of movement as bloating.

Let's take a look at a question here. **Dr. K, please let us know where to look on your site, testing required to figure out why bile is low, gallbladder is not flowing. Sometimes it's not distributing fats as well. Been on issue after out from non celiac gluten sensitivity. Thanks for your attention to those over 40 issues.**

So gallbladder bile is another key issue. Let me talk about that really quickly to you because it does impact your intestinal motility and gut function and so forth as well. So when people get older, especially it happens in women, but men or women when they get older, usually around age 40 and especially if they have insulin issues and they're pre diabetic and overweight, they tend to have a tendency to start to develop gallstones or what's called gallbladder sludge. And when this happens the first thing they'll notice is they just don't tolerate fats. So when they eat fatty foods they get really bloated, they get really distended. Fatty foods could be fried foods or fatty foods could be fish oil or whatever the source is. Fried foods definitely have a greater effect.

But when people eat like a really fatty meal, like piece of salami, if they get really bloated and distended from that that's a really big clue that the person may be suffering from gallbladder issues. Now the healthcare system doesn't really address gallbladder sludge which you can see with an ultrasound or a gallstone, until there's obstruction.

But prior to the obstruction when the gallbladder's not functioning well people have symptoms. So in those cases you really need to basically go off fats and then you definitely can supplement with things like lipase to help you digest your fats, and people actually use bile salts to dissolve gallbladder sludge and you can find those on health food stores, on Amazon, to help. So those are some things to really help with gallbladder issues. And then you want to basically take bile salts and lipase and avoid fats for a few weeks and then see if your gallbladder can function better after that.

Okay, let's go onto the next question. **I have periodontitis over 10 years, dentists don't know why. After taking care of both parents who passed of Alzheimer's disease I'm experiencing a number of**

**cognitive concerns. I sat for 5 hours in a doctors office to only hear about four drugs that caused many side effects for my mom and dad.**

Well, Cheryl, I'm sorry to hear that. If you have an inflammatory gum disease for over 10 years sometimes you don't really treat the gums, you treat the whole body. And this comes back to the concept of inflammation and antioxidant reserves. So there's a point where you just don't — when you have a chronic inflammatory response in one area, for someone it could be a bad back, a bad hip, it could be inflamed gums, and inflamed gut, sometimes when you're really trying to get a clinical effect you just try to forget localizing anti-inflammatory treatments for the tissue with like a topical gel, some kind of medicine, and you just try to improve the body's anti-inflammatory reserves for whatever that may be.

So that may be a combination of dietary things, we talked about high antioxidant and high antioxidant nutritional protocol, it could be trying to calm down the triggers that you can identify whether it's food proteins or environmental pollutants or chemicals, but a lot of times in my practice when I'm dealing with patients that complain of some kind of chronic inflammatory disease, in your case inflammatory gum disease, sometimes you just forget the condition and just focus on the whole patient and try to improve health.

Now if you're having chronic inflammatory gum disease and you're also having some issues with cognitive decline that is a concern. We know that some of the bacteria that are involved with gum disease are linked to developing Alzheimer's. There's a paper that we published in the journal of Alzheimer's disease, it was myself, Drs. Aristo and Elroy Vojdani, and we looked at 30 pathogens and showed that antibodies from pathogens can promote alpha amyloid plaque in the brain and that paper is available if you're interested in it. If you just go to PubMed or National Library of Medicine, type in my name you'll see a paper come up with beta amyloid plaques and pathogens.

And the key thing is that when you have this inflammatory cascade taking place in your gums some of those same bacteria antibodies are then maybe promoting inflammatory reactions in the brain as well. But in general inflammation anywhere in the body is going to have an impact on everywhere else as well.

Next question from Stephanie. **Is camel milk okay?**

Well, camel milk has less casein, it's less reactive than cows milk, but it just depends on your reaction to casein. For some people it's fine and for some people camel milk is still an inflammatory trigger. But it is lower in casein and is less reactive with people than other types of milks.

Okay, question from David, good to have you on board, David. **Hi Datis, how often do you find checking the lab panel for allergy to lectins in decreasing inflammation?**

David, I find that increasingly valuable. So when you're looking at reactions to lectins — there's been a lot of popularity in lectins recently, especially with chronic autoimmune disease and inflammation because of some popular books and things that have come out. But we've always known that patients that have conditions like rheumatoid arthritis that they really couldn't handle nightshades foods — for example eggplant and tomato being the most commonly eaten nightshades.

The proteins in the seeds are lectins and lectins are significant triggers for immune response. Now there's lectins found in gluten and wheat, actually not gluten but in wheat. When you look at wheat there's a different section of the wheat structure besides gluten which is the protein, there's the sugary,

sticky portion we call wheat germ or glutenin and there's different glutenins in things like peas and different nuts and seeds and sometimes those reactions are very inflammatory.

So we're actually completing a paper right now where we looked at several hundred blood samples of people that have autoimmune disease and reacted to lectins and we find a much, much higher risk and odds of developing autoimmunity if you have reactions to lectins. So we know there's some correlations there.

But here's the thing with lectins, when you look at food sensitivity testing, the way food sensitivity testing works in the lab is you have what's called an Elisa plate, a dish, and it has these wells on it and there's 24 wells and then you stick a protein in each well, and then you incubate it, you clean it, and you have this well with these proteins that are in these wells. You take the patients blood, you put it into the wells and you see if there's a reaction, an antigen antibody reaction. And they use different dyes and the colors change and then you can measure that through an optical density machine and get an idea of how significant that reaction is.

