



## EVERYDAY IMMUNE RESILIENCE

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Hi everyone, thank you for joining me on this talk about viruses and autoimmunity. Got a little bit delayed — my computer was for some reason today it decided to backup, so I had to wait for it to work. Anyways, I want to share with you some really important concepts related to viruses with this concern for people who have autoimmune disease and if they're at risk.

And just some background, I'm not a virologist. My background, I'm PhD in health science with concentrations in immunology and toxicology, and I'm a member of the American Association of Immunologists, which is a group where you have to have an immune related doctorate and published papers to be accepted as an immunologist. I have some background and understanding of autoimmunity, especially with diet, nutrition, and lifestyle strategies, and I want to share some of those with you.

I also created a free program for everyone who follows my work at Dr. K News (<https://drknews.com>). It's an immune resilience program. It goes over a lot of the key concepts related to how to improve your immunity with just lifestyle, and it's not a promotional thing to sell supplements or products. It's just there to teach you some really important concepts you should know about improving your immune resilience. But I'm going to go over some of those concepts with you as well.

The first question that has come up with me in my private practice working with patients is, "I have an autoimmune disease, am I at risk for coronavirus?" We have to first state that we really don't know much about coronavirus and risk factors. That will take some time. But we can just go over general concepts of viruses and immune state and autoimmunity to share with you.

The key thing to understand is that when you look at autoimmune diseases and people that are suffering from autoimmune disease, having the autoimmune disease itself doesn't necessarily mean that you'd be at increased risk. What really matters is your immune status. If you've ever had any blood work done, you want to look at your total white blood cell count. If your total white blood cell count is elevated or within normal reference range, then you don't have some technically immune compromised.

Now, some people that have autoimmunity, what happens with them is that their white blood cell count gets depleted. The white blood cells are low. So you have some people that have autoimmune disease and the white blood cells are like 2.5. That would definitely mean that you have some immune compromise, and you would be at risk for any type of infection, not just coronavirus.

If you look at 100 different white blood cell counts with 100 different patients suffering from various autoimmune diseases, you'll have a percentage of them that have low white blood cells. For some people when they get an autoimmune disease, their immune system gets weakened by the autoimmune disease, and their total white blood cell count goes down. And when the total white blood cell count goes down, then they could be at risk for infection.

However, if you have an autoimmune disease and your white blood cell count on your blood test is within normal reference ranges, then you really technically wouldn't have any increased risk. There are

also some patients that have autoimmune diseases, and they come in with a medical history and say, "I haven't had a common cold or the flu in five to 10 years since I have my autoimmune disease." And they actually have this overactive immune response, which for some people can be protective.

I don't think things should be much different with the new coronavirus pathogen. It's another virus. And whether you have cells to fight it or not will really be the key factor.

There's also been some reports by many physicians that are working with coronavirus saying one of their predictive factors of how a patient will do if they are diagnosed with coronavirus is their white blood cell count. If their white blood cell count drops, and especially if their lymphocytes drop, that they could be at increased risk for the complications or having more than just the moderate symptoms of coronavirus. So, keeping white blood cells healthy seems to be one of the key things that you really want to do.

Now, one of the key things... Oh, hello everyone. Thank you for all your comments and joining.

So, one of the things that I want to talk to you guys about is some general things about what you can do to really improve your immunity.

First of all, for some of you guys who are joining us from the Hashimoto's group, yeah, I'm going to go over some of the same concepts as before [referencing a previous talk]. But one of the most important things you can do from an autoimmune perspective is to really make sure you get sleep.

And even just from an immune perspective. If you're trying to figure out, "Well how do I improve my white blood cell count? How do I improve my immune activity?" Then there's a few lifestyle things that are absolutely critical, and I would say that they're much, much more powerful than taking any type of nutritional supplement.

The first thing is sleep. The immune system needs to have adequate sleep in order to function properly. You really want to look at how many hours of sleep you're getting and if you're really feeling rested in the morning, and if you're violating your potential to have the best sleep possible.

The biggest thing would be to go to bed too late and then get up early for whatever the reason may be, but if you really are trying to support your immune system, you really want to get adequate sleep.

I remember in my practice over the years, over 20 years working with chronic patients, one of the biggest indicators that would actually change white blood cell counts or natural killer cell activity on blood testing and lymphocyte counts was whether they slept. I remember I had patients that were taking handfuls and handfuls and handfuls of supplements. I mean, so many. Not the ones I prescribed. They were just desperate and they wanted to improve their hepatitis C or their Epstein-Barr acute remission, and they wanted to, they were just taking everything they had ever read about, everything at the health food store. And it really, for many of them, it did not budge until they were able to sleep.

