



**The Good Clean Nutrition Podcast
Episode 16 Transcript**

Episode 16: The Impact of Nutrition on COVID-19 with William W. Li, MD

Dr. William Li:

And so, to this day, what we're seeing, over the last two and a half years of this pandemic, I've been following the trail and expanding my investigation to understanding, how does COVID damage our blood vessels beyond the airways?

Mary Purdy:

Welcome to The Good Clean Nutrition podcast. I'm your host, Mary Purdy, integrative dietitian and nutrition educator. Joining us today is Dr. William Li, an internationally renowned internal medicine specialist and scientist, an author of the New York Times bestseller *Eat to Beat Disease: The New Science of How Your Body Can Heal Itself*. His groundbreaking work has led to the development of more than 30 new medical treatments and has influenced treatment and care guidelines for 70 diseases including cancer, diabetes, blindness, heart disease, and obesity. Since the COVID-19 pandemic, Dr. Li has been leading research to better understand COVID-19 as a disease, and how diet and nutrition can potentially assist in treatment and prevention, which we will be talking about in this episode. Welcome Dr. Li. I'm really excited about this topic because I actually know folks who are struggling both currently with COVID and also with long-term COVID. So, this is going to be a fantastically informative discussion.

Dr. William Li:

Yeah, I'm looking forward to it. There's a lot to say, even though this has been such a short time that we've actually been having COVID in everyone's lives and yet we know a lot, and yet we don't know a lot. So, I think we can kind of touch on both areas.

Mary Purdy:

Absolutely. And you're known, thank you, for touting the importance of diet for over longevity and as well as for fighting disease. And as an integrative dietitian, I have to thank you from the bottom of my heart for being a doctor who actually takes on nutrition as an element of therapeutic interventions. And I'm curious how you became interested in nutrition as a key component of preventing and treating illnesses.

Dr. William Li:

Yeah. Well, my background in this is as an internal medicine doctor, which means that I take care of young and old, men and women, healthy and sick. My own personal orientation has always been to keep people as healthy as possible. But over the people's journey, journey of a patient, they're at times going to get sick. And so, my goal has always been, even if I need to give them medications or to send them to referrals, I always wanted to get them back on the horse or back on the wagon, so to speak, back to health. And so how do you give somebody back to health in addition to prescriptions, which can last forever? Really one of the goals is to really help to allow people's bodies to do the work that's necessary to regain, restore and maintain health.



And if you're going to talk about prevention, you can't talk about drugs or treatments, you got to really talk about something like food. Safe, accessible, inexpensive. But the question that I always had about food, which I know you as a nutritionist naturally, this is sort of your wheelhouse from the beginning. But for me as a medical doctor trained more traditionally, I realized that the common criticism is that food diets don't have as much evidence as drugs. Well, I realized that because I was involved with drug development, and I helped to develop many of the systems in which drugs are tested. I thought, "Well, if that's the problem, why don't we develop the evidence?" And so, I actually started to throw foods into the same systems that drugs are developed to be able to get that evidence. And so for me, I'm a bonafide food as medicine researcher and actually using the systems to develop the evidence.

And that's really how I became interested in this because every single one of my patients would ask me after a visit, and especially after I gave them a serious diagnosis, "I'm sorry, Mr. or Mrs. so-and-so, this is what you have." They'd always ask, "How bad is it? How long do I have? What's the treatment?" They'd put their coat on and they'd walk out my office, and then they would pop their head back and they'd say, "Hey, one more thing, doc, what should I be eating?" And I realized I was never taught that answer. And so, I thought that was wrong and I went back to try to figure out that. And that's really how I got into nutrition.

Mary Purdy:

It is so empowering, I think, for patients to understand that it isn't just about the diagnosis. It's about their participation and sense of empowerment about what they can be doing to create that foundation of health as you mentioned. Health is not the absence of disease. It's a positive vitality that we very often get from the nutritional status that we have. So, thank you for that food as medicine approach to health and healing. You've said specifically that there are nutrients that can actually starve disease and there are nutrients that can perhaps feed disease. So, talk a little bit about the mechanisms of action behind those two statements.