So when you look at food sensitivities sometimes you won't see that the lectins is actually causing it unless you test for wheat germ or glutenin compared to just wheat. A patient may test to wheat but not to wheat germ or glutenin. Or they may test to pea glutenin versus just pea protein.

And when you understand why it's because you look at the lab, if you have a well and all you do is put pea protein in it and then you measure the blood antibodies reacting to it it may not be significant enough to really show an antigen antibody reaction because of lots of other things in the pea structure. But when you just purify the lectin portions of wheat and put it into a well then you can see a significant reaction. So the laboratory testing becomes much, much more sensitive when you actually have that lab measure not only let's say wheat, but wheat germ or glutenin, not only pea but pea glutenin. Not only soy, but soy glutenin. And the only lab that I know that does that is the Cyrex laboratory. And you will find many people that have reactions to lectins when they actually measure the glutenin lectin portion of foods.

Now for those of you that don't have laboratory testing available, just be aware that especially if you have rheumatoid disease like rheumatoid arthritis, that there's a high degree of sensitivity to lectins. Or if any of you guys have ever had a laboratory test done called rheumatoid factor, rheumatoid factor is just agglutination of two antibodies, IGG and IGM together, that's a glutenin response. And people who had this gluten or sticking of proteins together response are typically very sensitive to foods high in lectins, which are basically foods that have seeds in them like tomatoes and eggplant or actual nuts and seeds and so forth. So I hope that answers your question but definitely there are some people that have sensitivities to lectins as the main trigger for their inflammation.

Okay, Charlene. **What are the best supplements to boost immune system along with diet?**

Well, the best supplements to boost your immune system is going to ... I mean if you ask 10 different people you're going to hear 10 different things, so you can have a personal opinion about what supplements are best for supporting the immune system or we can just base it on the literature. And there's so many different parts of stimulating the immune system because it really just depends on what you want to stimulate.

But I think what many people are concerned about right now is what do you do for enhancing upper respiratory infection protection from a nutritional perspective. And if you do a literature search the most profound amount of information you're going to find, or the highest to give evidence in the

literature is echinacea. And it may not be because it's the strongest botanical that helps with upper respiratory immune support, but it's the one that has the most papers published and there's several clinical trials done on echinacea in humans and even meta-analyses where they combine multiple trials together and then look at the composite score of all their data outcome and then determine the effect of the supplement. So echinacea is very inexpensive, it's a very commonly available botanical. It really increases naturally killer cells and T cells and can really boost your immune system.

We don't know if that has any impact, positively or negatively on coronavirus or anything that specific, which no one knows. But it is, as far as evidence goes one of the cheap, one of the most published botanicals for supporting the immune system right now. And that's something to consider if you're just looking at taking some stuff.

There's lots of other things you can do, you can obviously take zinc, vitamin C, vitamin D, vitamin A, and then you can take antioxidants or food concentrate, like acai concentrate or pomegranate concentrate, blueberry extract. Those things all support the anti-inflammatory system.

Okay, let's go into next question here from Lauren. **Greetings from Jamaica. May I ask about scleroderma, the autoimmune condition with the highest mortality? What I'm finding is that specialists in functional medicine do not talk a lot about scleroderma. I'm doing diet, sleep, stress reduction, hydration, exercise. No internal symptoms but my external symptoms advance slowly, incrementally. Is this one of the very difficult ones to manage without conventional meds and skin problems. Seems to be difficult to treat like hair loss, tight face and lips.**

So scleroderma is one of the systemic autoimmune diseases and any time you start going into systemic autoimmune diseases they are definitely more difficult to clinically manage with diet, nutrition, lifestyle. So when you're looking at things like DNA antibodies or ANA antibodies and you have those types of conditions where scleroderma fits into that category, the immune antibody response is against actual DNA and actual cartilage and joint proteins throughout the body.

So where there's a trigger — there's a chronic inflammatory trigger — it's very systemic. Compared to someone who has Hashimoto's where the autoimmune disease is maybe just the thyroid gland or as in rheumatoid arthritis where it's just in their joint cartilage. But when you start getting to scleroderma you're starting to get what are called DNA or ANA antibodies and those autoimmune diseases are much, much more difficult to manage. So you still got to do what you got to do. You still have to look for all the different dietary, lifestyle triggers to make a difference but to answer your question, yes, systemic autoimmune diseases or autoimmune diseases that have anti nuclear DNA antibodies are much, much more difficult to clinically manage.

Okay, next question. I've done your program with FMD who used your program with me after being on it for nine months. I'm not sure what FMD is ... I don't really understand your question so I'm going to skip, I'm sorry.

Okay, Marina. **Do all food sensitivities translate into symptoms which provides clues through the process of elimination or is testing a better option in these cases?**

Okay, Marina, let me answer your question about food sensitivities. So not all food sensitivities translate into noticeable symptoms. So the first thing to understand about a response to a food protein is there's different antibody reactions to the food protein. Now, what's called allergy is the most severe and the quickest response to a food protein. And that's measured by an IgE, immunoglobulin E, response. And for those that are doing testing they would do like an IgE panel to foods and then those are considered

allergies. And they have an immediate mast cell histamine response and they trigger an inflammatory cascade and that's the typical food allergy.