Sleeping becomes really the key thing, and when I work with patients that have chronic viruses and I work with patients that have immune compromise, the first thing we do before anything else is just sit down, have a discussion, and go, "Let's talk about your sleep. How are you sleeping? Are you sleeping well? How many hours do you get? What's your lifestyle?"

The biggest thing I have seen in my clinical practice is patients just staying up too late for no reason. One of the key things is, do you really need to watch or be on the computer late at night? Maybe it's just good to wind down. For some people, they have to have a routine where they just wind down. And then

try to go to bed as early as they can. For some people, they have to get up in the morning at a certain time, but for other people, it's just the fact that they're not getting enough sleep and naturally waking up in the morning.

The best indication that you are actually sleeping well enough for your immune system is that you wake up naturally on your own. That your body just says, "Hey, I'm no longer tired." And you get up and you feel rested. That would be absolutely the number one thing to think about if you're trying to support your immune system.

When you look at the research done on this mechanism, it's pretty profound. Just like we need sleep, our immune cells need sleep. When you look at the cells you need to fight a virus and keep your immune system strong, these are called natural killer cells. Natural killer cells get primed with melatonin, and melatonin activates the production of T-cells and natural killer cells so that they can have the best response possible.

Even if you have lost sleep for one night, your immune system is now weaker the next day. It's a very dynamic state of function. You may have even experienced this. You may have like in the flu season walked around and you're fine, and then all of a sudden you don't get sleep, and all of a sudden you get sick right after that. So sleep is by far the most important thing.

Now, let's talk about a couple things. If you are, especially if your white blood cells are low, if you're not getting proper sleep, you definitely want to think about why you may not be sleeping well. If it's not just that you're going to bed late, it may just be the fact that you're hypoglycemic, or you may be waking up in the middle of the night, so let me actually get into that.

One of the main reasons why people don't fall asleep [meant to say get enough sleep] is that they wake up in the middle of the night, and the most common cause of that is that they tend to be hypoglycemic. A lot of people will wake up in the middle of the night, so then they have a hard time going back to bed. If that happens to you, the first thing to consider is are you hypoglycemic throughout the day? Is your blood sugar levels dropping? Hypoglycemic being a low blood sugar state.

Your biggest clue that you are is that when you eat, you actually feel energized, you actually feel like you can function better. That's a sign that your blood sugar levels are too low. And if you have that response, then that suggests that you really need to eat more frequently throughout the day.

What you have to understand is that when you eat food throughout the day, the foods that you eat eventually, whether it's protein, fats or carbs, become glucose, and that glucose is used by your body for energy, but that glucose is also stored in your body as glycogen. And then when you go to bed and you get into a fasting state, in order for you to support your brain all the way throughout your sleep, you have to break down this glycogen to glucose.

But if you've been hypoglycemic and missed meals throughout the day, and you've had some issues with that, then what's going to happen to you is that you're going to have some problems with having that proper glycogen output throughout the night. So what'll happen is your body will resort to breaking down proteins, and then your body, your adrenal glands will release epinephrine, norepinephrine to break down proteins, and then that'll wake you up. So really make sure that you don't have low blood sugar levels throughout the day if you're not getting adequate sleep.

Another major problem, especially with people that get older or with women that have had children is they wake up because they have to urinate because their pelvic floor muscles are weak. If you really

have to frequently urinate, then you really want to make sure that you do some pelvic floor exercises for about 10 days and see if that makes a difference for you. And you just do these hourly. I'm sure you YouTube lots of pelvic floor exercises, so that's really important.

With a lot of my patients that have sleep difficulties, I also have them use white noise. White noise is just a reoccurring sound. There's white noise machines. The best way to explain white noise is just a fan, a constant fan noise. It's not sound machines of a forest or rainfall or things like that. It's a very continuous monotone frequency of sound that really helps people sleep and get into deeper REM sleep. Really focus on your sleep.

Okay, well thank you everyone. I'm reading everyone's comments. Thank you for joining us. I'd like to also dive into questions. If you have any questions for me, I'm happy to answer them for you.

Once again, if you're joining us, our team put together an immune resilience program. It's free. If you just go to [drknews.com](http://drknews.com), you can download the program, and I go into all this stuff. It's diet and lifestyle that you can use to support your immune function. It's our attempt to try to support people at a time period where people are scared and people don't know what to do.

Now, one of the questions that comes up all the time also with my friends, my family, colleagues, patients, is, "What supplements do I take? What do I take to support my immune system?" The answer is, well, we don't really know specifically for coronavirus what supplements would have the biggest impact. And then there are some concerns that some supplements can maybe make the condition worse, which is all theoretical and speculation. But let's go over some general concepts of supplements — whether it applies to coronavirus or not, we really just don't know. But let me just give you the information.

Let's start with nutrients. There's basically nutrients you can take and there's botanicals you can take. And there's flavonoids and antioxidants that you can take. When we talk about nutrients, with that question, vitamin C has been shown time and time again to be very effective in improving what is called natural killer cell activity. Let me explain what this means.

