TRANSCRIPT OF EXTENDED INTERVIEW
Ron Rosedale, MD, Talks about COVID 19, the Immune System and Cytokine Storms

DATE: April 3rd 2019

Introduction — The Centers for Disease Control reports that people are at greater risk for Covid-19 hospitalization and often deadly cytokine stoems, if they have pre-existing health conditions, such as high blood pressure, diabetes, heart disease. Everyone says that healthy eating might reduce these risks - but does healthy mean the New York Times distractibaking comfort foods of brownies and Nutilla shortcake? Does it mean taking dozens of supplements and cutting out fatty junk foods, as Cristina Cuomo recommends for her husband, CNN's Chris Cuomo? Up next, we talk with Medical Doctor Ron Rosedale about why he believes that eating and sleeping in a way that reduces high levels of the hormone leptin might reduce the chance of severe symptoms of Covid-19, such as cytokine storms.

This is an interview to help you ask questions about the science behind your health choices. This is NOT an interview to take the place of medical advice. Talk with a doctor you trust, if you have questions about your health, and especially if you're taking medications, and monitor for changes to your need for medications whenever you're doing a lifestyle change, such as changing your diet.

TRANSCRIPT

RON ROSEDALE
Can you hear me?

SHELLEY
[I'm using the high tech method of recording this phone call on my handheld zoom recorder as you speak on What's App from India.

RON ROSEDALE
Yes, I am in India. I'm actually here helping a family known as the Ambani family. Very, very, very prominent. Probably the most prominent, not even probably -- they are the most

prominent family in India with their health. And they have they're mostly located in Mumbai, but ended up getting locked down in a town called Chadigarh. So that's where I am in a town north of Mumbai called Chandigarh

SHELLEY
We've certainly been thinking about India from here in the United States, because there's so much concern that India's population density, meaning it's in great danger from what will happen with Coronavirus. On the other hand, there's also a thought that perhaps India and Pakistan, because they do tuberculosis vaccines, might have an unusual amount of protection.

RON ROSEDALE
Not just tuberculosis, but Malaria. So, you know, malaria is fairly rampant so many people have taken quinalones, chloroquine, things like that, which is being touted as there is a medication to help treat the Coronavirus. So that's one way of looking at it.

THE KEY TO FIGHTING AN INFECTION IS A STRONG IMMUNE SYSTEM

RON ROSEDALE
However, the most important thing to fight any infection, especially viruses, is going to be a strong immune system. And that's really the only way epidemics subside. It's not that the bug goes away, but that people become immune to it. And that's especially true for viruses.

TOO MUCH PROTEIN IN USA; TOO LITTLE PROTEIN IN INDIA

And the problem here in India is that many people have deficiencies that impair their immune system. So, for instance, whereas in the US, people eat too much protein, which also impairs the immune system, actually, because excess protein is made into sugar. And it raises insulin and it causes what's called glycation when sugar molecules combine with other proteins and other molecules that impair their function. And antibodies for the immune system are proteins. Protein is very necessary for the immune system. So in the US they eat too much protein, but in India, they eat too little in general, and they don't have enough protein to actually mount a strong immune system to make antibodies. And so one of the problems with India is a deficiency of protein in general.

MICRONUTRIENT DEFICIENCIES IN INDIA . . . AND THE USA

And then there's also some micronutrients that are deficient in general in India, such as B12, which found more in animal products. Many people here are vegetarians. Vitamin D, which people are surprised to hear, even in India. But due to the dark skin, and people who are very modest, so they cover up when they're out in public, so they're not exposed to the sun

very often, and often it's really kind of too hot to be outside. And so there's a gross deficiency in Vitamin D here. And D is very important also for the immune system. And despite having thousands of miles of shoreline, ocean surrounding India. And also because of vegetarianism, they don't eat very much fish. And so they're deficient in omega 3 fatty acids, also, which is required to make any new cell, and cholesterol, required to make new cells. So cholesterol is actually a big friend. They've shown that a deficiency of cholesterol also impairs the immune system, which also includes taking cholesterol lowering drugs, oddly enough. Not really, oddly enough. But I guess paradoxically, if you want to call it that. So there's quite a few immune deficiencies in India.

INDIA - LOCKDOWN NEEDED BECAUSE LOVE OF CROWDS MIGHT PROMOTE INFECTION TOO FAST

RON ROSEDALE

And then also, from a societal level, people in India really love to congregate. I mean, they're very, very sociable people. And so they really crowd together. They love being with one another. It's really nice, but not so much when there's an epidemic going on. I'm not in general in favor of lockdowns, and we can go into why a little while. But in India, it's a bit of a different story, because if they didn't have a lockdown, then the first thing people would do is get together in large groups. And that's kind of good and bad. A lockdown keeps people indoors, which of course, impairs the vitamin D even more. No sunlight.