Now when you look at food sensitivity, food sensitivities are generated by different antibodies. IgG, immunoglobulin G, IgM, IgA, and those reactions are slow and delayed. Now lots of people have food sensitivities but they don't necessarily have symptoms and some people do, so I'll give you an example. If we did a food sensitivity profile on let's say a group of patients, they will many times notice like some people have no sensitivities and some people have a few and some people they're sensitive to mostly everything you test. But they don't always have reactions when they eat those foods.

Now these non-allergy food sensitivities with IgG, IgM and IgA, they take several days or hours to show a reaction and sometimes there's a cumulative effect where you eat one and then two and three and then you notice the response versus we just had one of the foods by itself. Your antioxidant anti-inflammatory system can quench it, but that's the same concept we're talking about.

If you get a trigger that causes inflammation, like say food sensitivity, how strong your entire antioxidant reserves are at that time can determine if you have symptoms or not. Some food reactions on the lab tests — let's say you have IgM to shrimp and then you have IgM to let's say peanut, you may have a greater response with one food than the another even though the labs both have IgM. One could be noticeable to the patient, one may not.

So there's different variations of things besides the antibody test. Now, some people like to do food sensitivity testing because it helps them identify foods they can't pick up with their symptoms. So it's not uncommon for a person to be chronically inflamed, they do a food sensitivity test. They find let's say six foods that they react to. They stop eating these foods and they noticed the inflammation goes down. So that's one example.

The other example is you have a person who let's say tests food sensitivities test with the a hundred foods panel and of the hundred foods they show up with 50. That's called loss of immune tolerance. And in those cases, when they react to almost every food that's being tested, or let's say more than a third of the foods that have been tested, simply just removing these foods is not going to work because that's a more progressed immune dysfunction.

And what happens with people that have this pattern where they show up to — most of the foods they test are positive, that's basically called loss of immune tolerance. If they avoid these foods and eat new foods, then the new foods they test will all start to show up on a followup test.

So if you have a patient that shows up on a panel of a hundred foods with let's say 35 foods. We limit all 35 foods and repeat the test, they're not going to show antibodies to the foods they've eliminated because now they're not eating them, but now they're showing antibodies to all the new foods they added in. So that's a different scenario.

I put together my program 3D Immune Tolerance Program where we talk about how to modulate that.

And in those cases where we see that loss of immune tolerance, if we have let's say 35 foods that show up positive, what we'll have them do is look at the 35 foods that they're testing antibodies for, and we go, "Which one of these do you notice cause symptoms?" And they go, "Well, I definitely know for example, cashew causes symptoms" or whatever. Then they remove that food, then with the other 34 that may not have so many symptoms, and then we work on their immune tolerance and we'll repeat

the test. And if they go from 35 foods now to six that they're reacting to without changing their diet, then we know we've supported their immune tolerance.

So when we're trying to treat immune tolerance, we don't always eliminate all the foods. We may just improve their tolerance and then use that baseline food sensitivity test as a way to determine if their reactions to food proteins are getting better, but not having to change those foods. So that's sometimes the different things to think about when you're looking at food sensitivities and inflammation.

Okay. Let me go into the next question here from Dana. **I know I have multiple food intolerances including histamines, oxalates and FODMAPs. I am trying to diversify my diet and improve my oral tolerance with the Microbiome Mashup.** This is something we talked about in our Oral Tolerance Program. **Should the food groups be included in the mashup in small amounts, through a small add or should they be avoided? I know they caused issues of inflammation.** So Dana, if you're doing the veggie mash up and you know you have reactions to some the foods vegetables, you should not include them in a veggie mashup. You should try to diversify with other foods as much as possible.

Now, if you're reacting to every single vegetable, then you might have to actually include it. But if it's just a few, it'd be best not to. Some people will react to every vegetable and they can't do a mashup and if that's the case, you still need the diversity of the plant fibers to diversify the gut. And in the long run it should help you develop your tolerance. I hope you understand the concept there but that's how it works. Okay.

Question from Nan. **Can you comment on how a stressful relationship with a partner affects brain health?** Yeah, you definitely want to be with healthy partner to improve your brain health. And when they look at studies on happiness and studies on wellbeing and the physiology of healthy aging, one of the key factors they find is that social relationships have a bigger factor than anything else. And the feeling of having support and feeling that you have someone to share things with make all the difference in long term health.

So whether it's brain health or any kind of health, if you're an involved with a relationship that is unhealthy and you just feel terrible being in that relationship, it's definitely going to have this serious impact on your physiology. So somethings you really think about. And I can tell you working with chronic patients and patients suffering from chronic diseases, it really the most overlooked area and you can see people focusing all their time and their food and diet and all that but they really don't pay attention to their relationships and the environment. And that really sometimes is the game changer to change their health around. So something to just think about.

Okay, next question. **What is the ideal ratio for EPA, DHA fish oils for someone with high lack of proteases.** So lack of proteases is a marker for cardiovascular disease, it's like bad cholesterol in a sense and there is no ideal ratio. People make them up. EPA, DHA ratios, people randomly make them up. So I would say if you take a look at most fish oils, there's EPA, DHA content and they both have an anti-inflammatory content.

So let me explain what the question is. When you look at fish oils, fish oils have two types of anti-inflammatory compounds. One is called EPA and one is called DHA. And then there's theories about if you have a higher ratio of one or the other, that you can get a better anti-inflammatory effect.

And that's not necessarily true. There's been some studies that show, for example, the DHA portion of fish oils, have greater effect on brain synaptic activity and marrow cell membranes of the brain and not

as much as the EPA. And the EPA has a better systemic anti-inflammatory response than DHA. But both EPA and DHA components of fish oils have an effect.