When you do immunology testing you can do a few things in the lab. One of the things you can do is you can measure the different percentages of white blood cells. And white blood cells have a total number, which you can see on your CBC if you look at your blood tests. But then white blood cells are further divided into lymphocytes and neutrophils, and eosinophil, and basophils. There are different types of white blood cells. The most important white blood cells to fight an infection are a subgroup called lymphocytes. And lymphocytes are the main cells that are involved with destroying infection. ... Lymphocytes further break down into T-cells, which kill viruses, and natural killer cells. And then B-cells make antibodies.

The unique feature of a virus is that a virus will come in and hide inside the cell. Once a virus gets into the cell, the cell then has an immune response called the development of MCHC proteins, which then is an immune mechanism. Or, there's messenger sent on top of the cell for immune system to make antibodies to tag it and then for the T-cells to come in and destroy it. That's all happening with the lymphocytes.

And when you look at vitamin C, vitamin C has been shown to really help this natural killer cell activity. But it doesn't necessarily raise your numbers, so when you look at one of the tests that are done with lymphocytes, there's a test called the natural killer cell function test. And most of your conventional labs will have the test called natural killer cell function test.

And what they do with this test is they take the patient's blood just like as you would get while donating, or going and getting a blood draw. And once you get the blood test, they take the white blood cells and isolate natural killer cells from it. They expose it some type of antigen, usually it's something [inaudible 00:14:42] mitogen. And then they trigger it to see if there's an immune response against it. They see how aggressively the natural killer cell can destroy that antigen, and they give a quantitative number for that. That's called NK cell activity. There's been some fantastic research that shows vitamin C really increased NK cell activity.

Now, this is just a general guideline for viruses, but we don't know with coronavirus. It's possible some of these things may aggravate it. Maybe some of the things can aggravate the irritation, but as a general concept, vitamin C has pretty solid research. Vitamin A and vitamin D have pretty solid research.

One of the key features about coronavirus also in general is that the pathophysiology, the mechanism of why it causes disruption is it's actually breaking down the lung epithelial system. It's actually causing a leaky lung, just like people talk about leaky guts. The virus comes in, destroys the vascular epithelial layer, and then that leads into a vulnerable state for developing pneumonia. And when you look at the lung barrier system, there's been some studies that really show that having high antioxidant status prevents breakdown of the lung barrier.

There's some patients that have different types of infections, and when they get the infections, some people have moderate symptoms, some have really severe, so there's a few reasons for that, and one of them can be their antioxidant status in general protecting the lung epithelium. But .... done animal studies where they infect the gut or put a pathogen in the lungs and see when the tissues break down, and there was some correlations between [inaudible 00:16:16] break.

Normally, you can really support your own glutathione status by eating foods very high in sulfur. So sulfur vegetables, like asparagus, garlic, onion, those things really help to produce your own glutathione levels. We don't know if glutathione supplementation or precursor supplements like n-acetyl cysteine would be appropriate for things like coronavirus. Just no one has done the research. Those things traditionally raise glutathione, but there's also some research and literature that shows that glutathione can aggravate upper respiratory conditions, so this is kind of the frustration we have for us that have experience and training in immunology and nutrition and have kind of tried to put together the pieces. There's a part of it we just don't know.

Now, when it comes to botanicals, if you were just go and do a literature search on botanicals, the strongest evidence for upper respiratory infection and protection for immunity is echinacea. Echinacea has several thousand studies and multiple clinical trials and what are meta-analysis studies. Meta-analysis studies are when they take a lot of clinical trials and they add up all the data to see if all these clinical trials come up with a conclusion, and the conclusion has been actually positive in these echinacea analysis studies that there is some protective effect with echinacea.

Now, each virus can be unique, so it may not have the same benefit, for example, with coronavirus. But that's one key thing. If you do have autoimmune disease, you've got to be very, very careful with things like botanicals that stimulate the immune system because it can also trigger an autoimmune response. And just be aware that if you're looking at having it if you have an underlying autoimmune issue.

So that's one thing. And then when you look at general antioxidants, one of the key things to remember is that your ability to protect your lung epithelium, your ability to decrease your inflammatory response is how much your antioxidant status is.

Super foods like acai, and blueberry, raspberry, things that are really rich in flavonoids really have a big impact on supporting your antioxidant status. So those are key things. And then foods that are fried, foods that are processed, like partially hydrogenated fats, really wipe out your antioxidant reserves because they're very inflammatory. Those are some things to really think about. I talk about that more in the Immune Resilience program [see drknews homepage], but that's the basic concept.

Now, let me kind of get into some questions here.

“What is your favorite immune supplement?” My favorite immune supplement is sleep. I'm just trying to sway away from the folks on supplements. But those are just some things to think about.