PEOPLE BENEFIT FROM BUILDING IMMUNITY . . SLOWLY, IF THEY CAN

RON ROSEDALE

But from an ideal circumstance, what you want, as we were mentioning, to fight any virus is to become immune to it. So rather than hide from it, ultimately we have to be exposed. You don't become immune to something unless you are exposed. That's the whole idea of vaccines, for instance, is that it exposes you to the virus or bacteria that then allows your immune system to build up antibodies to it so that you can fight it. Ultimately, that is what has to occur.

The virus itself doesn't go anywhere. It's going to continue to be transmitted. Every breath people take at this very moment, they're breathing in some coronavirus. It's not the Covid-19 that people are talking about. But the cold virus, influenza viruses. They're everywhere. And the reason everybody doesn't get sick and die from breathing these viruses is because they're built up immunity to it. And what is troublesome about the Covid 19 virus that is affecting people around the world right now is that it's novel. And so there is no path to immunity to it.

SHELLEY

Our bodies don't yet know how to fight this particular virus. And we're right now, with all of the lockdowns, we're buying some time so that we can see if there's some way that we can medically intervene either through a vaccine or have better testing so that we at least know

who has had this virus and who is at most risk for it. And what the general pattern is for how somebody gets sick. There's so many unknowns that we're buying at least a little time with the lockdown is my understanding. Does that fit with what you're thinking, too?

RON ROSEDALE
Partially. I think that the main benefit of the lockdown is, not that we really don't know who is exposed or getting tested. I think all of that is really not worthwhile. Everybody's going to eventually test positive to it. Or the vast majority of people will ultimately test positive to it. And the vast majority of people who test positive will have no symptoms because they have a strong immune system. There are certain predispositions, however, that we do know, and that has to do with diabetes, for instance. We know that the vast majority of people who do have a hard time with this virus have respiratory difficulties, have preexisting conditions. One of the prime ones being diabetes, hypertension, previous respiratory difficulty, cardiovascular disease. And I'll tell you why in a moment, or at least I'll tell you why. I think that strokes in a little bit.

But the major reason that a lockdown is beneficial is really not to help people as much, but because this virus is so novel, and many people will get sick because nobody has had the opportunity to build immunity to it, that it overwhelms the medical system. And so, so many people are getting it all at the same time, there will be a fraction of those people who will get quite ill that require hospitalization. And the hospitals and doctors can't handle the onslaught of such a novel virus. And so, so many people reporting to the hospital being sick, many people need ventilators now, if everybody were to get the infection at the same time, that proportion of people who would get seriously ill wouldn't be able to get the medical care that they need. And so that's the benefit of a lockdown is to try and get out the frequency of infection so it doesn't all happen at the same time. It's really more for medical care. It's really more for the hospitals and the doctors than actual people, is really how it turns out.

Trying to hide from this virus is probably futile. As I say, the virus isn't going anywhere. At some point, people have to go outside and breathe. And we know now, in fact, it should have known before. Surprised me that the World Health Organization expressed surprise that when recently it was found that the virus is in aerosol particles when people breathe, it stays in the air for days. I don't know why there was such a surprise, because that's what happens with every virus and not even just viruses, but any tiny particle, like pollen, that's how people get allergies because they breathe in ragweed pollen, because it's floating in the air, because they're tiny particles, and that happens with all tiny particles. So one can expect the Covid virus to be in the air and it's going to stay in the air. And finally when people go outside, they're going to breathe. people generally do build an immunity to it. And they're finding now that the vast majority of people who test positive, if they were to test the general population, and not just sick people. They'll find the vast majority of people who do test positive have no symptoms at all, that their immune system is up to the task. It fights the virus, and people don't even know that they've been exposed.

SHELLEY

Most people with Covid-19 might feel somewhere between absolutely awful to a little bit under the weather for a little while. But it won't be as serious as what we're hearing about so much in the news about people fighting for their lives in the ICU. And if we get an antibody test, if an antibody test becomes available, maybe people would even know if they've been exposed and they might be at less risk for both contaminating other people and also for getting as bad a case of COVID-19 sometime in the future. Still unknowns about whether those two possibilities are there, but they're more likely if someone could get an antibody test.

RON ROSEDALE
Sure. That would be really helpful because then they don't have to be scared anymore. They can go out dancing in the street.

EVERYBODY WILL BE EXPOSED AT SOME POINT

RON ROSEDALE
Ultimately, the ideal situation is if people were to get something little micro-doses of the virus so that they do build up an immunity because that's the only way that they'll ever survive it.

As I say, almost everybody is going to be exposed at some point. And the real competition is really between building the immune system versus the immune system getting overwhelmed by the virus. So if we could be exposed to small doses, that's a good thing. And actually, as I say, in India, it's a little bit different because people just tend to congregate together. And so a lockdown in India is probably the only way to slow down the spread of the virus, with so many people, and a medical system that just cannot handle so many people being sick at the same time.