And then when you look at ratios there is really no established ratio of how much EPA versus DHA shows that someone should have. For me in a clinical setting when I'm trying to really support brain synaptic activity versus inflammation, I'll use the high DHA content because DHA seems to have some greater impact on cell membranes.

But as far as inflammation goes, both EPA and DHA have a great effect. And choosing a typical fish oil with EPA, DHA should be totally fine for getting a significant anti-inflammatory effect. Some of the stuff you hear about high EPA, DHA ratios or perfect ratio are literally made up and I can't comment more than that.

Okay. Next question. Okay. **Can you make suggestions about chronically low iron, particularly how much to limit red meat.** Well I'm not sure about your question about chronically low iron. I got to be honest with you, Heidi, the question you're asking, most people that get diagnosed with chronically low iron, are technically misdiagnosed. So I'm not sure if they're looking at your serum ferritin at a different range, but if you truly are an anemic, which is on your lab test, your Hemoglobin [–], RBC, MCV, MCH, are low, your total iron binding capacity is high and your serum iron is low, then you definitely have an iron deficiency.

And the most common causes of iron deficiency are actually not from dietary intake of iron. They're from internal bleeding. They're from really heavy menstrual cycles or things like that. So those are the things to really look into first. If you're not absorbing iron that could be another issue.

Some people that don't have enough hydrochloric acid have a hard time absorbing iron. And if you notice that you have an aversion to meat and you don't want to eat because it feels like it's a brick in your stomach, digesting well, you may want to add some hydrochloric acid into your protocol.

So sometimes if someone is having a hard time absorbing iron, we'll make sure they take some hydrochloric acid that just depends on what is in your meals. Also add in vitamin C. Vitamin C helps enhance iron absorption and then we'll use iron. There's different iron supplements out there. For me personally, I tend to like to use the liver extract form of iron because it doesn't make people as sick and nauseous. So when they use liver extract forms of iron, like the product is actually liver extract with HCL and vitamin C, they can really take a lot of iron without feeling constipated, nauseous and they can have greater absorption that way. So maybe that can answer your question.

Okay. Let me go into next question here, Susan. **Please explain the nitric oxide connection to optimal resiliency and when, how it's best way to promote endogenous production of nitric oxide. If the antioxidant reserves are depleted, can it be harmful?** So nitric oxide is a compound your body makes and there's actually three different isomers of nitric oxide or 3 different variations of nitric oxide. One is called iNOS or Cytokine-inducible nitric oxide. When that goes up it creates inflammation and destruction. And that's important for fighting infections. So sometimes your body has an infection and they have to actually increase the free radical inflammatory oxidative stress response [inaudible] iNOS ... destroy infection.

And then there's another part of nitric oxide isomers called eNOS endothelial nitric oxide synthase. And that calms down — improves blood flow and circulation and dilates blood vessels.

So you really want to have a balance of both. One of the most powerful compounds to support and nitric oxide pathways is beet extract. It helps to dampen the inflammatory one and activate the eNOS one. Just consuming beets if you'd like to eat beets, those are great way to really improve your nitric oxide isomer systems.

And I'm not a big fan of Arginine. Arginine is a precursor medium acid to help make nitric oxide. But if your inflammatory cascade is up, when you give Arginine it may not be the best idea. I would rather use beet extract or things like vinpocetine to modulate the different i- versus e-NOS isomers of nitric oxide. Okay. Let me go into a less technical question.

Okay. From Kathy, **You mentioned pathogens in the gut. Where would these come from? Does this include parasites, which I hear a lot about.** Yeah. A lot of people have parasites. Now. There's some really shocking information about pathogens and parasites in the immune literature and what they're finding is that in areas with the highest amounts of parasitic infections like different regions of Africa and certain areas of South America, that there is no autoimmune disease. That some of these gut pathogens, they actually provide an anti-inflammatory immune regulating effect in the gut. And in a clinical setting, I've absolutely seen that as well.

So sometimes you run a GI panel on a patient that suspects may have gastrointestinal pathogen. They show up with a couple parasites or bugs and then you go on this journey to get rid of them. Whether they do — pharmaceutical interventions or they do botanical interventions — but a lot of times when you see those pathogens gone, you can sometime see an autoimmune disease significantly flare up.

Other times you can see that it really makes the patient feel better. So I think we're still learning a lot about pathogens in the gut. Obviously some people have significant symptoms and diarrhea and intestinal permeability, and there's markers on GI panels where you can look at intestinal inflammation like secretory IgA for example, which is an immune response to a pathogen in the gut.

There's different inflammatory proteins like calprotectin that can be measured when they do a stool analysis. Those are all up when there's pathogens there. It may be a good idea to probably get rid of it. They come from everywhere. They come from your diet, they come from exposure to different food sources, sometimes just contaminated sources of your food you may not even know about. And it'd be surprised, if you were to check a large group of people, you'd see many people have gut pathogens.

Now, if someone doesn't have the inflammatory markers in their gut, they don't have a lot of symptoms — you really have to question whether you want to necessarily go and treat the pathogen because there's a physiological cost to treating a pathogen. You have to actually break down the gut barrier in most cases with different protocols to get rid of a pathogen and you have inflammation to deal with and so forth. So that's an interesting concept you brought up about pathogens.

