



Episode 255: Dr. Valter Longo on a Fasting Mimicking Diet and Increasing Healthspan

Child: Welcome to my Mommy's podcast.

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Katie: Hello and welcome to the Wellness Mama Podcast. I'm Katie from Wellnessmama.com and I'm beyond excited for this episode... I've wanted to interview Dr. Valter Longo for years and in this episode we go deep on fasting and especially the fasting mimicking diet. Dr. Longo is the Director of the Longevity Institute and professor of gerontology and biological sciences at the University of Southern California. He has made tremendous contributions in research related to longevity, aging, fasting, and metabolic disease. Dr. Longo is the inventor of the Fasting Mimicking Diet which was granted the only patents in healthcare on promoting Longevity and Healthspan and on treating Diabetes. Dr. Longo, welcome and thanks for being here.

Valter: Well, thanks for having me.

Katie: I have wanted to chat with you probably for years. I've read your book and I think also several of your research papers, and love what you're doing to help advance the field of longevity, and all of your work

related to fasting and the fasting mimicking diet. And I find there seems to be a lot of misinformation out there when it comes to fasting, especially now that it has started to really gain popularity. And you are indisputably one of the top experts in the world on this topic. So, to start off, can you walk us through some of the high-level effects and benefits of fasting in general?

Valter: Yes. So, I usually start by saying that fasting doesn't mean anything and it's kinda like saying eating, right? And so, there are many, many different things that you can eat. And so, we usually don't use the word eating, is eating good for you or not. And so, the same is true for fasting. So, what we've been focusing on is what we call periodic fasting and fasting mimicking diets. And the other, I think, very popular forms of fasting are alternate day fasting in which, essentially, people don't eat every other day, and then, something call 16/8 or time-restricted eating or feeding, you know, which the period in which people don't eat is extended anywhere from 12 to 16 hours per day. And there is also another one called 5:2 in which, usually, people will have maybe around 500 calories for two days a week, 500 calories instead of the normal number of calories.

So, those are the major ones. And now, there are positive and negatives about all of them. And I think it's very important that we move away particularly with fasting because it's so powerful and it's very similar to medicine, or certainly has a kind of a powerful effect. And so I think we need to start describing exactly what are we talking about and what is it gonna be used for or not?

So, you know, fasting mimicking diets, we moved away from water-only fasting for a number of reasons, but mostly, our compliance and safety. So, to ask somebody to be, let's say, three, four, five days or a week on a water-only fasting, this should only be done in a clinical setting with doctors that are specialized. And even then, it's not clear that that's beneficial. So, we are now focusing on the usual of these fasting mimicking diets, and these are anywhere from 300, 400 calories a day to 1,100 calories a day depending on the use. And they can last from three or four days minimum to about seven days is the longest version that we'll be using, for example, for autoimmunity trials.

Katie: That's so fascinating and I'm sure very appealing to a lot of people listening, the idea of being able to do something that mimics the effects of fasting without having to actually not consume any food whatsoever. Can you go a little deeper to explain how that works? Like, how are we able to get some of those same benefits while still consuming calories?

Valter: Yes. So, I've been working on this for decades. And my mentor at UCLA back in, over 25 years ago was Roy Walford. And Roy was the world leading expert on something called caloric restriction. And so, caloric restriction is just an extended restriction on calories by about 30%. And from the beginning, it was very clear that caloric restriction was very beneficial but also very detrimental, so it caused lots of benefits and lots of problems. So since then, I've been thinking, "How do we get the benefits and possibly even more than the benefits of caloric restriction without the problems?"

So, the fasting mimicking diet...then after that, I started really focusing on the genes that control aging and diseases, and spent, you know, a good 15 years just searching and identifying some of the key genes that we now know to be controlling the lifespan of mice, but also certainly, the health span of people. So, we've been

following this group in Ecuador, for example, that have a genetic mutation that are apparently allowing them to live relatively disease-free. So, the first identification, the genes, and then eventually, the fasting mimicking diet was developed to regulate these genes so that these genes can then regulate aging and diseases. So, of course, we cannot intervene. Right now, there are no drugs that are known to affect life span. And so, diet and nutrition, whether it's the everyday nutrition or the periodic fasting mimicking diet, is probably the best way to regulate these genes, right?

