

Michael Roesslein:

We are recording on the cloud.

Michael McEvoy:

The cloud.

Michael Roesslein:

Hey, hello everyone. I am here in this video with my friend and colleague Michael McEvoy. Michael, thanks for coming on.

Michael McEvoy:

Thank you for having me, Michael.

Michael Roesslein:

Yeah, we're going to talk about some immune physiology related to this COVID-19 situation and viruses in general, and how oftentimes our immune response is actually what does the damage and causes the problems and ways to potentially modulate those situations. If I butchered that too poorly, you can correct me, but the floor is yours for whatever you'd like to speak about.

Michael McEvoy:

Well, the immune system is a very complicated, nonlinear system and it's actually becoming increasingly more difficult to really sort of define what comprises the immune system and what doesn't. Some people could even argue that the human body is itself an immune system, that all cells are equipped with some form of cellular defense to protect themselves from the threat of danger. Whether that danger is a microorganism, a virus, a pathogen, a stress signal, an electromagnetic frequency or something else that is perceived by cellular, eukaryotic cells to be dangerous signals.

Michael McEvoy:

So, when we discuss the immune system, and when we research the immune system, we often come back with very conflicting bits of information. Actually, in fact, I would say that most health related information that you read about, whether that's in science or in what people blog about and write about and publish about, a lot of it ends up being very conflicting. I think that that sort of underlies some of the fundamental problems with the way that we look at the world and the way that we look at our bodies in general.

Michael McEvoy:

Without going too deeply into this, I just want to say that the way that most of us and almost all of us, including myself view, and are sort of, for lack of a better word, conditioned to see the world is through this sort of lens of very simplistic linear cause and effect thinking. That sort of approach has its values and strengths, but it also has a number of limitations and when you start to investigate the human body and human physiology, you start to come away with the fact that human body is an open system, meaning that we are constantly under, a body is

constantly in a sort of surveillance mode, occurring on a moment by moment basis, different immune cells are sort of circulating the bloodstream and the tissues that are sort of looking for different danger signals, and are responding to different things in different ways.

Michael McEvoy:

So we also are under the influence of all of these different outside variables that are constantly being exposed to. So we are breathing in air every second of the day and that air that we're breathing in can contain more than just oxygen. It can contain various chemical pollutants, for example, and chemicals in the environment and all of these things are being, they're affecting your cell machinery, the cell physiology, the immune function on some level, all the time.

Michael McEvoy:

So there's a lot of things that are occurring, most of the things that are occurring in our biology is occurring on an unconscious level. In other words, we're not aware of what's going on in our bodies, and when we start to study what is going on in our bodies during when we become symptomatic, it's very difficult to use and apply this sort of very linear, what we're calling deterministic logic and trying to apply a sort of cause and effect.

Michael McEvoy:

This gene is definitely going to be affected by this particular virus and because of that, we need to either promote or inhibit it with this particular therapeutic agent. It's not as simple as that and I challenge anybody that's listening to this to try to disprove that statement. I've been doing research in science for a long time, maybe I don't know, not as long as a lot of people, but for me, I'm only 40 years old, so maybe 15 years of my life.

Michael McEvoy:

The deeper I go into researching things, the more I began to realize that things are really, really complicated in biology. So even many of the recommendations or so called things that I wind up thinking might be a good idea, for one person actually may not be the right recommendation for that person, but it may work for somebody else, or vice versa. Or something that is recommended at some particular moments in a person's illness, let's say, may work well for a certain period of time during a certain phase of an illness, but it actually may work against them in a later phase of the illness and vice versa.

Michael McEvoy:

So, again, these sort of problems have been thought a lot about by clinicians over the millennia and all of the different systems of medicine which have existed on this earth, I guarantee you that the top physicians, herbalists, doctors, from ancient times were looking at these, thinking about a lot of these same problems, and the sort of convergence of variables that are occurring simultaneously on a moment by moment basis. So, I wanted to begin with this because, again, we tend to look at the world and when problems arise, especially with our health, we tend to look at things in a very simplistic and linear way and in the way that there's limitations with that.

Michael McEvoy:

So I'm trying as best as I can to apply different ways of looking at complex problems. There's a time and a place to apply a sort of linear way of thinking about things, and then there's another time where we need to sort of put on another lens and kind of see the bigger picture. So with that said, I think that the current climate of the world right now, regarding this sort of COVID-19 epidemic or whatever, pandemic you want to call it, it's sort of illustrating many different problems that humans and human systems have developed.

Michael McEvoy:

It's important to remember and I'm going to stand by this statement, feel free, anybody that's listening to agree or disagree with it, that science is not necessarily a representation of reality. Science is an interpretation of reality, and interpretations are subject to different, they're subject to error, they're subject to bias, they're subject to limitations. So a lot of times with if we kind of use, a lot of ways we use different ways of looking at complex problems, we have a better chance of solving the problems.