But other than that, it's probably better to be outdoors, because then the virus will just kind of dissipate into the atmosphere. When people do breathe, they will breathe a small dose of it and they will be able to build up an immune system. And some people will get, like you say, they'll get a little bit sick. Many people won't get sick at all. They won't even know they have it. Some people get a few symptoms. That's probably, the majority of people get a few symptoms. And then there's a small percentage of people that will get seriously ill, but only because they have other conditions that impair their immune system or increase inflammation to a great extent.

HEALTHY IMMUNITY Vs CYTOKINE STORM

RON ROSEDALE
I will tell you where, right now, where I think that what the major preexisting condition is and what people can actually do about it. One of the major problems that ends up really killing people and then really, really presenting with the respiratory difficulty, is a mass of inflammation. You know, people have heard of inflammation, where they get swelling due

to infection or other things. And injury, inflammation is there to save your life. Yes. The personal immune system.

SHELLEY
People are starting to hear more about the term, "cytokine storm," and it's being described as something that does not happen at the beginning of having a Covid 19 infection. A cytokine storm is more when they've had the infection for a little while. They've had some aches, they've had some other symptoms. And then a little later, it's as though the body goes into another phase of reaction where suddenly the lungs and other body organs are basically fighting themselves. The term cytokine storm is used quite often to describe this very sudden change, where some people are short of breath. Other people, they're not short of breath, but their oxygen levels go very far down. And whatever symptoms they have at that point, it can mean a very life-threatening situation that has to be dealt with, very quickly.

DIABETES, HIGH BLOOD PRESSURE, HEART DISEASE & OBESITY

RON ROSEDALE
Right. And that's when people need ventilation, when they can't take in enough oxygen themselves and they need to be hospitalized on ventilators and you're exactly correct, when you talk about the term cytokine storm. And so here's what I think ties it all together that I have not read about anywhere. But I think that if I can mention it, maybe people could start researching it. We know that diabetics are very much at risk. People with hypertension are very much at risk. Obesity, obese people are far more at risk. And then there is the cytokine storm that you mentioned.

CYTOKINE STORMS, LEPTIN & IL-6

RON ROSEDALE
Well, there's a hormone called leptin, and leptin itself is a cytokine.

SHELLEY
What is a cytokine?

RON ROSEDALE
A cytokine is a hormone, essentially, a hormone that acts very locally. They're very powerful; most of the cytokines are inflammatory. And so, you know, we hear hormones such as thyroid and insulin and estrogen and things like that. But the body has hundreds, maybe even thousands of other lesser known hormones that don't necessarily circulate 100 percent in the bloodstream, circulate everywhere, but work more locally. (NOTE — “Locally” means that instead of being active throughout the body, a cytokine is released within a certain region of the body, such as in your thumb or in your lungs or heart) And cytokines are sort of like that, although leptin does circulate in general, although it is a cytokine itself. So we know that if you have high levels of leptin, it also causes

inflammation. But its major problem is that it elicits the manufacture and the release of other cytokines, one being IL-6. And we know that the major cytokine storm that is occurring with Covid is mediated by IL-6.

SHELLEY
IL-6. That is Interleukin 6. That's an an inflammatory hormone that the body makes.

RON ROSEDALE
Yes, and it's very, very inflammatory, and one of the treatments, in fact, one of the main treatments for people with this cytokine storm is to give IL-6 inhibitors, which are given to, for instance, people with bad autoimmune arthritis, for instance, rheumatoid arthritis, which have excess inflammation. So they give IL-6 inhibitors. So the drug already exists, and is being used to treat the cytokine storm because they know that IL-6 plays a huge role in these storms, and I know the strong connection between Leptin and IL-6. When most people have too much leptin, they're hyper leptinemic. They're leptin resistant. It's the major cause of obesity. It's one of the major causes of diabetes, one of the major causes of hypertension. So all of the predisposing factors that we know exist that put somebody at risk of an adverse outcome with Covid-19 (ie, high blood pressure, diabetes, etc), are tied together by excess leptin. And it mediates hypertension and autonomic system dysfunction. So a lot of these people have a difficult time breathing, not just because air doesn't get in, but there's a kind of a central way that people's almost ... wouldn't say "desire," because they want to breathe, but they can't. And not because of obstruction, but because there's an impairment in their ability to take a breath. And that's elicited essentially in the brain and hypothalamus. And once again, leptin largely controls the hypothalamus and autonomic dysfunction. And the sympathetic nervous system, vasoconstriction (meaning narrowing of blood vessels), hypertension (meaning high blood pressure). All these things, everything that puts a person at risk for serious disease with Covid has at least partially, if not mostly, to do with leptin. So you want to bring down leptin, and it's relatively easy.