So, how does it work? Basically, I call it something like nutrotechnology, which is the understanding. For example, we know the proteins and certain amino acids within those proteins that the people eat every day. They control growth hormone levels. They control the levels of something called IGF-1, insulin-like growth factor 1. And then, downstream of it, they control something called TOR. And all those are now widely accepted to be regulating the speed at which people age, and not just the aging, but also diseases. And on the other side, there's sugars control a pathway, a gene called PKA. And so, we use our understanding of this connection between nutrients and genes, then develop these fasting mimicking diet so we can, in many ways, orchestrate the changes in the body so that we switch the body into this highly protected mode not just during the diet, but also in the months following the diet. So, the idea is intervening for, let's say, five days. This was shown in a clinical trial a couple of years ago, intervening for five days, and then these effects of the fasting mimicking diet can last potentially months.

Katie: That's amazing. And you mentioned autoimmunity. And definitely, there's a sector of the audience listening right now that has some form of autoimmune disease. So, based on the research and what you've found over the years, what is that connection or how can fasting potentially be beneficial for certain autoimmune conditions?

Valter: Yes. So, we now published several papers. One with a mouse model with multiple sclerosis and one mouse model for inflammatory bowel disease, but both of them had also human clinical trials that were testing the fasting mimicking diet. But in mice, we were able to look at mechanisms, so how does it work? And so, it looks like the...in the case of multiple sclerosis, the fasting mimicking diet cycles could reduce or sometimes even eliminate the multiple sclerosis effects. And they did so by, in part, intervening on the inflammation and the ability of lymphocytes to attack the normal cells of the spinal cord.

And on the other side, the cycles of the fasting mimicking and the refeeding, were basically activating these oligodendrocytes precursor cells, and so essentially regenerating, promoting the regeneration of the myelin-producing cells to reverse the effects of multiple sclerosis in the mouse. And then in humans, in the trial, we showed that, in fact, the quality of life was improved. This was a 45-people preliminary clinical trial. But certainly, very promising to already see a single cycle, by the way a week-long single cycle of the fasting mimicking diet, able to improve the quality of life of the multiple sclerosis patients.

And then, the other study that we published just a few weeks ago was with inflammatory bowel disease, so Crohn's colitis. And there we saw very similar effects. So on one side, the FMD acts on inflammation and autoimmunity, and on the other side, acts on the stem cell and repair. And the interesting thing here was that when we looked at water-only fasting, it didn't work very well. And so it looks like, as we had always suspected, that the vegan content of the diet is helping, is cooperating with fasting to promote regeneration

and anti-inflammatory effects in the gut, and in part, at least by changing the microbiota, so the microbial population in the gut, and changing it from a pro-inflammatory kind to anti-inflammatory kind.

So, it's interesting now that by connecting these two worlds that we always operated in, one was the fasting, but one was also, you know, vegan-pescatarian diets, you know, these everyday diets that the people that are very long-lived, they've always consumed. We now realize how good that idea was because it seemed like the prebiotic content of these vegetables is allowing the fasting-refeeding to promote the growth of protective bacteria and remove the bad bacteria from the gut.

Katie: That makes sense. And I know I've read some sources have potential concerns with water fasting having a negative effect on the gut. So, it makes sense that that could kind of mitigate the risk of that. I'm curious, when comparing in a research water fasting with a fasting mimicking diet and, of course, like you mentioned, compliance would be much better in a fasting mimicking diet. But are there any benefits that people can get from water fasting only that they would not be able to get from fasting mimicking diets, or do you really see pretty comparable results?