Dr. William Li:

From my work in biotechnology, I realized that there was so much work being done on the immune system, on the vascular system, on gene therapy, on regenerative therapy, and I worked in all of these areas. And then I realized the microbiome was this other powerful area that was just starting to emerge. And I realized that rather than thinking about the treatments to cure disease by striking at the immune system or the vascular system, what if we looked at the negative space? What if we look at the controls, the placebos, the people who are not actually getting the drug, how do they actually stay healthy?

So, when people talk about nutrition and talk about superfoods, what I actually always say is that my research has revealed hundreds of different foods that are helpful for health, and there is no one single superfood. But what is super is actually the human body. When it comes to food and health, it's not just about the food, it's about how our body responds to what we put inside it. And that is where the health defense systems come in. What we feed our health defenses as we get older, we can actually raise our shields, our health defenses, or we can lower them. So those decisions that we make three times a day actually guide our destiny.



Mary Purdy:

Powerful. And so, eating is actually helping to feed these defense systems, the blood vessels, the stem cells, the microbiome, the DNA, the immune system, which we might even say is intricately involved with all of those other systems as well.

Dr. William Li:

These systems by the way are like a macramé.

Mary Purdy:

Yes.

Dr. William Li:

They're interwoven together. If you took a look at an Irish fisherman's sweater, and looked at all the yarn as sewn together, that is actually how our health defenses are. And so literally, that old saying about the hip bone connected to the leg bone, our health defenses are all interwoven together. It's really quite amazing what they do. So foods that help one system, tend to help other systems as well.

Mary Purdy:

And I really like to challenge that notion of just food as medicine, because is it the food that's the medicine, or is the food that's providing the tools and the information that our body needs to do the healing on its own, and the food provides those tools with which those defense systems that you talk about can operate more functionally?

Dr. William Li:

That's a great point. Listen, when I wrote my book Eat to Beat Disease, and I got a copy of it right here, it's got a big, nice letter on it, Eat To Beat Disease, but actually the real title, the essence is what's the subtitle, which says The New Science of How the Body Can Heal Itself. And to me, that is the most important thing. And if there's any take home, even from this discussion that we're having today about everything that I do, is that we actually have within us the power to maintain our health, to restore our health and to avert disease. And what we do in terms of decisions that we make for food that we put into our body, either raise our shields or take them down. And really, we have that agency to be able to do that. That cannot be the missing tool in the toolbox for healthcare, because in fact, it is the care for our health that happens between visits to the doctor's office.

Mary Purdy:

Amen to that. And I want to get to the heart of our conversation today, because you mentioned angiogenesis, right? And you are the Founder and the President of the Angiogenesis Foundation, and you have been leading research there to better understand COVID-19, its short-term impacts, its long-term impacts, and I would love to understand more. What is the Angiogenesis Foundation, and how does that connect to the research that you are doing around COVID-19?

Dr. William Li:

Well look, my background in vascular biology studies blood vessels. I was really fortunate early in my career to train with the father of angiogenesis research at Harvard. And I was so inspired by that work where he was looking at cancers forming all the time in the body without causing disease like pimples



that actually form in our body, because cancers form with DNA mutations. And I don't know if you know this or not, Mary, but can you guess how many mutations happen in the average person's body every day?

Mary Purdy:
400.

Dr. William Li:

10,000 DNA mistakes happen every day simply because you and I are made a 40 trillion cells a piece. And when those cells have to copy-paste themselves to divide every day... If I gave you 10 words to copy-paste, you probably wouldn't make a mistake. If I gave you 100, probably it'd be pretty good. If I gave you 40 trillion, you definitely make mistakes, and our body makes 10,000 mistakes. Now why don't we form cancers all the time? Well, the answer is we actually do, but our DNA fixes most of it, and all the different health defenses do their job to protect us from dangers inside our body as well. So anyway, angiogenesis is one of those, because the growth of blood vessels, we all have 60,000 miles worth of blood vessels packed inside our bodies, under our skin, right? And these are the highways and byways of the oxygen we breathe and the nutrients that we swallow.