TO LOWER INFLAMMATION, BRING DOWN LEPTIN

RON ROSEDALE
You can bring down leptin . . . not totally down to where it should be, because of some of that is mediated by how fat a person is. But what's not appreciated is that there's a surge in leptin, a spike in leptin, depending on what a person eats. So if a person eats a high carbohydrate meal, for instance, it causes leptin, that day, to perhaps double, from what it would be if a person hadn't eaten. So we know that if a person asks, for instance, or if a person follows a low carbohydrate, moderate protein, high diet, that I've been recommending for 25 years, that leptin levels will really fall. It can probably go to maybe half of what it was prior to having eaten a poor, high carbohydrate meal, When you lower leptin, I think you can greatly reduce the incidence of inflammation, excess inflammation, cytokine storm, hypertension, all the factors that make surviving this virus far more of a challenge. But this is not recognized. So people go into hospitals, and they get glucose, and everything that occurs, everything they eat inside the hospital, all the IVs they take will raise leptin and make surviving this virus far more of a challenge.

So they take medications to reduce the inflammation, they need to eat also to reduce the inflammation, and to reduce leptin and reduce the IL-6 that's causing the inflammation in the first place.

SLEEP AND LEPTIN LEVELS

SHELLEY
Well, Ron Rosedale, you've been giving a lot of information for people to check out about things like leptin, about the role between high blood pressure and high leptin levels, and how the way somebody eats can start to affect the levels of hormones such as leptin. Evidently how someone sleeps also affects their leptin levels. Leptin levels also tend to be higher if someone's not getting enough sleep.

RON ROSEDALE
Sure.

SHELLEY

HOW FAST CAN LEPTIN LEVELS BE LOWERED SAFELY FOR COVID-19

SHELLEY
If somebody has suddenly found out that they have symptoms of Covid-19? Is that too late to start sleeping more, and eating in a way that lowers leptin levels? Would it be stressful to the body to shift to these lifestyle changes?

RON ROSEDALE
No. Well, there is a transitional period, and that's a great question. In other words, whenever the body, kind of shifts gears, then there is somewhat of a stress put on the body, but probably not near as much of a stress as, for instance, a high carbohydrate meal would be caused in raising leptin and raising insulin. And a meal like that raises leptin within hours. And when it raises insulin and raises leptin, we know that it almost immediately increases so-called sympathetic nervous system activity. Basically, the fight or flight stress. And so it's not a mental stress, but it's a physical stress.

And you mentioned sleep. One of the major reasons, and probably the major reason why a lack of sleep raises leptin is because of lack of sleep causes an increase in the sympathetic nervous system to keep a person awake. In other words, it causes secretion of adrenalin and noradrenaline from the adrenal glands to allow the person to stay awake when they ought to be sleeping. And that raises the blood sugar. And then the raising of blood sugar, raises insulin and raises leptin, which increases sympathetic nervous system activity, which also then secretes glucose. And you're into a vicious cycle.
And we know, for instance, and they did this to college students who will pretty much do anything for some meals. They kept college students up for several days straight. And the

vast majority of them actually clinically became diabetic. The diabetes was able to be reversed with sleep. But it just shows the power of lack of sleep in causing an increase in blood sugar. That increase in blood sugar is due to an overabundance of adrenal hormones, the stress hormones -- hormones of stress, such as adrenalin, cortisol, noradrenaline, things that raise blood sugar. And a lot of that is also then mediated by leptin. And it also raises leptin, again, as I mentioned, a vicious cycle also, with insulin . . . throw that in there also.

SHELLEY
Well, Ron Rosedale with as much as you're mentioning stress adding to a dangerous situation, we should try to think of a joke to tell right now. But I'm a little short on jokes at the moment!

LOWERING LEPTIN & OVERMEDICATION

SHELLEY
Many Americans are on many different kinds of medications for high blood pressure, for high cholesterol, for diabetes, including insulin or insulin lowering medications. When somebody starts to eat and sleep differently, their need for those medications can start to change, so that they can suddenly become overmedicated very quickly. If somebody is not used to eating in a way that lowers leptin levels, would it be best if they work with a medical doctor to help them adjust their medicines?

MONITOR BLOOD SUGAR & DIABETES MEDS

RON ROSEDALE
I'm really glad you brought that up, because medicines do have to be adjusted, because this is not something that takes days or weeks, but can occur almost immediately, like within hours of changing to a low-carb, high fat, adequate protein diet. So yes, when people bring down their leptin, then they bring down their insulin because of the change in diet again, and again, bringing down insulin and bringing down leptin can occur in one day. Leptin before insulin, actually. It generally does certainly lower fasting blood sugar. So if they're on diabetic medications, those diabetic medicines have to be lowered. Many diabetics measure their own blood sugar. So that's easy when your blood sugar start falling. You take less medication. They can probably do that themselves. Great if they can do it under a doctor's supervision.

Many doctors don't understand basically the power of diet in reducing insulin and leptin and therefore blood sugar. But great if it can be done under a knowledgeable doctor's direction.