Valter: Well, not only comparable. We see better results, as I just mentioned, with the fasting mimicking diet. So, now you have an issue of safety with the water-only fasting compliance and efficacy, right? So clearly, you know, we need to move away from water-only fasting. You know, for example, water-only fasting is associated with increased gallstone formation and the potential for needing the gallbladder removed. It can lead to hypotension, hypoglycemia, etc., etc. So, yeah, I mean, at the beginning we, of course, did lots of work with mice and water-only fasting. But then, we realized very quickly in our cancer trials, but in general, the water-only fasting was not a good idea for patients, and that we needed to move to a fasting mimicking diet regimen also to standardize, right? So standardize the number of calories and making sure that we can say, "We've tested this on, you know, 300, 400, sometimes even more patients. And as it happened now for cancer, there is gonna be about, you know, 300 or 400 patients now that have received the fasting mimicking diet in combination with chemotherapy and other therapies." And so, that will allow us to standardize.

But also just the regular people, the people that don't have any diseases, we wanna make sure that we don't endanger. We don't put people in a dangerous situation so that they can save, you know, \$300 or \$400 a year. I think it's much better to do a small investment and be safe and really get the effects. And eventually, I hope these fasting mimicking diets will be reimbursed by insurances and etc. So hopefully, people, soon enough, will get them for free.

Katie: Let's talk about the cancer side a little bit more because that's certainly one area where I've seen a lot of published research both from you and from other researchers on the very much benefits of fasting in some form, fasting mimicking diets, especially for cancer outcomes. Can you explain some of the reasons why there's such a correlation there?

Valter: Well, the reason is two-fold. And one is the protection of the normal cells, you know. We don't realize that many patients are not killed by the cancer. They're killed by the treatment, and that's okay. Meaning, you know, I'm not trying to attack the system because there are desperate times, desperate measures. But

certainly, you can see if we protected the normal cells, that treatment could become much, much more effective because now, you'd be able to continue the treatment, etc., etc.

So, that was our original focus, you know, maybe 12, 13 years ago, was how do we protect the normal cells and not the cancer cells? Something we call differential stress sensitization. And clearly succeeded in that in mice and then, at several clinical trials that were published also just in that, in fact, this happens in humans that are receiving chemotherapy. And then, the focus switched to what we call differential stress sensitization, meaning that, okay, the normal cells get protected during the fasting mimicking diet and the cancer cells not. But what about the toxicity of the chemotherapy to the cancer cells, could we show that it's even higher? So, could we show that the standard treatment is more effective against the cancer cells independently, or the normal cells? And that's what we showed in many, many papers, that in fact, when the cancer cell is faced with chemotherapy or other treatment, it's already in a very panic, stressful situation. And so, when it gets in that panic emergency situation, it looks for nutrients which allow it to escape the situation, right?

For example, you know, sugar being one of the major one. So, when the cancer cell is faced with the toxins, the chemotherapy, radiotherapy, etc., it often looks for sugar to generate all the things that now need to generate at a higher rate to repair and replace, etc., etc. So if their sugar is down, now it's got a problem. Now, the fasting mimicking diet is not just acting on sugar. It's acting on sugar, IGF-1, on insulin, on ketone bodies, on leptin, etc., etc., etc. So, it's essentially generating a very hostile environment particularly when you're receiving treatment and this treatment is imposing already a difficult situation, to begin with. So this is, on one side, the chemo or the kinase inhibitor, or the hormone therapy, etc., etc. are causing problems from the cancer. And now, the cancer can go into this emergency mode and utilize all these nutrients to save itself. But if those are now altered, especially they reduce in most cases, but in some case like ketone bodies that could be there, even if they're increased, now, the cancer has a much higher, much more difficult time surviving.

And this is why we see with many cancers if we...in mice and now we also have human data, if you add the chemotherapy alone, you see very little cancer-free survival. If you had the fasting mimicking diet alone, it's about as good as chemotherapy, but you see very little cancer-free survival. And then, when you combine the chemotherapy and the fasting mimicking diet, that's when you see lots of mice becoming completely cancer-free. And now, soon enough, we're gonna be publishing the data from breast cancer patients suggesting that the same is true for patients.

Katie: That's incredible. And based on your research, we've seen that there's also a very protective mechanism with fasting for those who don't have cancer, which hopefully, most people listening do not. But what does the actual data say as far as...if you can implement a fasting mimicking diet, does that actually potentially reduce the risk of cancer as well?