For some people they do have gastrointestinal pathogen and it does cause chronic inflammation for them and for other people, it actually has the opposite effect. So it's an area to be honest with you, I'm confused about too.

So my strategy right now is if I see someone that has a gut pathogen and symptoms and inflammatory markers on their GI panel, then it's probably better to treat than if a patient just has a pathogen that you measure and there's no inflammatory reaction with gastrointestinal inflammatory markers, then maybe you should have a second thought if you should treat it or not. And that really for me, I just let the patient's gut instinct tell us where to go.

Okay, next question from Shamshad. **Does papaya fruit powder contain sugar? I'm fructose intolerant.** Thank you. So what it will depend upon your extra content. So you can get different fruit extracts and they can have different degrees of fructose in there based on how they extracted it. So you'd have to actually read the label and determine if that's appropriate for you. If you have fructose intolerances you really want to make sure there's no fructose in that powder. If they are just isolating the flavonoid extract from papaya or any other food, then it should be fine.

Joe Clark. **I had mild hypoglycemia diagnosed when very young and eat a low sugar diet but still have blood sugar issues and worried about the effect on the brain. Should I take Metformin despite not being diabetic.** So if you're hypoglycemic it means your blood sugar drops, so that basically means throughout the day you get shaky, lightheaded, irritable. You eat, you feel like you can function again. That's a sign of low blood sugar. Metformin is actually going to improve your insulin signaling, so you'll actually become more hypoglycemic if you take it. Metformin is not really designed for hypoglycemics. It's really designed for people that have prediabetes or insulin resistance. So it would not make sense to do that. Now if you've had hypoglycemia for a long period of time and have a low sugar diet but still have blood sugar issues, then you've got to figure out why that's taking place.

Sometimes it's just really because you have functionally weak adrenal glands that they're not responding. So other times you may have actual some adrenal antibodies. There's a percentage of the population that I've seen in my clinical practice that have chronic low blood sugar issues, low blood pressure issues, crave salt all the time, crave sugar and when we check, they actually have antibodies to their adrenal glands. They have this subtle autoimmunity against your adrenal glands.

Now, the adrenal glands help produce cortisol and catecholamines — epinephrine and norepinephrine to help keep your blood sugar — like hypoglycemia — in check. So what I found is that — what I've seen is that there's a percentage of people that have these adrenal antibodies.

Now, the autoimmune disease for adrenal antibodies is called Addison's disease. And to be diagnosed with Addison's disease by conventional laboratories right now where they do this 24 hour measurement of adrenal hormones in the urine or they do something called an ACTH stimulation test, which is they inject you with a hormone and see your adrenal response to it, those tests only show positive when a person has lost about 90% of their adrenal glands.

So there are a lot of people that have chronic hypoglycemia walking around out there that have not lost 90% of the adrenal glands. Maybe they've lost 20% or 30% from a subtle autoimmune reaction that's there, but they never test positive for Addison's.

So they walk in the healthcare system, constantly ignored, and they're kind of clueless and they're really struggling to figure out how to get their low blood sugar symptoms under control. So the way you identify that as you just measure adrenal antibodies — 21-Hydroxylase antibodies against the adrenal glands will be the key marker to look at.

If those 21-Hydroxylase antibodies are positive, then maybe the best way to handle the blood sugar is to really work on the autoimmune system and look for an autoimmune clinical model and see if you can get the immune attack against the adrenal glands off, until the subclinical autoimmune response isn't there anymore.

And for some people that's the only way to get rid of their chronic low blood sugar issues. And it's not easy, it's a tough battle and there's ongoing efforts to try to optimize patients who are struggling with

that kind of pattern. But there are many, many of those patients around and I've seen them in my practice over the years all the time.

Okay. Next question here. **I have a 38 year old female patient with Hashimoto's disease. She is a vegan. She could not get pregnant and had two miscarriages. What test or mechanisms could I check on her to be able to help her?** I don't know. The key thing with... I mean you have to have substantial, you have to have enough protein in order to maintain your immune health and your endocrine system. I think the biggest mistake we see with vegans is that even despite the fact they're thinking they getting enough protein, they're not getting enough protein and also healthy fats. So a lot of times you will see vegans institute things that really impact their physiology and their health. One is that just don't get enough protein.

They're not getting complete proteins and to get complete proteins, we'll have to combine the food sources together. So for example, bean has some protein, rice has some protein, but when they're combined together you get a complete protein and that's the key thing. So you have to do proper food combining to get complete protein sources and you've got to get enough protein source being a vegan to really have a healthy endocrine immune system. And the other key thing is going to have healthy fats. So sometimes receiving and just getting enough healthy fats in their diet.

And if it was me and I was working with a patient that was vegan getting healthy amounts of fats and protein is really important. What I've seen in my clinical career over the years is what I call the junk food vegetarian or the junk food vegan, they basically eat potato chips, bad food, unhealthy foods all day and they just don't have any rich nutrient diet. So that's one thing to be aware of. But anyways, those are some key things. And also the other key thing is you have to have some degree of caloric intake to support your system too. So sometimes those that are vegans, they just may not be eating enough calories to support their endocrine system. But there are people that practice a vegan diet very effectively they've lots of health benefits from them. So it's just a matter of if protein and fats and caloric intake are enough to meet their endocrine immune demands.