Now, the safest stuff I think to take would be just A, C, and D. Botanicals get a little bit more aggressive.

Okay. “Now please comment on the use of herbals such as echinacea [inaudible 00:19:15] with autoimmunity.” So, this is what I was trying to mention a little bit earlier. With echinacea, one of the key things is that echinacea is an immune enhancer. Unfortunately, with autoimmunity, when they take immune enhancers, it may really flare them up. That's one of the key things that's there.

All right, let me go into some more questions here. “Can you review what you said about the connection between blood sugar dysregulation, protein breakdown, and ... epinephrine?” Yeah, we're going to save this video, and you can play it back. But basically the concept is if you're hypoglycemic throughout the night, if you're not getting enough blood sugar reserves throughout the day, then in the middle of the night, you don't have glycogen and have this epinephrine release.

Okay. “What is the best kind of vitamin C to take?” There's some controversy about taking ascorbate versus ascorbic acid. As far as literature goes in natural killers cells, either one will have an effect.

Now, let's talk about a few other things. Now, one of the other key things that really has a huge impact on immune function is your general opioid status throughout the day. Let me explain what I mean by that. Your body makes opioids throughout the day. Whether it's a positive emotional response, whether it's a healthy relationship with family members, whether it's just a hug, whether it's watching a movie that makes you feel good, opioids have a profound impact on our immune system. Exercise has a profound impact on our opioid system.

So things like T regulatory cells and T-cells, they all have receptor sites for opioids. One of the things to really talk about is this concept of how do you really improve your opioid content? Now, at the same time, if you really have lots of fear and you have lots of anxiety, that can really devastate your immune system. I think one of the problems we're having right now is everyone is just so focused and so scared with coronavirus and the things that are happening, and all they do is watch the news, and they see the death rates go up, and they see this virus spread, and they just get really scared and get really nervous, and they constantly watch that all day. That will have a negative impact on your immune system.

What you may want to do is you may want to watch some videos that really make you happy, maybe you pull out your phone, find some times with your family that were great, watch those videos, some recordings you had. You may want to watch funny YouTube clips. You may want to watch the movies that you love. But keeping your immune system healthy really has a lot to do with your state of mind.

There's an field of immunology called the psychoneuroimmunology, and it has its own journals, it has its own field of study. And there's no question that your thought process and your mood and your emotions have a significant impact on your immune status. And those things may not show up directly

on a total white blood cell count, but they have a significant function in how your immune cells function when they do functional type testing. And it's also dynamic. It also changes from day to day.

You really want to think about if you're at home, cherish the time you have at home, cherish the time you have with you family, watch the movies you used to love, laughing is really critical, those things really have a profound impact on your immune health and your immune system. You really want to maybe put some extra effort into doing things that really impact your opioid response with what your getting your body and brain exposed to. Think about that.

The other key thing that you really want to understand about opioid responses too is that opioids again, impact your T-cells, they improve your immune function, and you make your opioids yourself physiologically ... is that exercise has a profound impact on various aspects of immune function. I talk about this more in the free immune resilience program. But one of the things that we know is that when you exercise and you get that exercise high, that exercise high is basically a release of opioids, and then those opioids have a profound impact on your overall immune function.

But then also when you exercise, you produce some free radicals, but you have a huge surge of antioxidants afterwards that lasts many, many hours after your exercise. And then those antioxidants protect your tissues, like your lung epithelium and your gut barrier, and the rest of your body from any kind of inflammatory reaction.

You really want to think about that also when you're trying to improve your immuno fitness. And the key thing is you don't have to necessarily exercise for an hour or two hours to get this opioid effect. You just want to, just be a little bit better. I think for most people, if they even spend five or 10 minutes just getting the heart rate up, they would feel a lot better.

Now, the other key thing about exercise and the immune system is that when you look at exercise and the immune system, you have some issues with... you actually, when you contract your muscles, you're actually pumping out what is called the lymphatic system. When you look at the immune system, your blood vessels and everything, your immune cells are just circulating around, but they have to communicate with each other. And they communicate with each other through lymph nodes and through your blood.

If you take a look at let's say your shower, the water running through a shower, you can equate that blood flow and circulation, and then your drainage water from your shower into your drain is your lymphatic system. And your immune system has to communicate with things throughout your body of any pathogens or any triggers there, and it can only do that if your circulation is functioning well and your lymphatics are working.

If, for example, your immune system found a pathogen, like a virus and this [uses hands to mimic immune cell] started to react against it and engulf it, it sends messengers out to the rest of your immune system to know that there's a pathogen there. And then those messenger systems circulate in your blood, and then they also, these immune cells communicate with lymph nodes where there's stacks of immune cells ready to figure out what to do that are all waiting there. When you increase your heart rate and you get your muscles moving, your lymphatics, because as you pump your muscles and move your muscles, that makes you lymphatics contract and move fluid around, that really makes a huge impact on your immune function. Those are key things to consider.