And so our blood vessels deliver oxygen and nutrients to every single cell and every single organ in our body. And that's what we want for the defense system to do is to keep everything well fed and happy. We don't want to have insufficiencies. So, imagine you are a landscaper and there was a bald patch on your golf course. You better actually put some grass seed under to grow up the grass, or you're going to actually have a problem. The other side is that if you have too much overgrowth in one area, you got to mow it down. You want the perfect lawn and that's what the angiogenesis system does. And that's what my organization actually does, is we actually study angiogenesis as a common denominator of both health and disease. And when it comes to cancer, what cancers do and become dangerous, these little, microscopic cancers can only grow to about two to three millimeters in diameter.

That's the size of the tip of a ballpoint pen. Can't get any bigger, no oxygen, no nutrients, that's how big they are, because our body's defenses prevents blood vessels from feeding them. And then our immune system wings by like I say, cops on a beat to pick up these errant bad guys that they see and take them away. And that's really why when people say, "Well, why did I get cancer? Why did I get colon cancer or breast cancer or skin cancer?" This is how my brain works. Let's ask a different question. Why don't we get cancer more often?

And the answer is that our body's health defenses protect us against that. And this kind of knowledge about our body's health defenses, especially angiogenesis is what brought me to COVID research. And so maybe that's a good place to start.

Mary Purdy:

Yeah. And let's relate that because I'm hearing that these blood vessels are acting as a supportive highway for the defense systems. How is this relating to COVID-19, either one's susceptibility to it, or one's poor outcome from it, or the severity of the disease? Talk to us about that.



Dr. William Li:

When we looked in this tissue of people who died of COVID, immediately, I mean, I would say within days, we realized this was not just a respiratory disease. It wasn't just a bronchitis, a bad bronchitis. It wasn't just a bad flu. We saw at the get-go that we saw for the first time, the coronavirus, the thing with the spikes invading the blood vessels in the lung. We have the first pictures of invading the blood vessels, damaging the blood vessels. Now we had the tools of modern technology that people didn't have during the plague. So, we got to the genomics, like we went right down to the gene, from the tissue to the gene, from the autopsy down to the tissue, down to the blood vessels, down to the genetic level.

And man, were we shocked? The coronavirus entered the blood vessel, screwed up the blood vessel, destroyed the architecture of the lining of the circulation completely, and basically started to race like a wildfire of right through the circulation. So everywhere we saw, it was in the brain, it was happening in a thyroid, it was happening in the testicles, it was actually happening in the heart. And we were able to do this technique called corrosion casting, where you can inject a resin into the small blood vessels, and then you dissolve all the tissue. And we were able to actually get these three-dimensional sculptural pictures of what was going on, in addition to having the genetic information. So, we actually published our findings as a lead story in an England journal of medicine. It helped to explain all these odd phenomenon that we saw at the very beginning of the pandemic, blood clots, strokes, COVID toe, kidney failure, things that you don't normally see with a viral infection.

What was happening was that the blood vessels are being damaged. And because these are the highways and by-ways that you need oxygen and nutrients delivered, when you damage the blood vessels, you get clots. When you get clots, you interrupt blood flow and now you have organ damage.

And so, to this day, what we're seeing, over the last two and a half years of this pandemic, I've been following the trail and expanding my investigation to understanding how does COVID damage our blood vessels beyond the airways? How does it develop our smell sensation? How does it develop our brain? COVID will shrink your brain, which is really astounding it can actually do this. We've actually found that, and this has been published, blood vessels infected by the coronavirus will in people who are severely affected... Now remember many people have brain fog. We found this in the autopsy. Literally the coronavirus invades the blood vessels of the brain and strips out the lining.

It's like pulling the foot out of a sock, the vessels collapse, no blood flow. And this is happening at the microscopic level. This is hidden in plain sight. So now we're using computer programs and software to reconstruct the blood vessels in different organs, starting with the lungs. And we can literally calculate where and how much and how badly the blood vessels are damaged. So, it's true that the ancestral, the first coronavirus did the worst damage. But I will tell you, we have not published it yet but we're going to very soon. We're finding a similar kind of thing also happens with Omicron. I'm one of the people that actually, because I'm in the trenches looking at this stuff, I'm not quite ready to call it over. In fact, what I would say is that now's the time to take stock of everything we've learned and think about what are some sensible things that we can do forward, because actually we know more now than we did before.