Okay. **What can someone do about effects of dysautonomia resulting from a car accident. Gut motility and empty speech, diaphragm function was also impacted.** Okay, so let me explain this concept of dysautonomia really quickly to people that may not know that term. So the autonomic nervous system, the part of your brain that triggers physiological responses without you volitionally thinking about them like your heart rate, your blood pressure, your intestinal motility, is a sympathetic system which is the fight or flight, which increases your heart rate and it gets blood flow to your muscles and dilates your pupils. And then the parasympathetic where you have motility and digestion and so forth. And this should be in balance.

One of the things that happens after traumatic brain injuries is the brain gets injured and areas of the brain that control the autonomic system are no longer working efficiently. And then the person could have palpitations and they were trembling and have constipation issues and hyperactive bouts and all these things. Then that's called dysautonomia.

There's a paper that I published also and it was called "The Brain Gut Axis" and I went over... I think it was "Traumatic Brain Injury and The Brain Gut Axis" and then this paper that was published, I went in through the details .. a literature review of what happens to the gut from a brain injury. An dysautonomia is very common and there's some papers that listed about a third of patients, they get a traumatic brain injury and some degree of dysautonomia.

Now the treatment of choice for that, it's just improved brain function. Ultimately the way you control the autonomic system is to not necessarily treat the palpitations or treat the gut motility or constipation issues, but to really focus on treating the brain. If you don't know what that means, you may want to check out a book I wrote, "Why isn't My Brain Working?" I go into a very detailed way of how to support the brain. I also created an online program for patients to help figure out how to support their own brain called Save your Brain Program. It's at [drknews.com](http://drknews.com) and you can check that program out. I go into a step by step, week by week of different strategies you can use to improve your brain function, like controlling your blood sugar and looking at your fatty acids and so forth, and then implementing those each week to improve that.

If you don't have access to someone to help support the patient with a traumatic brain injury, you may want to check that course out as well. But ultimately with dysautonomia, for traumatic brain injury, you just have to improve the brain itself. Great.

Okay. Next question is coming in from Mary. **What is your recommendation for mercury poisoning from amalgams?** Well, I don't... Okay, so let's just talk about mercury amalgams for a second. So they're not good. They will increase the toxic load and there's different people that will have different reactions to mercury, based on, again, their antioxidant reserves and the resilience to having an environmental toxic chemical in their system.

Some people have it in their system their whole life. They never developed chronic disease and autoimmune diseases because the resilience is so healthy. And some people can timeline their medical history: I had fillings put in and then I noticed from that point my health declined and so forth. Or I had fillings put in and then I started to have cracks in them and then my health started decline. So there's different degrees of reactions with them. But we definitely know in the immune literature, in the toxicology literature, that mercury does have significant adverse effects on the nervous system, on the brain, and it's something you don't want to... It's a toxic compound. You don't want it in your system.

The problem is that some of the people that I've seen, that I've worked with, have had the turning the corner of getting significantly worse or falling apart right when they had their mercury fillings removed. So removal of mercury fillings has to be done by a qualified dentist that is using a dam where the mercury fillings should not be dropping backwards. They're using a vacuum to get rid of the vapors and they're usually doing them not all at once. They're doing it over a period of time. So that's one thing to put into consideration.

Now for myself, when I work with really chronically sick autoimmune disease patients that really have no room for a flareup, maybe in some of the patients are in a wheelchair, they have MS, they have a flare up they may have such severe impacts in their function that it would be devastating.

So when you're in that scenario all the time, you're working with people that have no chance to have a flare up, the questions that sometimes come up is, should I have my mercury fillings removed? So one of the things I like to do is I like to check three things right away. I like to check if they have antibodies to mercury bound to albumin. And they do this through a panel from Cyrex called Cyrex Array 12. And they check chemicals but they don't check the levels of chemicals. They check the chemicals and if there's antibody or immune reactions to chemicals.

So when chemicals are circulating in your blood, they actually start to attach to proteins in your blood. The main protein in your blood is albumin, and then albumin changes. That becomes a new protein and then you can make antibodies against it. And that's an immune reaction to mercury, not a load or level. So if they have immune reactions to mercury, there's a very strong possibility that if they try to get their

amalgams removed, they're going to fall apart and have a significant flareup of their autoimmune disease. Also, I check to see if they have blood-brain barrier permeability and intestinal permeability. Because, despite all efforts to use the vacuum... [Noise ...] Oops, that's my dog... to use a vacuum or a dam to get rid of mercury vapors when it's being removed, there's still some exposure. So if the blood-brain barrier is permeable, then you can have some significant deposition of mercury into system, into the brain, especially when you increase the load from removal.

So the best thing to really do is, if you are having concerns about mercury, make sure you're healthy enough and safe enough to remove them. Raising your glutathione levels, maybe doing IV glutathione beforehand and making sure your blood-brain barrier is intact and your gut barrier's intact and really having a strong antioxidant reserves before you go into mercury removal. And then working with a qualified dentist that specializes in removing mercury and to take all the precautions to do it would be the way to go.

Okay, that's a long question, a long answer, but it's important. Next question. **Do you know why pea protein affects blood sugar with diabetics?** So it may not be the glycemic effect that you're noticing with diabetics, but it may be the immune response to pea protein that's an issue. So pea protein itself is low glycemic and there's a paper that I published in the Journal of Diabetes Research and what we looked at was cross-reactive foods with the target proteins of type 1 diabetes. And we were looking at GAD 65, IA2 eyelet cells. And what we found is that certain foods have molecular mimicry with the cells in the body that produce insulin.