Now, let me try to get to some of these questions here. Man, some of these questions are very sophisticated. I'm sorry... And they're also... it's also difficult to give personal health advice on any questions because I don't know your history and what other factors are there.

Okay. Now, let's see if I can answer some of these. "Not clear how much vitamin C is effective" is the question by [inaudible 00:26:10]. Thank you for asking that. I'm sorry if I'm missing some of your questions. I'm trying ... there's so many coming in.

With vitamin C, the key thing is... at least 1000 milligrams would be the least amount. Some people really, what they do with vitamin C is they keep adding 1000 milligrams a day until they get to a watery bowel movement, which is usually around 5000 milligrams, then they back off. That's when they get their saturation of vitamin C. But one again, we don't really know what type of factors can impact that.

Now, there's been a lot of focus. Let me explain a lot of things to you with nutrition and so forth. For example, we talked about phospholipase A2, and then looking at the mechanism of coronavirus, and there's people talking about certain supplements you can't take because it aggravates it. That is complete speculation. This is the problem that we have with people — I don't know how to say it any other way — that really don't understand how the immune system works.

The immune system is not about one enzyme or one pathway. The immune system is an integrated symphony of movements that are all happening together. The best analogy to that is you can't understand a football game if you just look at the quarterback. If all you did was study the quarterback, you wouldn't understand what's happening in the game. You have to look at all the players. When you're looking at different types of immune responses and immune function, what I'm seeing happen on the internet right now is someone will find some paper on vitamin A or vitamin D and talk about how it can shut down one part of the immune response, and coronavirus has some association with that. And they go, "Oh my god, hands off".

That's speculation. That's also a part of not really understanding how the immune system functions and works. That's very frustrating. It's one of the things we're seeing out there. I would say when people comment like that, it really shows that they don't understand how immune system function works. It's never about one single pathway, it's really about an overall effect, and we really do not have enough information to speculate whether a supplement will be harmful or beneficial yet. There's a point of this where you have to as yourself go, "What do I think? What do I want to do my immune system for supplements versus not?"

The focus in my new immune resilience program that I developed for people is actually to not talk about supplements at all. Just talk about things like sleep that we talked about, think of like exercise we talked about, things like getting opioid response, those things are all critical for getting the best immune response. Okay.

[Reads comment on Facebook thread:] "Keeping your immune system healthy has to do with the state of mind." Yeah, exactly. That's a key thing. Now, let's talk about a few other things here. Maybe some questions.

And then one of the questions that came up by Tim is, "What about short chain fatty acids and immunity? In the gut, in the microbiome." We know that the immune system has a direct impact from the gastrointestinal system. The gastrointestinal is a huge part of the immune system, so keeping your gut healthy is really critical. Short chain fatty acids was a comment someone brought up. Short chain fatty acids like butyrate can be I think helpful. There's no signs of anywhere of the literature of butyrate

aggravates a immune response or a bowel response. Butyrate you can be taking as a supplement, but you can increase your own, produce your own butyrate in the gut by taking in high fiber type foods.

One of the other key things that really will impact your immune system about diet — so let's focus on diet for a second. Some basic concepts of diet. You want to make sure you're eating a high fiber diet to really impact your gut immune system and your overall immune health. Fiber, when you ingest fiber, soluble and insoluble fiber, you get some production of what are called short chain fatty acids. Butyrate, acetate, propionate. These short chain fatty acids immediately turn on cells in the gut called T-reg cells, and these T-reg cells in the gut then send messenger proteins out to the rest of the immune system, especially if you're getting some physical activity, getting our heart rate up, you're even more efficient. Then these T-reg cells starts modulating your immune system, and they make your immune system very, very efficient to coordinate an immune response. To either fight an infection to keep your immune system healthy.

It's really important you eat a high fiber diet. High fiber diet really make a big impact on raising butyrate levels (short chain fatty acids in your system). And the other key thing that we've learned over the past few years is that diversity of the microbiome is critical for immune function. You really want to eat a diverse list of vegetables. We talk about that in my immune tolerance program, but one of the things we teach people how to do is to take lots of different vegetables and fruits, lots of different vegetables and fibers and blend them all up in a Vitamix [blender] that have 15, 20 different vegetables, and then blend it all up, and then take a couple teaspoons of that a day. And we have a diverse vegetable intake, that causes lots of diversity in your gut microbiome. And as your gut microbiome gets really diverse, that tends to have a profound impact on your immune system.