Mary Purdy:

Wow. Okay. So that was a cascade of information. I want to make sure that I've got. I want to summarize again for our listeners and for myself, for my own brain. So, we had this defense system, one of which is this blood vessels. The coronavirus actually invades these blood vessels. They cause things like clots; these things can lead to organ damage. It really depends on perhaps where the weakest link is of the person who has that coronavirus in terms of where it actually manifests, brain, heart, testicles, wherever that may be. And that may have short-term and or long-term effects. And I want to bring us back to the nutrition piece, because I know that there are foods that strengthen our blood vessels like phytochemicals or polyphenols. So, let's talk a little bit about what is it that nutrition and food, what is it that that can do to help prevent COVID and perhaps prevent a worse outcome of a more severe case of it? Talk to us about that.

Dr. William Li:

Well, this is actually like a great opportunity to reintroduce this idea of health. It's not so much, why did I get COVID? Why didn't I get COVID? It's because your body's health defenses were basically your musketeers defending yourself, pulling out the scabbard and actually defending yourself against invaders from the outside, in this case the coronavirus. So, what are the health defense systems? Immune system is the first one. All right? We need to be able to repel the bacteria and viruses. It's not just COVID, but lots of viruses that are running around there. If you have an invasion, you need to be able to lower inflammation, because although inflammation is a natural response to an infection, a little bit is good, a lot of it is terrible.

I tell people like this, think about going camping in the woods. You want to carry a nice campfire. You can cook your meal in the evening before you retire into the tent. A little campfire is good, and then you want to put it out, right? So, you just dump some water in it, put it out, now you can rest at night. That's inflammation. Now imagine if the inflammation doesn't go out and in fact it jumps out of the fire pit and now it ignites the forest on fire. Now it's a life threatening, critical situation, and that's one of the things that COVID does as well. And so you want your health defenses to be able to lower inflammation and foods can not only raise immunity, foods like broccoli sprouts and blueberries have been known to increase your T cells and natural killer cells. That's the front line of defense.

And foods that can lower inflammation, and we can go through these like critical step by critical step, foods at lower inflammation are, many of them are vitamin C containing foods. So, you're talking about strawberries, guava, red bell pepper, tomatoes, green tea is another one with catechins that can actually lower inflammation. None of these things are pharmaceutical panaceas, but they are all parts of equation. Those things, those self-care, healthcare is self-care. And so those are things that we could do for ourselves. And back to the staring out the window at the beginning of the pandemic, what I realized was that "Here I am. I'm pretty fluent in biotechnology and my job is actually to develop really cutting-edge treatments for really unstoppable diseases like blindness. And all of a sudden, I was stopped dead in my tracks with nothing, no pharmaceuticals. And this was a lesson to me where physicians who have relied on pharmaceuticals as their real weapon of choice suddenly had nothing to offer patients.

And without knowledge about nutrition, there was no dialogue to be had. So, everybody just clammed up and went to work in the ICUs and emergency rooms. And yet I felt like there was an absolute need to be able to communicate to the public. And so, when everybody started to go on Zoom, I started to do



these master classes and I started to develop online courses in order to be able to teach people, "Look, you got these health defense systems. This is your chance because you have to make a decision to eat three times a day to be able to arm your body while you're healthy, in order to be able to actually be in control of your health and defend against disease as best you can." And so even after you get infected, there's still ways to actually deal with COVID and post-COVID, the so-called long COVID, there's a repair that needs to happen as well. And I'm working on that also.

Mary Purdy:

Hmm. So, I mean, it is really astonishing to me that for so long, we haven't been having conversations like this in the media or in general in the medical community about how key it is to just make sure that the immune system is bolstered and balanced and ready. And so many people who have had COVID may have had these insufficiencies of these vitamins and minerals that support the immune system. And I think you all don't recognize that the immune system is driven and supported by nutrition and nutrients. So, this idea of these vitamin C rich foods you mentioned, and I know these polyphenols, things like catechins and anthocyanins and blueberries. And then of course we look at our vitamin D levels, we look at vitamin A levels and all support immune function. And obviously we know that a good chunk of our immunity is in the gut microbiome, which you mentioned as an important defense system. So talk about the role of the microbiome.