So sometimes the person you actually think is having a strong glycemic response is having it because they're having an inflammatory response against their pancreas. You definitely want to check to make sure they don't have a subtle autoimmune diabetic pattern that's called an LADA Auto Immune Disease in Adulthood. And most of those people go undiagnosed because they just get diagnosed as diabetics. And for those people, if they eat foods that trigger the immune response, they can have some significant reactions.

So in the paper we published in the Journal of Diabetes Research, we discussed why, looking at the glycemic indexes may not be enough, that you may actually look at food cross-reactivity. So pea protein is a very cross-reactive food with the pancreas. And the reasons you may be having significant issues with pea protein is not because of the glycemic response, but more of the immune response that is impacting the pancreas.

Okay. Next question from Rosemary. **Any thoughts on the use of oral supplementation butyrate for those with ileus stomis including removal of the complete colon?** Yeah, I think short chain fatty acids are always a good idea for people that have any kind of colon issues, even if they've had some of their colon removed. Butyrate being a short chain fatty acid helps control intestinal inflammation and as it provides a fuel source for the colon to help produce more bacteria, it would definitely be something to consider for ileostomy or any type of removal of your colon. Just to keep your pH and your colon healthy on a regular basis.

Next question, Cindy Williams. **What parasite test, cleansing protocol do you recommend?** Well, there's different types of parasite test out there. There's the typical parasitology where they look at parasites in a microscope with different dyes to see if the parasite exists, and there's the more advanced testing which is called PCR, polymerase chain reaction, which actually looks for a parasitic replication. I like to use both of them. I basically use a panel from a laboratory called Genova, and they have a GI

Effects Comprehensive Panel and that panel does both of them. And if they show up with a pathogen, then your protocol's based on the pathogen, it's not just a regular cleanse or something.

So I don't have the specific protocol for you. But at the end of the day, when you're trying to deal with parasitic infection, you're trying to treat them. You got to make sure that gut is healthy enough before you go into a protocol. And then there are some parasites that have very low responses to natural supplements and they may need a prescription medication to help them. And there's some where they have ova and you have to treat them for so many weeks. And different rounds to get rid of them. So it's parasite specific. It's not that general.

Okay. All right. I have a question from Sarah. **Baby weaning suggestions. Mother has CFSRA. When would you induce introduce gluten?** I'm not sure if I understand your question. As far as baby weaning suggestions. I don't know, I'm sorry Sarah. I don't know how to answer your question. So when would you introduce gluten? So there's some studies on gluten where they shared that when they have children and they get exposed to gluten proteins in their very first part of life — this [study] is actually specific to celiac disease — and people had gluten sensitivity genes. When they get exposed to some gluten in early parts of life, they have some degree of immunity built against gluten and don't have the significant inflammatory actions later in adulthood. So for example, if someone has the celiac disease genes, HLA-DQ2, HLA-DQ8, if those children are initially exposed to some gluten proteins, they tend to have less reactions when they get older.

Now this gets misinterpreted all the time, where people go, oh well I'm going to get my kid gluten all the time cause it's healthy for them. No, it can actually totally impact their childhood development, their learning and so forth. Now, I can tell you for us, one of the things that we did is as parents for our daughter, both my wife and I are on a gluten free diet, we've been on it for, I don't know how long, 20 something years, before it was trendy. But we would expose our daughter to gluten in Europe because the proteins, the gluten proteins in Europe are less reactive and in some countries don't contain glyphosates that change their protein structure and reactivity of gluten, which is a theory but seems to be accurate with some correlation studies. And we've got her exposed to some native gluten proteins while we were there just in her early ages to then support some of her tolerance.

But in the US we never gave her... We're on a gluten free diet. So those are some things to... That was our attempt to translate that information but you definitely don't want a person with a family history of kids with gluten sensitivity to constantly be exposed to gluten, no matter what. But there was that one paper that was published on celiac disease patients that early exposure can really calm down the inflammatory response into adulthood. Okay. Yes. Typically with, when you look at research, there's so many things that are out there and you sometimes get dizzy. You have to try to interpret the best you can.

Okay. Next question here. Deborah. **How bad is antibiotics with autoimmune disease?** Well, it depends what they're being used for. I mean, if you have a bacterial infection, that is something that would be appropriate. Having a bacterial infection can sometimes trigger the autoimmune disease. Now the key issue with antibiotics is that antibiotics will change the flora and change the microbiome, means you have less [gut bacteria] diversity, you can have immune dysregulation and you can have a flare up. So I would say if you have to take antibiotics, when they look at studies of taking probiotics with antibiotics, they actually find that it doesn't get in the way of the antibiotic therapy and it can be supportive to help the patient recover.

So for me, I think if you have to go on antibiotics, you definitely want to consider taking some probiotics. You also want to take some butyrate, which are short chain fatty acids that also helps the colon recover much faster if you wipe it out from probiotics and provides fuel for the colon so it can regenerate healthy bacteria when it's necessary.

And then you want to basically do what we call the Veggie Mashup. We talk about that in the 3D Immune Tolerance program where we take many vegetables and break them all down [blender] and water we shake and drink and have a whole list of diverse vegetables to change the microbiome.

So I think a Veggie Mashup with butyrate and probiotics may not be bad idea if you have to take antibiotics for autoimmunity. But, there's some patients we see that are on antibiotics for like 10 years. I'm not joking. 10, five, 10 years, 15 years, because of trying to treat a chronic Lyme disease or trying to treat a chronic staph infection or something, a strep infection, and it can really impact their overall health and physiology. So it's something that you have to determine if it's appropriate and go from there.