The bacteria in your gut are actually producing messenger proteins, things such as a lipopolysaccharides. And these lipopolysaccharides communicate with your immune cells throughout the rest of your body, throughout your lymphatic system, and then you get this coordinated message of what's happening. When your gut gets lots of fiber, it gets short chain fatty acids, you have a diverse list of fibers, you have more bacterial species, the more healthy bacterial species you get, they produce what are called polysaccharides, they're immune modulators. Those immune modulators in your gut get taken up into your enteric lymphatic system, your gut lymphatic system, that gets into your thoracic duct and goes all throughout your body. And now the changes in your diet with improving your microbiome diversity through a diverse list of vegetables has really impacted how efficient your immune system becomes. It's really important that you eat a diverse list of vegetables when you're trying to improve your immunity, however you can make that happen, however you can do it. It's key.

Now, the worst thing people do is they just eat the same thing every day. Now, we also know that diets that are really, really high in sugar shut down the immune system. And the studies on this are pretty scary. They're pretty drastic. Exposure to let's say concentrated amount of sugar, like a glass of fruit juice, something very sweet, sometimes they put sweeteners in cough syrups, that concentrated amount of sugar has been shown to shut down natural killer cell activity for several hours. The worst thing you could be doing is eating a fried food pro-inflammatory diet, little vegetables and lots of sugar. And some people are. Some people are really just depressed being at home, and they're kind of dealing with the depression with eating lots of foods in boxes and bags, and sugars, and I guess gluten free, but it's still a lot of sugar, and still has very little fiber in your diet. Those things still will impact your immune system. That's one thing to be very conscious of. You definitely want to eliminate your concentrated sugar intake.

Concentrated sugar means there's no fiber to counteract it. So, fruit's okay because fruit, most fruits, especially low glycemic fruits are okay, like an apple because there's lots of fiber there. And that fiber prevents your glucose in the fruit to not be quickly taken up. There's no [blood sugar] spike. But when you juice it and have just pure apple juice or something, then you get a huge concentration of sugar load into your system, and then that has been found to have an immune suppressing effect actually. That's something to be very aware of. Okay.

One of the things I'm really not a fan of is just people just eating, drinking fruit juice all day thinking they're getting their vitamin C source that way. That's really a terrible idea. You really want to understand the sugar aspect of it has a big impact on that as well. Okay?

All right. People keep asking the differences between TH-1 and TH-2. It's a little more sophisticated for this talk. I really would like not to go into that. We talk about it in the [thyroid] book. I'm sorry I can't answer that. Just not where I want to focus this on. Okay.

The other key thing that you really want to understand about keeping your immune system healthy is that you really want to get into a pattern. If you're really trying to keep your immune system healthy, reducing your sugar intake, eating lots of plant fibers, diverse plant fibers, getting some physical activity in where you're not totally exhausted, but you get an exercise high and you feel like it could recover and do the same thing again the next day. Those have a dramatic impact. Having healthy relationships, discussions, those things all seem to have a pretty profound response.

A question, comment here. "Do the T-reg enhancing benefits of high-dose vitamin A and vitamin D outweigh the risk that they can upregulate ACE-2 for COVID-19?" This is exactly what I'm talking about. ACE-2 upregulation may have different expressions based on other type of messenger systems that are upregulated or downregulated at the same time. The immune system does not work in a linear fashion. It works in a multi-linear three dimensional system. When you're looking at isolating a drug to block one pathway, every time they do it with drugs, it's a disaster. It causes significant side effects, especially down the road. It's always a bad idea to look at the immune system as one single pathway. That's kind of the key thing here. Okay.

What else here? "... SIBO.. high in fiber." Obviously, if you have SIBO and personal uniquenesses, then you have to kind of work with your fiber intake. If you do you have small intestinal bacterial overgrowth and you can't take a lot of fiber, then you can just probably just take butyrate as a supplement, you can still get the immune effects but without having the fiber that can trigger small intestinal bacterial overgrowth. Okay.

Teresa asked, "There's some rumors that individuals with O blood types are more immune to the virus. What are your thoughts?" Time will tell. Different blood types are going to have different antibody reactions, different antibody reactions are going to have different immune responses, so we have to kind of look at that. I think one of the questions people are confused about is why are some people vulnerable and why are some people not vulnerable? Because we know for example if you're elderly, and your immune system is weak, and you've had some kind of pulmonary disease, you're for sure vulnerable, but why is the healthy young athlete all of a sudden getting an infection? That's one question.

There could be lots of reasons for this. One of them could just be that their white blood cell counts are low. As a healthcare practitioner, I've been checking blood panels in almost every new patient for over 20 years. I can tell you you see a lot of "healthy" looking people, athletes, that have really low white blood cells. Some of it is from over training, some of it is for they have an autoimmune disease, they

don't even know it. Some people have chronic infections like hepatitis C and have no symptoms of it, but their white blood cell count's really low. One of the reasons why some people may be more prone to getting serious complications can be low white blood cell count.