Valter: Technically, it's difficult to say it reduces the chances of cancer. But certainly, in the clinical trial that we published a few years ago, we see that patients, let's say, were pre-diabetic, had a major reduction in fasting glucose. Patients that has high levels of IGF-1, which is now being associated, this growth factor that I mentioned earlier, is being associated with many different type of cancers, they have a big reduction in this IGF-1. And inflammation, which is also associated with many cancer, that was reduced, you know, C-reactive protein. So, in central adiposity, which is now considered one of the major risk factor, so, you know, belly fat,

the visceral fat, one of the major risk factor for cancer, I think something recently put it in number two behind smoking as the highest risk factor for cancer, so that's reduced, right? So now, if you take all that together, it's hard to imagine how you will not get protection from cancer by doing the fasting mimicking diet, particularly if you have elevated levels of these markers or risk factors.

Now, it's not proven because, you know, to prove that, you'll have to do what we're doing right now, which is we're doing a preventive trial on BRCA1 and BRCA2 women that have this. Like, Angelina Jolie have this high risk for breast cancer because of genetics, and they do a mastectomy, so we're following them. And, you know, this is gonna take a very long time to figure it out. But we're gonna do it both in the mouse model and we're now recruiting patients in Southern Italy. And so, you know, the clinical trial, basically, is gonna look at what is the incidence of breast cancer in those under fasting mimicking diet versus those that don't do the fasting mimicking diet once a month.

Katie: That makes sense. And yeah, that's amazing that you guys are doing that research. And in your book, "The Longevity Diet," you talked about something called the five pillars. And I'd love it if you could explain what those are and then talk about why those are so important for us to understand when we're evaluating research and claims because, as you know, I'm sure very well there's so many claims on the internet people make related to different health outcomes. So, can you explain the five pillars?

Valter: Yes. So, the five pillars, I tried to...so the epidemiological studies, clinical studies, basic research, centenarian studies, and studies of complex systems. And the idea was that, you know, everybody in the world is now writing book about...it's interesting because the two fields that I specialize in is simply everybody's an expert, so nutrition and aging. Everybody ages. Everybody eats. And so, therefore, everybody has a book on one of those two. And this started generating tremendous confusion because people, every other day, you hear, you know, coffee is good and coffee is bad, and alcohol is good, and alcohol is bad, and proteins are good, and then bad.

So, the idea of the five pillars was, like, when we go to court for major crimes, you know, the court system has developed...you know, somebody's accused of murder. There is a multi-pillar system there and it's been around for centuries before you can convict somebody of a crime like that. And so, the five pillars, it is trying to bring that kind of rigor to medicine and to, you know, whether it's preventive or treatment. And so, if you say, for example, are proteins good or bad for you, well, let's start looking at it. What about centenarians around the world? Do they commonly have a high-protein diet or a low-protein diet? And if you look at some of the longest-living people in the world, they very consistently had a low-protein diet. And the vegan, pescatarian, mostly vegan, some meat, but not very often. Then you say, "Okay, what about animal studies? Does a high-protein diet make mice live longer? Or does a low-protein diet make mice live longer?" Well, very consistently, the low-protein diet is being shown by many laboratories to make mice live longer.

Then you can say, "Okay, let's go look at studies of populations, you know, epidemiological studies." So, you know, what about the Harvard studies that looked at nurses and doctors, and the ones that have high proteins versus the one that have a low-protein diet, and other studies by this database, like, enhanced by the CDC? And again, you see the people that have a low-protein diet at least up to age 65, 70, they do much better than those that have a high-protein diet. And then, finally, clinical studies. What if you take a group and you put

them on high protein, you take a group and you put them on low protein, and then you follow them? Well, you see that, for example, the one on low protein, the IGF-1, the potential risk factor for cancer that I mentioned earlier, it goes much lower. And there's all kinds of other benefits that appear.

So, now you have four pillars that are supporting this idea of at least up to age 65, 70, have a low protein diet, but sufficient, right? You cannot be malnourished. You have to be low or sufficient. And yeah, so that's the approach. That's the multi-pillar system approach.