Next question here. Let me try and go to some people that haven't asked questions yet. From Rebecca. **Why is CBD contraindicated for people with concussion and TBIs?** That's not contraindicated. I'm not sure where you're hearing that. It could just be a practitioner's recommendation. There are definitely people that have traumatic brain injury that the only thing that helps them would be things like CBD to really calm down their inflammatory cascade and some of their symptoms. So there is, when you look at, for example, marijuana, there's THC, which is what gets people stoned and there's CBD, which has the immune modulating properties.

So CBD actually dampens brain inflammation. Dampens microglia, neuroglia activation of an inflammatory cascade from trauma. So there could be different responses to people that have brain injury. Some people that have brain injury cannot tolerate THC. They have significant hallucinations and violent attacks and whatnot, violent reactions when they get exposed to THC. But for other people, it's the only way they can really calm down their brain after an injury. So, that's the THC portion of it.

CBD for the most part seems to be beneficial to most people with traumatic brain injury. And I would never think of it as a contraindication. I would just say that some people that have traumatic brain injuries have various reactions to THC before and after their brain injury. And some get worse and some it helps them calm down but it's not a clear guideline that they should be not taking CBD.

Okay. Next question from Sariah. **How does B12 impact the brain in regards to focus, concentration, motivation to stay on task with something?** So B12 helps support a pathway called methylation and methylation is the transfer of one carbon group and methylation is involved with really helping different inflammatory responses in your brain to work. And also it helps with the production of serotonin. And B12 also helps with acetylation, which is two methyl groups that are used to help to make acetylcholine. And that helps with focus and concentration.

Now, to be honest with you, most people they take B12 are not going to notice difference in the brain function. They're going to take B12 and go, I didn't notice anything. And some people will take B12, there will be a small percentage of people and they'll immediately go, wow, I think in focus and concentrate much better. And that's this huge clinical sign that you may actually need B12 and so that's one key thing. If you show significant positive benefit to taking B12 in your cognitive tasks, you definitely want to make sure you measure your serum homocysteine levels, make sure they're not elevated. If your serum homocysteine levels are elevated, you can a significant risk for neurodegenerative diseases

and cardiovascular disease. So B12 helps methylation, and if you're not methylating, your homocysteine levels will be high. So those are some clinical pearls I would just share.

Next question from Deborah. **Dr K, I've had pernicious anemia and positive anti-parietal cell antibodies and intrinsic cell antibodies. My last test, I was negative for both. My ANA was still positive [inaudible 01:25:33] What does this mean? Do I still have a PN?** I'm not sure. I'm not sure if I answer and understand a question directly Deborah, but I would just say this. Antibody tests do fluctuate for people that have autoimmune disease. Sometimes antibody titers will go down as the person goes into remission and that's a good sign. That means their overall immune response to their own tissues has calmed down and patient feels better.

Other times you can have some regular degree of fluctuation with different antibody markers. Doesn't mean you're getting better or worse. So you've got to look at these levels. So for example, if you're looking at something like TPO antibodies for the thyroid, and let's say the range is less than 45 is normal, someone comes in with the antibody of 220 and then they're retested and it's 250 that's not that big a deal. It's kind of about the same. There's some degree of just normal variation.

But if they go from, let's say 220 down to 20, that's probably remission or it looks like the antibodies are coming down, may be positive. But if they also go from 20 to a thousand that could be a degree of a flareup. So antibodies will change and fluctuate as a normal part of autoimmunity.

There's also some people that have a false response, which means they'll have antibody levels drop, but they're actually getting much much worse. And what you see with them is they have their autoimmune disease but their total white blood cell count starts to drop and they're getting so immune compromised — their immune system is getting so fatigued but they're not able to make as many antibodies. And you see that through B cell count, their [inaudible] markers, percentages actually drop, and they may look like they're getting better because their antibody levels are going down, but they're actually getting much, much worse. So you also see that as well. Okay.

Let me just take one last question and then we'll meet up on another day. **Is it possible to take too much fish oil supplement?** It's possible to take too much fish oils. Let me say a few things about fish oils. When you look at fish oils, they used to think taking 1000 or 2000 milligrams is sufficient. And if you look a fish oil capsule, most of fish oil capsules you'll see that are manufactured have about 1000 milligrams in them. And new research has come out over the years where they show, well maybe 1000 milligrams isn't enough. So 10 to 15000 milligrams have been recommended for controlling inflammation and supporting the brain. And some people really do need the higher dose, 10000 milligrams of fish oils a day.

The problem with fish oils is that they do have a blood thinning effect, so they are definitely contraindicated with anyone that is on any kind of anticoagulants. They definitely don't want to be taking fish oils. And for anyone who's got some susceptibility to having a blood thinning effect, you know, taking high amounts of fish oils, that's not a good idea. And then for some people that have subtle gallbladder issues, when they start really increasing their fish oil intake, their digestion shuts down, they get bloated, distended, they don't feel well, and that's a sign that the gallbladder needs to be treated and managed. But are were some people who just can't tolerate as much fish oil supplements.

Anyways, I think we went about an hour and a half into the discussion. We'll absolutely have more of these. Thank you all for joining from all over the world. I'm sorry if I didn't get to your question. I'm just doing the best I can. They just keep coming in and I'm trying to read it the best I can. I hope you found

this live feed useful and looking forward to doing this again with everyone soon. Thanks again for joining.