MONITOR BLOOD PRESSURE & MEDS

RON ROSEDALE
The other thing that you mentioned is hypertension, and blood pressure, more often than not, probably at least 75, 80% of the time, will come down fairly rapidly when one drops

insulin and leptin, not the least of which is because it reduces the sympathetic nervous system activity, which causes vasoconstriction, constriction of blood vessels and fluid retention, which causes an increase in blood pressure. And so by reducing insulin, which allows the release of retained body fluid, so like when people go on a diet, they know, well, you're losing a lot of water weight. Yes. You're urinating away retained fluid, but you're also then dilating arteries. When this happens, the blood pressure can come down very rapidly and quite significantly. That does also entail a reduction in blood pressure medication.

GLUCOSE MONITOR & BLOOD PRESSURE CUFF

And so, I would encourage anybody who was on to quite a few medications for blood pressure or for diabetes or anything like that, to home monitor. Get a blood pressure cuff, measure your blood pressure, and as your blood pressure comes down, you can start reducing your blood pressure medication because you can't wait for a doctor's appointment, especially at this time when there's so many lockdowns. So people are going to have to start taking their own responsibility for their health. Many times they've been told not to. And so it's not people's fault. But everybody wants your doctor to be in charge. And that would be great if they were available, that if they actually knew about such things. But because many of the measurements can be done by people themselves, at home, with blood pressure cuffs, with glucose monitors, it's relatively easy to measure these things and then recognize that they will not be doing themselves harm. And in fact, doing themselves a lot of help if they can reduce the medications that they're on, many of which have adverse side effects.

“COMFORT FOODS” DURING COVID-19

SHELLEY
There does seem to be a strong correlation between people with underlying conditions and having a more serious case of Covid-19 when it does arrive. And yet, I have to say that Ron Rossdale, what you're describing, even though it's much more well-known, this topic of a ketogenic diet or a low carb, high fat, adequate protein diet, or even just cutting out a lot of the junk food that people eat, the kind that's sweet and comfort food . . . ice cream. What you're saying is not quite consistent with people do in a time of crisis and worry.

RON ROSEDALE
Yeah, and that's unfortunate. There's a lot of misinformation out there, especially when it pertains to chronic diseases like heart disease and diabetes and obesity and autoimmune diseases. In fact, I would say that the vast majority of what people have heard about these things is absolutely wrong. And we can see where it's leading to, you know, heart disease is on the rise. Cancer is on the rise. Lifespan now is going down for the first time in human history. The deeper science that has come out about diet and nutrition over the last 30 some years that I've been talking about, this supports the notion that you need to keep insulin and leptin down so that a person becomes more insulin and leptin sensitive. That then allows the burning of fat as opposed to sugar.

BURN FAT, NOT SUGAR

RON ROSEDALE

Nutrition itself can boil down to in a very, very simple sentence. Nutrition, health in general. And if I had to integrate literally tens of thousands of research articles that I've read, it can boil down into a single sentence. That is that a person's health and longevity is going to be determined most by the proportion of fat versus sugar that they burn over the lifetime. You can essentially burn two fuels, you can burn fat or you can burn sugar or you can burn products of burning fat, such as ketones. And if you burn fat and ketones as your primary fuel, most of the time, you're gonna be quite healthy. Your incidence of diabetes and cancer and obesity and hypertension, autoimmune diseases, all of the so-called chronic diseases of aging, and even aging itself, are going to be much reduced. Whereas if you're burning sugar, most of the time, it will be the opposite. You're going to be much more disease prone.

Sugar was never meant to be a primary fuel. The reason we have glucose in the blood is not to burn it on a continual basis, but as an emergency fuel because it can be burned without oxygen. So it's an anaerobic fuel. So if we had to run away from a lion or a tiger and we're sprinting and we can't breathe oxygen fast enough to be able to burn fat, then we have sugar because you can burn sugar without oxygen, whereas you need oxygen to burn fat. So it's a kind of an emergency turbo charged fuel that is there for just that -- anaerobic emergencies. But because people constantly eat sugar--by sugar, we're talking about also foods that turn into sugars, like all of the carbohydrates and starches that people eat, bread, pasta, cereal, potatoes, rice, all of that.

You know, we call them different names and even we even call it complex carbohydrate and think that it's good for you. But as soon as you chew it and swallow it and initially digest it, it all turns to glucose. It's your cells that actually do the eating. So we think of ourselves as putting food in our mouth, chewing it, and we're eating. But we're not, we're just processing the food, ultimately making little molecular pieces out of it so that we can feed ourselves. So whether it starts out as as rice, potato, cereal, and then we put it in our mouth and we chop it up into smaller pieces and swallow it and then we we basically chemically "cook it," and we make it into even smaller little molecular pieces to feed our cells, who actually do the eating, what they're going to see is glucose. And so that's what we're feeding them. We're feeding them glucose.