And the fifth pillar is complex system. And I really always like to think about cars and planes in making decisions about, you know, you cannot always use it, but in many cases, you can use it. For example, you know, if you're thinking about, you know, shall I run 100 miles a week or shall I run 20 miles a week? Well, if you think about a car, if you drove a car, you know, 1,000 miles a week, you probably...anybody will make the conclusion that, you know, after 10 years, nobody would wanna buy that car, right? So, that's the fifth pillar. And now, in many cases, it can be used to sort of make prediction about eventually, yes, if you run 100 miles a week, your knees and your hips, and etc., etc., and your feet are gonna be damaged. So, probably not such a good idea for a health span to be doing something excessively. So look for solutions, like, biking for an hour every other day may be a much better idea than, you know, than trying to run 50 miles a week.

Katie: That makes sense. It's a great analogy. I'm curious when it comes to protein requirements, to go a little deeper on that. Is there a clinical definition or a research definition of what low-protein diet while still getting sufficient protein looks like? And then, secondly, what happens to the data after age 65? What changes at that point?

Valter: Yes. So, the standard by most medical associations around the world including the World Health Organization is 0.8 grams. So, it's about 0.35 grams per pound of body weight per day, right? So, if you weigh 100 pounds, most medical association will say if you eat about 35 grams of protein to 37 grams of protein per day, that's...very few people argue that that's not sufficient. So, that's a minimum.

Now, after the age 65, the...probably, what happens is that if you ask an 80-year-old, "How much proteins did you have today," and the 80-year-old answers, "Very low," let's say, you know, I just mentioned 0.35 grams per pound of body weight per day, if the 80-year-old answers 20 grams, they usually don't do very well. They have higher cancer rates and higher overall mortality. Now, the suspicion is that they're just malnourished. They're not on a low-protein diet. They're just not eating well. There may be a situation where they're frail, they're sick, and they're malnourished. But at the same time, it is true that a little bit extra proteins and extra variation may be beneficial to a 70, 80, 90-year old. Meaning that, for example, I followed Emma Morano in Italy and she became the oldest person in the world and the oldest whoever lived in Italy. And Carlo Bava, I always tell the story that Carlo Bava, when she turned around 100 years of age, gave her 100 grams of raw meat per day, right?

So now, 100 grams of raw meat per day is clearly not a good idea for somebody who's 50, 60, or even 70. But somebody just turned 100, I think he got it right. And she needed that sort of additional raw nourishment that was beneficial. I think Carlo knew that she was a little bit anemic. And so, that's how he intervened. Now, I'm

not...you know, that was his opinion. I'm not trying to tell people to, when they turn 100, to start eating raw meat. But it's just probably not a bad idea, right?

So then, the idea is when you turn 65, 70, maybe starting to add some more eggs to your diet, more, let's say, goat yogurt or some goat cheeses, some of these ingredients that are much higher nourishment, and they are also commonly associated with the longevity population, right? So, goat milk, and cheese, and yogurt, you see it in various population like Sardinia, Greece, etc., where there is tendency to live very long. So, they're probably not bad for you. Otherwise, we will not have seen this record of longevity stories in these areas of the world.

Katie: Got it.

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Katie: And you talk a lot about something called health span. And I would love if you could define what that is and then walk us through some of the factors that, from what you've seen, most impact health span. I'm

assuming, obviously, the fasting mimicking diet or some version of that would be a tremendous one. But are there other things that you found in your research that also can really affect health span?

Valter: Yes. So in the book, I talk about two things. One is youth span and the other one is health span. So, I talk about juventology and youth span, meaning that, you know, what is the period of life where we remain young, and so, where you have maximum performance? And the idea is to extend it. Now, you could claim that based on, let's say, Olympic athletes and professional athletes, that's about 40, right? So, most people can perform at very high levels until age 40. But the idea is can we push that youth span, the period in which you remain young, to 60, maybe 70? And then, after that, what about health span? Meaning that what is the period that you're no longer young, but you're healthy? And that's in the United States, in Europe, this is largely disappearing. Most people have a chronic disease if not multiple chronic diseases after a certain age.