Dr. William Li:

So the gut microbiome is another one of the body's self defenses. We talked a little bit about angiogenesis. I want to circle back to that. The immune system, obviously frontline of defense, very important in acute disease. The gut microbiome is one of the third health defense system, it's fascinating because while we don't think about bacteria in our body, and I want to just come back to how when I was in medical school, microbiology class was all about learning and memorizing about bacteria that were bad and that you wanted to kill, must kill bacteria. And then we did pharmacology and here is the drug to kill the bad bacteria. And we just like filled our heads with all this stuff. Little did we know, and this is now fast-forward today, that in fact most of the bacteria that we encounter in our lives are good bacteria.

Most of the bacteria in the human body, on the human body that we encounter are good bacteria, and there's a few bacteria that occasionally occur when your immune system's out of whack, when your microbiome is out of whack that can overgrow. So here we are, prescribing antibiotics to kill specific organisms. Now, granted, that can be a lifesaving. So, I'm one of those doctors who believes the right medicine for the right person at the right time. But think about the idea of collateral damage. Here we are trying to kill one organism that we've identified, and we are knocking out all these other organisms, that's called dysbiosis. Now, if you think about the number of people that are on antibiotics for bronchitis or skin lesions or pneumonia or UTIs, urinary tract infections, a boil, et cetera, et cetera, et cetera, dental procedures. Now think about the impact on the gut microbiome.

Now the gut microbiome mostly lives in the lower part of our gut, in the intestines, in the area of the colon. The colon is the big fat tube at the very end of our digestive system. And the area that most of the microbiome, the gut bacteria is called the cecum. It's at the front end of the colon. The tail end is basically where we squeeze it out, but the front end of the colon is actually where most of the bacteria is. Most people don't realize this, but again, a change of teaching when I went to medical school is that



we now know that 70% of your immune system is actually in the wall of your gut. So, think about a garden hose in the summer, and you cut that garden hose in half, and you see a hose with a hole in it, a channel, inside that hole is where the bacteria is going to live, in the cecum, in your gut. That's the gut bacteria.

And in the lining of the hose, in the wall of the hose that you just cut open, that's where 70% of your immune system actually is. So, your gut bacteria talks to your immune system. When your gut bacteria healthy, they are able to instruct the immune system to do the right thing. I call it like college roommates screaming through a paper-thin wall in their dorm to talk about what they wanted in their pizza. It's basically your bacteria talking to your immune system continuously, and when you actually upset the bacteria, the instructions to the immune system are disrupted and your immune system doesn't do as good. So now think about this, right? Who gets COVID, who doesn't get COVID? We don't know yet exactly, but we do believe that the gut microbiome, the make-up of the gut microbiome impacts your immune system, impacts your defenses and that might actually lower your shields so that a virus that might not attack or invade your neighbor, your family member, your co-worker, might actually get you because your gut microbiome was a little bit off.

How do you know when your gut microbiome was off? Well, okay, so we can do poop tests and scrape and send away and get a result back. But I think that we have an easier way to tell, right? I mean, all of us have felt crappy in our tummies, from the time we were kids. That's a cardinal sign. That's kind of like, "Listen to your body. There's something that's not quite right. Something's out of balance there." And that's the time that you should really use nutrition as your friend to be able to actually get that gut microbiome to be happier, feed it dietary fiber, pre-biotic foods, pro-biotic foods like fermented foods, and even post-biotic foods, which contain the stuff that the bacteria also make to calm and quell and get the bacteria, the ecosystem to be happy, which makes a happy immune system.