It doesn't matter what our perception is, when we put it in our mouth. While it circulates, and it's glucose, it also raises insulin and raises leptin, and our cells then become bombarded with insulin and leptin, day in and day, out almost 24 hours a day. Ultimately, the signal, the really critical, life-giving signals of insulin and leptin become corrupted because they're overused. It's like being in a smelly room too long. Pretty soon you can't smell it. And so there's you know, there's reasons for this. And so people become insulin and leptin resistant. And that produces even more insulin and leptin because the body wants to get those life-giving messages heard. And so it produces more insulin and more leptin. But the problem there is that there's an orchestration, whereas, for instance, with insulin, we want your liver to essentially get a higher signal than your fat. But as you become insulin resistant, your liver becomes resistant first, and then it can't hear insulin's message. So it

makes too much sugar, so diabetics wake up in the morning, haven't even eaten, and their blood sugar goes up rather than down. And that's because the liver has made too much blood sugar, because it can't hear insulin, because it's insulin resistant, and the orchestration of insulin becomes corrupted. And so the fine orchestration of signals in the body becomes impaired. That's what causes disease.

SHELLEY
A new novel virus such as coronavirus-19. adds another way to make a lot of noise in the whole system.

RON ROSEDALE
Absolutely

COVID-19, LEPTIN & IMMUNITY

RON ROSEDALE
Something like coronavirus will bring out deficiencies in our health. You know, it becomes very apparent when a person's immune system is impaired, and the person's immune system will be impaired when they are leptin resistant and when they have high levels of leptin, which occurs because of that resistance. Leptin itself, although better known to be a hormone that regulates fat metabolism and fat storage, we know that leptin is elevated in almost all obese people, what is not appreciated is how important it is for the immune system.

The white blood cells, which are critical to our immune system, have leptin receptors, in other words, leptin signals white blood cells very extensively. And so when a person's (cells) can't listen to leptin properly, their immune system is automatically impaired. So they can't fight the infection as well. And then in addition to that, what we talked about is the high levels of leptin predispose to this so-called cytokine storm because it makes too much IL-6 to begin with. And leptin itself is a cytokine and is itself inflammatory. So when it's high, they body's already too inflamed. And then the predisposition to manufacture and secrete IL-6, which causes even more inflammation, which also then raises blood sugar . . . so you get all these vicious cycles.

So, yes, you want to try and improve your health as much as you can. And your immune system is certainly going to be a huge part of that. And so improve your health in general. One of the main ways is by burning fat as your primary fuel, as opposed to sugars. And the only way that you can do that is by having leptin and insulin being signaled properly. People have to look at eating as, it has nothing to do with calories. You want to eat to regulate the hormones, such as insulin and leptin, that then tell your cells what to eat, i.e., sugar or fat. You don't just, burn what you eat. You have to go through a whole complex symphony of metabolic orchestration that then tells your cells what they should be eating. And they're the ones that actually do the eating. And that is what your health depends on. So, again, you eat to regulate insulin and leptin that then tells your cells, whether they should be burning fat or

burning sugar, which then has a huge amount to do with inflammation in general and health in general and whether you're going to be able to fight off his Covid virus or not.

SHELLEY
And so you want your body to be able to fight this new virus and figure out the way to fight it. But you also want your body to know when to not OVERfight, not to fight so much that it causes the cytokine storm.

RON ROSEDALE
You don't want a bunch of collateral damage. You don't want your immune system to just start flailing around like a berserker with a sword and killing all the people around. You want to specifically kill the Covid virus, not your own cells. And when the immune system is dis-regulated, what you're getting is a whole bunch of collateral damage. Your own cells die. You're killing your own cells as opposed to the virus. Obviously, that will not lead to a very good outcome. So inflammation has to be controlled. And we certainly need inflammation to be able to fight anything, any kind of stress. But certainly you need inflammation to fight viruses. And fight bacteria. But again, it has to be controlled properly and to control it properly. Insulin and leptin have to be controlled properly. And to control insulin and leptin properly, you have to eat properly.

OBESITY AND LOWERING LEPTIN LEVELS

SHELLEY
Leptin levels tend to be higher in somebody who is overweight or obese. Does it take losing 20 pounds to create this protection. What makes this protection more likely is to get enough sleep and to eat in a way that doesn't push the body into lots of leptin and lots of insulin.

RON ROSEDALE
Yeah. And again, an excellent point, and this is something that is misunderstood, especially by most doctors and even the people who know about leptin. Many people feel that leptin levels are determined by how much fat a person has. And that's partially true. The more fat you have--most leptin, not all -- most leptin is produced by fat itself. And so it's thought that the more that you have, the higher your leptin and the only way you bring down leptin is by losing weight, and that you can only bring down leptin by losing weight. And of course, that is a many months long process. That's not true. Your leptin levels are determined by two factors, not just one, not just by how much fat you have. How much fat you have kind of sets kind of a baseline level. So if you are fat, you will have a higher baseline level. But that baseline level can dramatically rise, depending on what a person eats for breakfast or lunch or dinner. And that can be controlled, almost immediately. Change what you have for breakfast, lunch or dinner and you can cut your leptin levels almost half in one day. And that's been shown for many years. But it seems still to be unknown to people that you can greatly bring down your leptin. And when you bring down your leptin by preventing the big surges, the big spikes in leptin caused by what a person eats, then you increase the sensitivity, you reduce leptin resistance, and when you reduce leptin resistance, you're