The other one is just the blood type. Your blood type can be a factor in your genes. But also we have different types of genotypes, and when they talk about different genotypes, there are different, what do they call it, HLA-DQ genotypes that determine how your T-cells respond through different polymorphisms or gene uniquenesses, and how your immune system has different messenger pathways. And some of the most studied aspects of genotypes is related to hepatitis C research.

With hepatitis C, let me give you some concepts here so you can understand how it may be related to coronavirus as we learn about it later. There's different types of hepatitis C virus gene types too. Now, I think so far with coronavirus, we found a couple strains. We found there's a European strain and a Chinese strain. They don't find them to be vastly different from each other. But with hepatitis C, there's different strains of hepatitis C virus have mutated over time. And the type of hepatitis C viral genotype, the genes of the virus combining with the host, the person that gets infected can determine outcome.

Certain hepatitis C virus gene types, when they infect a host, with their gene uniqueness can cause them to have liver failure very quickly. And for some other people with different viral genotypes and the different genes of a host, they may have the hepatitis C antibody but have no significant liver inflammation, no fibrosis because of that combination. That's one thing that's very interesting about why some people react to coronavirus versus others. It may not always just be about the white blood cell count, but it can maybe be about some gene uniquenesses. That will take a long time for people to figure out and understand, but that's common with all viruses.

And there are some people that have what are called SNPs, or single-nucleotide polymorphisms, which their genes are unique in certain ways that make them not be able to get the infection. There are people that have gene uniquenesses, and they can never get HIV. And other viruses are in the same thing, and this is really amazing from the human species immune concept that certain gene types are not going to get certain infections based on multiple factors of how their genes are expressed.

I think when we're looking at people's reactions to coronavirus, some that are completely asymptomatic, some that completely fall apart, there's probably a gene uniqueness component to it, and there's probably just a total white blood cell count component to it, and how their immune system has some predetermined risk factors that may all be a trigger. We don't know what all those are.

The best we can do is really just we have our genes, we can't do anything about them. We can just try to improve our immune resilience with our lifestyle and all our actions and so forth.

Thank you for all the positive feedback. I'm getting a chance to look at some of these feedbacks, and I haven't done... I think this is my third Live Facebook. But I'm still new to it. It's a pleasure to have everyone being so positive, and thank you all for being on today. I'll try to do more of these in the future because it seems like people are interested in them, so thank you for your interest.

Okay, let me move on to some questions here. People have brought up fasting a couple times. I can see these questions. This is a question that actually comes up all the time. Fasting does have an impact on the immune system, and in a positive way. When people go into a fasting state, there is a change in oxidative stress levels, your free radical production goes down, your antioxidant reserves go up. In a fasting state that has the protective response to support your immune system.

However, there's some people that CANNOT fast. And that would be back to the hypoglycemics. If you're hypoglycemic, if you get shaky, light headed, irritable throughout the day, and when you eat you feel like you can function again, you're definitely not a person to fast. Fasting can really put you in an immune suppression state.

If you are an unstable... you have unstable energy throughout the day, and you're playing this blood sugar roller coaster ride, and you're craving sugar all day and crashing, you're craving sugar all day and crashing, you should definitely not be fasting. That will cause you to release high amounts of stress hormones and cortisol, and you will fall apart.

If you're a person who can fast and not have any significant symptoms, then there are some benefits of fasting that can be very helpful for you.

Another key concept that I just want to talk about, we talk about this is in the free immune and resilience course is hydration. One of the key things to understand about how the immune system works and how water is so critical is that studies show that when people become dehydrated, their immune system dysfunctions. It's just that simple. Water carries oxygen, hydrogen, and water is responsible for many biochemical and immunological reactions that are necessary for you to have a healthy immune response. But also, water has an impact on your osmolarity and the concentration of electrolytes and sodium in your system. When you get dehydrated and you don't have enough fluid to change the viscosity and the osmotic pressure in your blood vessels, your immune system can't communicate very well.

Another key thing to make sure that you really do to try to keep your immune system as healthy as possible is to stay hydrated. The key thing about that is you should never feel thirsty throughout the day. You should just get in a routine of drinking lots of water. That will make a huge impact on your immune system as well. Okay.

Here's a question. "What's the best way for diabetes type 1 to boost immune system?" I can't tell you. That's too complicated. That's the key thing with the people who practice personalized medicine. Each person is unique in their own way. You have to look at their labs, look at their history. There's no general rules. This is what I think is frustrating for a lot of people too. Okay.