So the idea we know that it's possible to now increase dramatically the percentage of people that can be healthy until very old age or possibly healthy until they actually die, right? So, you die healthy. What does that mean? You know, it means that, you know, at age 85, you develop Alzheimer, you're not gonna die healthy. If at age 67 you develop chronic heart disease, you're not gonna die healthy, or cancer, etc., etc. So, the idea is then can you eventually die when you're 110 of the flu, right? That's really health span, right?

So, now you're 110 like Emma Morano, and also like Caruso, the people that I followed, both of them, male and female, made it to over 110. And they were healthy, meaning that they didn't have any chronic disease and eventually, they both died of probably infections, but that's okay. I mean, eventually, you're gonna have to die of something. But that's really great that they can make it to 110, one, and 117 the other without chronic diseases. And really, that's what we're focusing on. And I think, because of the confusion out there, nobody is doing the right thing.

So, what are the right things? Well, in my book, I divided into two. I mean, half of it is about what you do every day and every day, the best diet seems to be a pescatarian, vegan, plus some fish, maybe fish a couple of times a week, diet. And the fish should be, you know, low mercury. So, you know, let's say salmon, anchovies, sardines, that seems to be a couple of times a week. And seafood is also fine, plus vegan, right? And vegan, where do you get the proteins? Well, legumes have a good level of proteins. So, chickpeas and black beans, etc., etc.

But people need to pay attention, right? When you are mostly vegan and you eat fish a couple of times a week, you have to make sure that people don't realize that it takes about 300 or 400 grams of chickpeas to get 30 or 40 grams of proteins. So, yeah, the portions need to be fairly large. And this is why I also talk in the book about eat more, not eat less. So, every day eat more, but your dish is now gonna look like 30, 40, 50 grams of, let's say, 1 or 2 ounces of pasta. But then, now you have 300 grams or, you know, whatever, 5 ounces, or actually, 7 ounces of chickpeas, and then, let's say vegetable. So, it's a large dish, high nourishment that is gonna fill your stomach with fibers, etc., and make you not hungry for hours and hours. So, that's a way to go.

The other strategy every day is limit food intake to 12 hours. So, 12 hours on, 12 hours off. So, eat 8 a.m., 8 p.m. People say, "Well, but I get up at 6:00. How can I do that?" Well, you know, if you get up at 6:00 and you

have dinner at 8 p.m., don't have breakfast until 8 a.m. That's okay, you know. Have a couple of hours go by and then have breakfast at 8 a.m. So, you can keep at 12 hours a day the feeding period. Also, I recommend moving to two meals a day plus a snack for people that are overweight and obese. This idea of five meals, six meals a day has done, I think, tremendous damage and has been associated with a record increase in obesity, and people overweight are now over 70% in the United States. And so, move back to the old...what lots of centenarian used to do, you know. Eat a couple of times a day and maybe have a snack. So, a breakfast, always have breakfast. And then, eat a lunch and dinner, or dinner, and then have a snack, maybe a couple hundred calories coming from a salad or some nuts, or etc. That's your third meal until you move to a better weight. And then, you can move back to the three meals a day plus a snack.

And you know, exercise, I talk about 150 minutes a week and try to walk maybe an hour a day. That seems to be important. You know, stay active and try to have maybe 15, 20, 30 minutes a week of a little bit more strenuous exercise. So, you push yourself, you know, depending on your age and your condition. But you push yourself a little bit more, struggle a little bit, and that seems to be important in staying healthy.

And then, the fasting mimicking diet. Fasting mimicking diet at least up to age 65, 70, a couple of times a year to 12 times a year. So, if you're a 35-year-old athlete with a pescatarian diet, you might only need to do the fasting mimicking diet, which is called ProLon in the U.S., a couple of times a year. But if you're overweight or obese, and you have high cholesterol, high blood pressure, you may have some high inflammatory markers, then probably fasting mimicking diet once a month until you move to a better state. And then at that point, you can go once every two months, once every three months, and eventually, say, once every four to six months. I would say, on average, an American probably needs to do it three times a year.