allowed to burn fat. And then, over a longer period of time, you start burning your fat, and then leptin goes down even further. That takes a while, but it doesn't take a while to bring leptin down dramatically. Very quickly, just by changing what you eat, when you mentioned that leptin tends to be higher in obese people, I would actually go a little bit more emphatically with that, and say that leptin, almost always is higher, in overweight and obese people. It's very rare for an obese person not to have higher leptin. There are very, very rare genetic mutations that a person might have. But that would be, probably less than one in a thousand. So the vast majority of people who are overweight and obese have high levels of leptin. And they can bring those down, as I say, within one day, if they eat properly. They won't bring it down all the way. You know, they won't bring it down as far as we like. That would entail some fat loss. But certainly by bringing down the spikes in leptin, you can improve dramatically, very quickly. And then it also then allows you to burn fat, so that over the long haul, you can bring it down even further as you lose your excess fat, especially your visceral fat, belly fat. It's the belly fat, we know, that produces a lot of these inflammatory chemicals, such as IL-6, that causes over inflammation and predisposes to diseases such as diabetes and auto immune diseases. And the cytokine storm that you were referring to earlier.

THREE TAKEAWAYS

SHELLEY
If somebody has a higher weight than they think that they should have, or if they've been told that their obesity is a is a danger to them, that simply by starting to eat differently, they're significantly changing the inflammatory response in their body to one that is not going to be as much of a roller coaster, that will probably fight the virus better, but also not create a cytokine storm. There's three things that I think we could give people as take away points from what you've said.

1. Whatever somebody's weight, to be eating a low carb, high fat, adequate protein diet, may have some protection. If what you say is correct, this way to eat could have protection for people, to help their body fight the coronavirus.
2. Starting now is probably better than starting in the middle of finding out you have symptoms.
3. The last is that even though some doctors don't know about this way of approaching health and wellness, there's an increasing number of health professionals who do. And additionally, for anybody that's on medication, if they can monitor what's happening with their body's response to the medicines and let their doctor know, that's probably important because anybody on medicine will probably see some significant shifts and could be overmedicated very quickly if they don't let somebody know to help them adjust their medicine.

WORK WITH A KNOWLEDGABLE DOCTOR

RON ROSEDALE
It's always best under an educated doctor's supervision. Right. Somebody that actually understands the changes that occur when a person changes to a diet like we've been recommending for decades. So that would be ideal, but I wouldn't necessary dependance really. As you say, it depends on the doctor. Totally depends on the doctor. There are some doctors that are very knowledgeable. It would be great to listen to their advice. And there's other doctors who know very little about this and whose advice actually might be more harmful than not. So it's really hard to say. But one thing I would urge people is to take their health in their own hands. Read a little bit about what leptin does. Read a little bit about the power of a low carbohydrate, high fat diet, which now being called a ketogenic diet, which I don't agree with the name. It's not the ketones that are so beneficial, but the actual burning of fat. And don't be afraid really to adjust your own medications. If your doctor is unable to do so, if your doctor does not really know about the physiology for instance, of insulin and leptin and what it will do to the blood sugars. If your blood sugars fall. You must reduce your blood sugar medication. Reduce your diabetic medication. It's really quite simple. Start off slow. If blood sugar stays high. Reduce it a bit more. Same with blood pressure. If your blood pressure is going down, reduce your blood pressure medication. Don't be afraid to do it. Great If you can talk to your doctor, and he can, maybe if you're on multiple medication, he could tell you which medication might be best to reduce to begin with. But if you, for instance, can't get ahold of your doctor because they're so busy because of the viral infections that are going around, then take your health in your own hands. It's not really that hard to do.

SHELLEY
If they do feel like they need a doctor's advice, if they could start calling today to interview different doctors and find one who they could shift to, who could walk them through this. There's an increasing number of agencies and places that offer ways to coach people on how to eat in the way that you're describing.

RON ROSEDALE
Absolutely. There's even like online apps that can help people in this sort of thing. So there's certainly help out there. And a person just has to be diligent and look around. As you say, interview, interview doctors, look at different websites. But I think that certainly the situation right now calls for self education, you know, educate oneself about what they can do on their own to take their own health in their own hands. You'll know your health better than anybody. You'll know what your blood sugars arel you'll know what your blood pressure is. You'll know what it is this hour, because you might not be able to call your doctor this hour. So I would certainly recommend a person going and purchasing a blood pressure cuff and a blood glucose monitor. Those are the two indexes that can change quite dramatically when they change their diet and need adjusting as far as medication for sure.

HAVE YOU HAD COVID-19?

SHELLEY

Well, good luck with what you are doing yourself. Have you had this virus yet that you know of?