So very much intertwined. And by the way, one interesting study that came out of China in the early days, they looked at 700 people in China as the pandemic was just starting, and they wanted to figure out who is going to wind up getting COVID and who was not going to wind up getting COVID? So, by tracking people, they did blood tests, they did poop tests, they also did dietary surveys to figure out what people were eating and drinking. They found that the people who wound up not getting COVID, who had a stronger immune response, they had a cytokine, a good cytokine an antiviral cytokine called interferon gamma that was high in their bloodstream. Now then they said, "Okay, well who are the people that have high interferon gamma?" That's where the answer came from the poop. They looked at the microbiome and the people who had high interferon gamma had high levels of a bacteria called ruminococcus. It's just one of many bacteria.

Then they went and basically said, "Well, now who has ruminococcus?" That's where the dietary surveys delivered an answer. And they found that the people who had the high ruminococcus were the people that ate a diet rich in omega-3 fatty acids and were drinking green or black tea. All right, now you talk about a dietary intervention. There you go. A dietary intervention that affects the microbiome, that affects the immune system, that affects a clinical outcome. I just shared with you a little bit of the detective story of COVID and nutrition.



Mary Purdy:

Well, it makes complete sense to me. I mean, if we think about nutrition being the foundation of immunity, immunity, being the foundation of that healthy vitality, the connection is absolutely a no brainer. And so again to capture what you just said, we're talking about that nutritional status of somebody that not only supports their immunity, but also supports the microbiome. So having foods in there that are fiber rich or fermented foods, foods like omega-3 fatty acids supporting the presence of ruminococcus bacteria that may help to increase levels of this interferon gamma, which is a new cytokine that I have not heard of before. So, I'm always happy to learn about an inflammatory or anti-inflammatory cytokine.

And so this is really key information for people to know because I think the studies that I have seen have showcased that those who have a worse outcome of COVID-19 have tended to have lower levels of vitamins A's and vitamin D's. And so, I want to move us into the conversation around, beyond food, which of course we know is foundational, but what about supplementation? Is there a space in this conversation for supplements, whether that's vitamin D or moving beyond that, things like quercetin, N-Acetyl cysteine, which I've seen research around? Tell us about your thoughts around those.

Dr. William Li:

Yeah. Well, so again, there's a lot we don't know yet and so the research is still going on. I'll tell you my own views on supplements, which is that supplements can be life-saving. Most of the vitamins that we have today as supplements really came from addressing serious illnesses like beriberi, rickets, scurvy, right?

Mary Purdy:

Right.

Dr. William Li:

So those are all deficiencies of vitamins. So, what does the supplement do? Supplement by definition is a top off. So, I think about it like if you can get most of the micronutrients you need from food, do it. Because why? Food is actually also about pleasure. Food gives you joy. I never heard anybody say that, "Medicines or supplements give me joy." But foods give you joy. But that's also an important component I think to a healthy life is really to be able to align pleasure and joyfulness with your food.

So much about food and health historically has been about deprivation, accusation, blame game, don't do this, don't eat that, you're a bad person when you do this. I mean, think about just like weight gain. There's a whole stigma around food. My research is really about how do we use food as our friend? How do we use the delicious foods as our friend? And many of those clues, and I'm writing my next book about this by the way, actually come from old food cultures in the Mediterranean and in Asia, where time has tested these ingredients for tens of thousands of years. So, I believe in supplements. For example, many people in a Northern hemisphere are vitamin D deficient, just not enough sunshine and too much clothing. It's hard to get enough vitamin D just by being outside. In that case, if your vitamin D levels are low, I think supplementation is perfectly fine and probably a really smart thing to do.

We do know that people who are more vulnerable to COVID infection and bad outcomes had lower levels of vitamin D. Now we don't know of vitamin D as a treatment. It could be that just chronically low



vitamin D made your defense systems more vulnerable, so then the virus just drove the truck right through the garage door. And so that's one thing. Omega-3s, first of all, most of it don't realize is omega-3s actually come from plants. So, it doesn't matter whether you're talking about a walnut or whether you're talking about a piece of salmon, because even in the ocean, it's algae and plankton that actually developed the omega-3. So that's like a plant of the sea, right? So, the thing is that not everybody eats enough seafood. So, the USDA recommends two times a week of seafood, about six ounces, about the size of a deck of cards or a couple of decks of cards.