"How about carnivore diet for autoimmunity?" I don't know. Carnivore diet... Your microbiome will completely change on a carnivore diet. I don't know. I think if you worry about your immune fitness and you're trying to improve your immune health, now is not a time to try a drastic diet that completely changes your microbiome by reducing diversity. One of the key things about a carnivore diet without question is that even though you can decrease your antigen loads by just eating meats because meats are typically not foods that cause severe inflammatory reaction for people — so many people feel benefits for eating a carnivore diet and their antigen load calms down. And reducing the carbohydrate intakes, so their insulin levels start to come down — your microbiome diversity will completely shrink on a carnivore diet. And that's one of the side effects people have is when they have significant bowel symptoms after they go on a carnivore diet. It may or may not be helpful for immune function right now, but I'm not sure if it's... my gut feeling is I'm not sure if it's the best response. Okay.

Let's go into some other questions here. We talk about genetics, we talked about exercise, we talked about microbiome diversity. We talked about vitamin C, A, and all of those. And I think at the end of the day when I kind of look at these questions here, one of the key things to really think about is we just don't know a lot of things. We don't know much about coronavirus. There's going to have to be some

retrospective studies that come out that teach us more, specifically with the medication or nutraceuticals that have an impact that's positive or negative.

But you can just apply general principles of what our immune system needs to function properly. Again, sleep, hydration, getting your opioid release, getting in some physical activity to bump your lymphatics, those are core principles that will go across all types of viral infections of any kind, just immune health that are pretty reliable. We can definitely count on those.

The other questions that seem to come up are really much more specific to patients and various things like that. One person asks, "Why hypoglycemic people should not fast?" That was the key thing. I talk about that in my books too if you get a chance to read my book *Why isn't my brain working?*, or *Why do I still have thyroid symptoms?*, we go into those as well.

The other key thing that you really want to think about during this coronavirus situation is to really just to get your information from accurate sources. I would strongly discourage everyone from getting any accurate information from any news channels. It doesn't really matter what your news stations are. Just go to the CDC, go to the World Health Organization educational resources. That's really where the real information's at. What you're getting on news channels is an interpretation of that, and there's intention to cause fear when you look at news, to really get people to stay tuned in, which is just horrific. Really stay with the CDC, World Health Organization, they have some of the best scientists in the world that are really sharing accurate information. That's really the best place to keep information on.

Stay away from commentary news, stay away from general news that is there to try to just freak you out with death toll numbers and all those things. That's not good for your immune system as well.

Okay. And then the other key thing I want to talk about is so someone, Michelle, "How about gluten that's supposedly used as a binder in thyroid meds?" Well, in general, these are the key things too. If you have autoimmunity, for example, or if you have sensitivities to food proteins, or have immune reactions, if you constantly get exposed to your triggers, maybe your trigger is gluten, maybe your trigger is dairy, you're going to weaken your immune system. So if your immune system is dealing with food sensitivities all the time, you're going to make your immune system less efficient at dealing with infection.

That's another problem we're seeing is some people go, "Well, I kind of react to dairy or kind of react to milk and gluten, but you know, I'm stuck all day at home. Well this sucks. And I'm going to just eat whatever."

That's a terrible idea.

That will really have a negative impact on your immune function.

Please be very conscious of your reactions to food proteins: casein protein in milk is one of the most reactive. Gluten in grains is very, very reactive. Egg albumin is very reactive. And corn proteins are very reactive for many, many people.

Some of you already know what those sensitivities are. If you know what those sensitivities are, now is really a time to focus on really being, restricting those, to really giving you a chance for your immune system to have the best outcome.

Anyways, I think we're doing well here with time here. And I encourage you guys to let me just kind of recap the key concepts here.

Get an opioid response by watching shows that make you happy, watching YouTube clips, try to laugh, try to be with family, try to appreciate the time. Try to reduce your time stressing out on negative things and death tolls and all that, that's not good for your immune system.

Eat a high fiber diet with lots of diversity to improve your microbiome diversity. That has a profound impact on immune regulation.

Drink lots of water. Stay hydrated makes your immune system really, really efficient.

If you want to fast, that's fine. Make sure you're not hypoglycemic if you are trying to do a fasting state.

Supplements, the key thing is there's A, C and D, which are the most common nutrients that help, but they all... there's lots of botanicals to support the immune system way beyond what we can talk about in this short period. Antioxidants seem to be helpful. Eating lots of super foods. Flavonoids can be a great way to support yourself.

And anyways, we'll try to come back here again, and I'll try to look at these questions later and maybe hold another video when I can get an idea. It's hard to get all my thoughts across and try to read questions at the same time, but we'll definitely put another video together very shortly. Let me just kind of get a chance to read all the questions and we'll comment more.

I summarized a lot of these key concepts. If you go to [www.drknews.com](http://www.drknews.com), I write articles and information for people that are following my work as an author, but I put together a free immune resilience program that goes over all the lifestyle things we talked about ["Everyday Immune Resilience" on the home page.]. It has some videos and some notes. Hopefully that can help you all. I hope everyone's safe, and thank you for joining.

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