RON ROSEDALE
You mean have I personally?

SHELLEY
Yes, have you had Covid-19 as far as you know?

RON ROSEDALE
No. I'm actually locked down in a beautiful facility, actually, so I can't really complain. I'm taken very good care of it. Right now, there's virtually no chance that I could be exposed. So I have not had it. I actually would like it. That might sound funny to say. But I would like a low dose. I would like to actually be exposed to a little bit, because I know eventually I'm going to have to be. And I would just as soon be exposed a little bit so that my immune system would start building up tolerance and building up immunity, building up antibodies and building up white cells to the virus, so that when I do get a bigger exposure, you know, it's not going to affect me so much. So as I say right now, where I am and I think in India, I don't necessarily disagree with the advice for a lock down only because in India there are so many people, and the medical system can be so easily overwhelmed. And because the society here is so social. I mean, people just love to congregate, that I think the prime minister didn't have much choice but to kind of insist on a lockdown to keep people from spreading it so fast that would overwhelm the medical system. But I think in most countries, I kind of agree with the approach, that Sweden has taken, which is just actually go about your business. But pay attention, keep your distance. Wash your hands. Don't cough on people. If you have it, stay on there. They seem to be doing just fine. I think that probably for most countries, including the U.S., I think or at least most places in the US, would do probably better, with that approach, than trying a more complete lockdown. In other words, don't be afraid of getting it. You just don't want to get a high dose of it. You know, you don't want people to sneeze on you or you don't want to sneeze on other people. Or cough on other people.

SHELLEY
And, you know, there is new evidence that indicates that people get the highest, most virulent dose of it. When people are early on in the infection and may not even have symptoms, which is quite a different thing about this virus, that it's at its most potent when it's early on, that's when it's most likely to be shedding and spreading. Probably an exception is if somebody is in the hospital and having to be intubated for a ventilator. Somebody who's doing that from a health care perspective is very much at risk because they're just so close to somebody. But in just general hanging out with people, it's when people don't have symptoms, and it's early on that they're most likely to spread this virus, which would mean that the more that people get lots of rest and eat, not for comfort, but for health, it might be a smart idea to do those things.

RON ROSEDALE

I think that's exactly correct. Once again, that the major superpower, I guess, of this virus is that it's new. So people have not developed an immunity to it. And therefore, early on, like you say, it's going to be much worse because people have not yet developed an immunity to it. So the more a person has the virus, the more, if they have a good strong immune system that build up antibodies against it that will be able to engulf it and kill it. So then it becomes less virulent, as time goes on in a particular person and then over the weeks and months between people, as people start developing an immunity to it. But early on, when that immunity is lacking, certainly the virus becomes the most contagious and the most powerful because the immune system is not fighting it then.

SHELLEY
Yes. And so here we are in this situation where it would have been so fun to talk with you additionally about what just what is going on. How does the immune system fight things? What is the mechanism of what causes high blood pressure? We could have had a fun conversation about those things, too, but right now what's on people's minds is how do they do what they can to protect themselves? How do they do what they can to share information with a loved one that they care about that they'd like to have around in another year? These are real questions that people are facing.

RON ROSEDALE
Yes, absolutely. Well, you know, for me, eating properly is paramount in any disease. But certainly the chronic diseases of which an impaired immune system is one which then can manifest and is brought out by this virus. You want to eat properly. In addition to eating properly. There are certain micronutrients a person can make sure that they have enough of such as vitamin D. That's why staying indoors sometimes might be counterproductive because certainly the best way to get vitamin D is to get sunlight. So I would not be afraid of going outside.

And also, as you go outside and you're breathing, your aerosol particles will dissipate into the atmosphere. So they'll become less concentrated, whereas indoors they'll become more concentrated. So being indoors might not actually be the best thing. Outdoors, it's fine as long as you don't congregate with people so that, you know, they're not directly getting a huge dose of coronavirus. Let it dissipate off into the atmosphere. So keep your distance a little bit or. You can take certainly take very easily, Vitamin D soft gels.

SHELLEY
You still think that outdoors is best. And for people in Colorado where this will broadcast, what a beautiful place to be outside and people are learning to keep their distance from each other during this virus crisis.

RON ROSEDALE
Exactly. I think being outdoors is great. I would encourage it. that the fact that there's more awareness than it can be an aerosol is why now the Centers for Disease Control is recommending face masks.

[00:57:11] Yeah, well, I it actually surprised me more than anything when the World Health Organization a week ago or so was surprised that Cauvin can be in the air for days.

[00:57:25] I was surprised that they were surprised because that's pretty well known on almost all viruses. For instance, influenza is known to be in the air for days. I don't know why this virus would be any different, but anyway. I would certainly encourage sunlight, encourage open air. Make sure you do get enough vitamin C. I don't necessarily believe in going overboard with it. There are downsides to taking too much, but something like 500 milligrams or so twice a day or high. I particularly like the form of vitamin C.