Katie: Got it. Those are great guidelines. And to circle back to something you mentioned earlier, you talked a little bit about sugar in relation to cancer specifically and IGF-1. But I'm curious if you could go a little deeper on sugar specifically because I've taken a lot of heat for writing and saying that, especially, like, with my kids and in general that we don't have a biological need ever for refined or added sugar. And I've taken a lot of heat for that. People, you know, are like, very much all things in moderation. So, I'm curious, like, am I wrong on this? Or what is the data actually saying? What have you found in your research regarding sugar?

Valter: Well, I mean, I think people confuse an item like sugar with the problem, which is excess sugar, right? So I think that, in general, you know, fruit has sugar in it, and lots of it. And so, having a fruit today is perfectly fine. Let's say an apple a day or an orange a day, or whatever. Now, even with fruit, you're starting to have five oranges a day or five apples, you're starting to get lots of sugar from those apples. Now, let's say that on top of that, you start having lots of bread, rice, and pasta, etc., etc., all of that become sugar, right?

So, I think the problem is not so much, let's say...I always tell people, "Go ahead and put sugar in your coffee. It's four grams. It's not gonna do anything at all." But watch out about, you know, drinking a liter or a big bottle of orange juice every day, right, because now, that contains 100 grams of sugar. So, I think that we really need to try to keep refined sugar as low as possible but without feeling, like, that's poison because we are fueled by sugar, right? So, the human body works...the major fuel is sugar.

But what happens in most Americans, in fact, is that, you know, the average level of sugar is high. And that's when then the body needs to struggle to make more insulin. And insulin now eventually promotes insulin resistance so that the muscle cells and the lymphocytes, they become...they struggle to bring in glucose. And insulin is also giving the message to deliver and to the fat cells, in general, store more fat. So, all that process is clearly influenced not just by pure sugar, but also by the starches, the pasta, the bread, the rice, the pizza, right? So, all those starches are very quickly turned into sugar once they get to the intestine. So then, those are gonna eventually contribute to lots of problems including weight gain, insulin resistance, etc., etc.

So, the best way to do it, as what I said earlier, which is, you know, if you wanna have an apple a day or even have something that's got a little bit of sugar, a few grams of it, go ahead and do it. We need to be careful not demonizing these ingredients, you know. So, if the child wants to have, you know, some cake that it's got, you know, 12 grams of sugar, I think it's perfectly fine. What's not fine is to, you know, have three Cokes a day and then three apples, and then, you know, some orange juice, and then the candy. Now, all of a sudden, you went from 12 grams to 150 grams. And that child is gonna be at risk for developing visceral adiposity and being overweight, and then, you know, developing all the problems that most Americans have.

Katie: That makes sense. And so in other words, basically, we can get the carbohydrates our body needs from things like fruit and sweet potatoes, and vegetables. But you don't see anything wrong with occasional, like, dark chocolate or something that would contain sugar, it's about the amount essentially.

Valter: Yeah. And people should be very careful about the amount because otherwise, you know, I also don't wanna give the message, "Oh, don't worry so much about it." Yeah, worry about it because pay attention, you know. If you're a parent, pay attention because you wanna try to limit those simple sugar to very low levels, and you also wanna say, "Hey, yeah, one apple, perfectly fine." Maybe two apples, that's okay. If you have a child that is very thin, that's okay. But don't, you know, implement this empty sugar calorie diet because eventually, it's gonna be a problem. The problem may not occur until somebody turned 37, right? So, they may have a fairly high metabolism and can drink Coke all day and they're fine. And then, eventually, the metabolism slows or they reach a level of abdominal fat that changes the metabolism, and now they start getting a lot of weight. And you know, that's what happened with most people. They're fine until a certain age. And then they turn overweight and obese later in life and they can never get rid of that.

Katie: Got it. That's a great guideline. And I'm curious as we get close to the end of our time. So, you're in a lab on the forefront of actual research and you're seeing a lot of the research across the board as well, and you also do a lot of research. What topics can we expect to hear more about in the future as they relate to health?