It's hard to eat that much fish if you don't live by the shore, and not everybody likes the taste of fish, especially in America. So, here's a great example where omega-3s, which are not only useful against infection, but also powerfully impactful against cardiovascular disease, protective against heart disease and stroke, protective against dementia, protective against metabolic syndrome, protective against diabetes. There's so many things that the omega-3s are, that I almost think that because our body doesn't make omega-3s that's almost like an essential... I even kind of hesitate in calling it a supplement, because it's almost one of those factors, like a biological factor that really helps us be healthier. We should all be getting omega-3s and it doesn't matter how you get it. If you can get it by fish, perfect, seafood.

And the other thing about mythology, I'm big about like myth busting. People always think that, "Well, I got to eat my salmon. I don't like salmon. I've had salmon five times this month. I don't want it anymore." Or tuna. "Oh, it's got mercury in it." People don't realize that you can get omega-3s from all kinds of fish, sea bass, cod, flounder, hake, you can get it from shellfish, clams. You can get some from crab, you can get from lobster. The key is to actually have little bits all the time, and then if you test your omega-3 levels, if you choose to do that, you can always top it off with a supplement.

Mary Purdy:

Great advice. And I'm a big fan of expanding on the seafood world as well. So, anchovies and sardines are other great ones too and they also are more accessible and inexpensive for those who may not be able to afford a nice big chunk of salmon. One last question before we are beginning to wrap up here is, if somebody does have COVID, I am curious what advice you might give them. Either if they are in the throws of it, they just got diagnosed or starting to feel symptoms, what might be helpful for somebody to think about as it relates to foods that they should include. And the same question might go for someone who's struggling with long COVID.

Dr. William Li:

Yeah, no, it's a great question. I'm in the middle of this every day right now. I've probably treated more than 250 people with COVID just since January, this being June. So, this is really an ongoing activity for me. Let me try to not separate food from medicine, but to really take a more comprehensive approach, and with a caveat that I'm not giving medical advice.

Mary Purdy:

Of course.



Dr. William Li:

Anyone who's got a medical issue should obviously consult their own doctor. But as a general principal, I think that here's what I would say in where we are at this point in the pandemic. Number one, you should be vaccinated and boosted. Number two, if you get COVID... And you should wear a mask, if you can, based on your circumstances. If you get COVID, right now and not as many people know this as they should, we have an antiviral treatment that's specific for COVID. This is the Z-Pak for COVID. This is the game changer that everybody's been waiting for. We didn't have it for two and a half years, and it's not being used often enough, but it's called Paxlovid.

It's three pills. You take twice a day for five days. Part of it is derived from an old HIV medicine. So, it's been taken for 25 years very safely. What it does is it chops down the virus's ability to be able to divide in your body, giving your immune system a chance to wipe it out. So, think about it. Think about the virus, like a piece of chalk on a chalkboard scribbling, putting more chalk on it. Now think about your immune system being the eraser, trying to erase it. The virus is putting more chalk on the board, your eraser, your immune system trying to erase it.

Paxlovid prevents more chalk from being put on the board so that your immune system can erase. All right? Now here's something really interesting that people should know. During this time, you want to actually give your immune system every chance it can to strengthen that immune system. A vitamin D supplement is a good thing to take. Vitamin C is anti-inflammatory. Eating foods that actually can lower inflammation, really, really important. There may be medications that every individual's doctors may also suggest based on their own circumstance and our own comorbidities.

Now, I will tell you the other thing I've learned at a much deeper level. Whether you have a severe case of COVID, even during the Omicron era, or whether you have a mild case, and probably even if you're asymptomatic, this virus is a clever, nasty bugger. It is doing three things that everyone should be aware of and be concerned about. And when I say everyone, I'm going to start with the medical community and the nutrition community. Number one is that it's damaging your blood vessels. It is basically scuffing up the endothelial lining, the inner lining of the blood vessels. What's an example of that? Think about an ice skating rink before hockey game, or have you ever gone for recreational skating?

Mary Purdy:

Sure.