Valter: I think that we can expect to hear much more...you know, for example, as I always mentioned, the fasting mimicking diets, we're gonna need to focus much more on exactly what you do and when, right? So, much less of these words, you know. For example, you hear commercials, a high protein dish, 20 grams of protein, 30 grams of protein. I mean, of course, that's extremely damaging, well, first of all, because it's talking about, you know, high protein when you should be talking about low protein, and also because it's trying to give sort of medical recommendation or certainly make a recommendation that come from a dietician, we're now seeing it in the commercials. So, they have...you know, they're implying health benefits, right?

So, all these commercials that you hear, you know, when somebody says, "Oh, 20 grams of protein," what are they saying? Well, they're saying, "Eat lots of protein because it's good for you." So that's very bad, the tremendous damage coming from that, and that's gotta change. And I hope that people are gonna start demanding that we have less confusion and less people going on TV, or on the radio, or on the internet and improvising with opinion, and more people that are really paying attention to, you know, what do we really know, right? And who's the expert that is accountable for it?

And, you know, I always say, for example, almost everybody flies on Boeing or Airbus, and there is a reason for that. I mean, you know, we heard some problems lately. But in general, these companies have an incredible safety record, very, very few planes crash. And so, I think we need to do the same for food and nutrition, and really have to rely on the experts that seem to get it right. And they also have responsibility, you know. They're in centers that were...you know, for example, I direct the Longevity Institute here at USC, so I have accountability. If I say low-protein diet is good for you and then I'm proven wrong by paper after paper after paper, eventually, that's my accountability. I get it all wrong. And so, how is it that I get it all wrong? Shall I keep giving advice to people? Maybe not. So if that was the case, that would be a fair assessment, and it should be like that for everybody.

So, I think I really hope that with, you know, blogs like yours and many others, that we can start moving in that direction of separating ideas from, you know, real science, real clinical data, and also accountability and reputation, you know. So, all of those should be kept in mind when deciding who do I expose my listeners to and why.

Katie: That's a great point. I think you're spot on. And as we start to wrap up, I would also love if you could give people kind of a starting point to keep learning more from you. Personally, I would highly recommend your book, "The Longevity Diet," and I'll make sure that we'll link to that in the show notes and on social media so people can find it. But if someone has been listening and, like, really understanding what you're saying and wanting to get into fasting mimicking diet, what would you recommend as a good starting point in general? Like, are there any good just general guidelines for someone who doesn't necessarily have cancer or a specific condition but just wants to start getting the benefits?

Valter: Yeah. I think, you know, there is ProLon. It's called fasting mimicking diet. And people can purchase it. And I don't make a penny out of it. I donate everything to charity and to research. But yeah, people can go...I think it's ProLon FMD and they can get it there. And that's the one for healthy people. Then, soon enough, there's gonna be a fasting mimicking diet for cancer patients. The initial clinical trials are finished. So, I hope that in a few months, there is gonna be that out so people can start benefiting and getting the benefits that we've seen in the clinical trials for cancer, you know.

And soon enough, you know, we're doing trials now. We have, I think, over 30 clinical trials going, go from many cancer trials to Alzheimer to multiple sclerosis, inflammatory bowel disease, etc., etc. And so, those are gonna be out. And understanding that lots of people cannot wait for one of these many trials to be finished, then I recommend the book. And I recommend, as we've done with thousands and thousands of patients, you can take it to your doctor. Let's say somebody has autoimmunity and they say, "Well, you know, I don't think I can wait," "Take the book, read it, go to your gastroenterologist and say, "I don't think I can wait." Does the

gastroenterologist agree that maybe it's worth trying the fasting mimicking diet maybe together with the standard of care, and see if that helps in a very careful manner? Yeah, so then, that's probably a good way to approach this.

Katie: Wonderful. Dr. Longo, thank you so much for all the work that you do and for your dedication to this field of research. Like I said, I've been a fan of yours for a really long time and I'm so grateful you took the time to share with us today. And I'll make sure that people have links to find your research and your books to continue learning. But thank you so much.

Valter: Well, thank you. Thank you very much.

Katie: And thank you to all of you for listening. And I hope you'll join me again on the next episode of "The Wellness Mama" podcast.

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