Dr. William Li:

What happens after a game or after a session on the ice? It is really messed up. At the beginning of the session, if you were to throw a sweater on the ice, it would slide all the way across. That's what blood vessels are supposed to be like, smooth. Once you scuff up the ice after a hockey game, you throw that sweater it's going to get stuck, it's going to clot. That's what happens in your blood system. So, in an ice skating rink, what happens? You bust out the Zamboni. This is this big machine that rolls over the ice and it smooths out the ice skin, making it a perfect smooth surface. That's what nutrition we think can do, is to help repair endothelium even if you have a mild case of COVID.

There's research, by the way, looking at other ways to repair the blood vessels including using Viagra, low dose Viagra which stimulates nitric oxide. Now, what if you don't want to have use of medication?



Well, there are other foods that can stimulate nitric oxide? I got one right here. I have some beet juice. Beets and spinach and bok choy can stimulate nitric oxide in your bloodstream, dilate your blood vessels and stimulate repair. So, we know that blood vessels get scuffed up. They need to be fixed. Number two, inflammation happens no matter what. Eating a diet rich with anti-inflammatory foods, very, very important. Even if you have mild COVID. Vitamin C, catechins, those are all great ways to calm your inflammation.

Remember that analogy of the campfire that jumps out of the fire pit into the forest. You want to actually put out the stuff in the forest and keep it contained. And the third thing that happens is there's a low level of autoimmunity that occurs. What I find so shocking about COVID is that this is a coronavirus that essentially tries to give people lupus, not real lupus, but it triggers an autoimmune response, which is why some people wind up getting long COVID and all these other complications. So, things that can lower inflammation for lupus, diets that might be helpful for lupus might also be helpful for opposing this autoimmune effect as well.

So, at the microscopic level, vascular damage to your blood vessels, chronic low-grade inflammation, it's a sneaky kind of inflammation. And third is autoimmunity. These are the things that nutrition and nutritionists can actually play a big role in how you can actually recover from the acute disease and for long COVID outside of medicines that might be tried, clinical trials, experimental things that are going on right now, there's no clear-cut answer to this. Nutrition, remember is self-care, and healthcare starts with self-care and that's in your kitchen.

Mary Purdy:

I am so glad we've been having this conversation. I think it's going to be measurably helpful to so many individuals who are struggling with COVID, long COVID, or who may have yet to get COVID and are trying to strengthen their defense systems. So, they can do that with reducing the amount of inflammatory foods, getting anti-inflammatory foods that are rich in polyphenols, and omega-3 fatty acids, getting vitamin D, vitamin C, nitric oxide rich food, teas, supporting the microbiome with healthy, good bacteria from cultured foods and a lot of traditional foods, which tend to be anti-inflammatory anyway. So, these are just so valuable for us to understand. And we've already gotten a masterclass from you, Dr. Li, right here, but I know you have a masterclass on your website. So briefly tell us a little bit about that and how people can find you if they want to become true masters and mistresses or whatever you want us to call it of this domain.

Dr. William Li:

Well, first of all, it's part of my mission to try to get information out there, and so if anybody wants to learn more and actually, I provided a free download for immunity, so you can actually know what are some of the knee-jerk foods that I would actually tell you should actually know about right away. First come to my website. It's at drwilliamli.com. And you can also find me on social. My handle is @drwilliamli. And sign up for my newsletter, and I do have a masterclass that you can actually sign up for as well. I hold it periodically, a couple of times a month, please sign on. What's really fun for me about it, is the global impact. I've had more than 50,000 people from 44 countries over the last year take this masterclass. And so, I'm pretty interactive on it too, and so people can really see where other people are coming from and what their concerns and questions are as well.



Mary Purdy:

Excellent. Well, what a wealth of information you are, and I'm sure will continue to be. Thank you for all that you've done to help people through this disease and through whatever else is yet to come. We look forward to having you join us for future episodes of The Good Clean Nutrition podcast, sponsored by Orgain, where we will interview more subject matter experts on a variety of health and nutrition focused topics. To stay up to date on the latest episodes of this podcast, be sure to subscribe on your favorite podcast platform. Thank you so much Dr. Li for joining us today.

Dr. William Li:

Thanks Mary.

Mary Purdy:

And thanks to you all for tuning in. See you next time.

Mary Purdy:

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