Michael McEvoy:

So I want to just say that this is not very simple to just say that we have a, that there's easy solutions. I think that many people will start to say I'm confused because some people are saying to take elderberry, other people are saying don't do it. Some people are saying that you want to inhibit the ACE2 gene other people are saying, including medical institutions are saying that people that are taking ACE2 inhibiting drugs are at a higher risk of infection. So there's a lot of conflicting data and information and I think a lot of it has to do with the fact that the lenses that we're using to see problems has its own limitations.

Michael McEvoy:

So with that said, I think that it's worth at least talking about some of the problems that I see that sort of underlie this current COVID-19 situation. I want to start out by saying that for many years now, I've been aware of the body of research that the US government has been conducting on many citizens regarding the health of its citizens, and this has been published since the early 1970s and it's collectively known as the NHANES data, stands for National Health and Nutrition Exam Survey.

Michael McEvoy:

Basically, what this is, is this is a giant set of different caravans that drive around the United States to investigate subjective and objective measurements from random populations within the US. So that includes blood test data that includes symptoms and health related data, that includes providing the collectors of information with data about their food intake and things like this. So that data has been published in different datasets over the years and I began looking at the NHANES data sets and what it was saying about basic nutritional needs and how populations of people, very large percentages of people in the United States, a first world, country are likely not meeting basic nutritional needs on a regular basis.

Michael McEvoy:

I think it's also important to call to attention the fact that approximately 86% of all healthcare cost in the United States is for chronic disease management and that accounts for roughly \$2.8 trillion annually in chronic disease care. So when we start talking about "viral pandemics," we start to look at the populations that are likely to be most vulnerable, most susceptible to injury and to possibly dying during a particular health crisis. So I think that it's important to look at that information because it gives us a sense of where we're coming from, in the United States alone.

Michael McEvoy:

I don't know about other countries, but I suspect that if these numbers are similar or reproducible in other countries, we're probably looking at bigger problems than we can estimate. So for example, the NHANES data has showed that approximately 44% of people in the United States do not meet daily requirements for vitamin A. vitamin A is a fat soluble vitamin. It plays arguably one of the more important roles in the development of lung epithelial tissues, the lung epithelium, which this current viral situation is believed to be targeting.

Michael McEvoy:

So, almost half the population does not meet vitamin A requirements. Approximately 30 million people in the United States have, according to NHANES data, have a severe vitamin C deficiency. That number actually maybe higher given the interaction with different medications which may be lowering vitamin C levels on different medical procedures which may require a higher vitamin C need. So the NHANES data has also showed that approximately 35 to 45% of older adults over the age of 65 are likely zinc deficient, which we know is another fundamentally important nutrient for our health and for the immune system and in particular.

Michael McEvoy:

So I cite this information, and I should point out that there's many other nutrients that are believed to be deficient. For example, dietary intake of vitamin D is suspected to be quite low. The NHANES data from a dietary intake perspective finds that approximately 93% of Americans do not meet their daily dietary requirement of vitamin E, which is an important antioxidant. So it's quite clear that the government's own published data, that the US taxpayers have been paying for, for many, many years, has shown that in the first world, basic nutritional needs are not being met.

Michael McEvoy:

Now, I have a question for any health officials out there. Why has this Information never been applied? I'd like an answer to that question. I haven't been able to find any health authority in the public sector that's been able to tell me why that information that's been gathered and paid for by the government has never been applied. Why is it that no current medical agency, including the CDC or the FDA is actually requiring right now, that adults or any high risk populations of people supplement with vitamin A, zinc or vitamin C, and why that's not being blanketed across all media networks.

Michael McEvoy:

Those are facts that are published by the United States government. So, I have to say, Michael, that that information has me very, very alarmed, and very concerned that the people that are in power don't have control, or even really a bigger picture understanding of what the problems really are, that have led to the development of this current, "viral pandemic." So, in terms of therapeutics, there has been a lot of debate about when to take what, what supplements should be taken, what supplements shouldn't be taken, should I take vitamin A, should I not take vitamin D, how much vitamin C should I be taking?

Michael McEvoy:

To be quite honest with you, what I want to just emphasize first is something that doesn't get a lot of press, which is preventative medicine. This sort of concept of prophylactic treatment, in other words, if our bodies were given the right resources that it needs in order to just function on a very basic healthy level, can that actually improve the outcome of health in this country? These kinds of studies are known as longitudinal studies and we sort of really need and rely on longitudinal studies to show what would happen if a population of people were able to get and meet basic dietary requirements, how does that improve the outcome of autoimmune diseases?

Michael McEvoy:

How does that improve the resilience against so called infectious diseases. As a general prophylactic treatment, you have to talk about the factors that make up health and as we all know, the fundamentals of health are fundamental to human health and to life. We need adequate food, shelter, clothing, we need basic nutritional requirements. We have to take into account that the overwhelming majority of people in the world today are exposed to a very high level number of chemical toxins including chemical toxins and heavy metal toxins in the food that they're consuming on a regular basis.

Michael McEvoy:

So we're sort of at a crisis point, I see in our sort of systems in this world, and I really would say that to anybody that's listening, and hopefully from a very basic level, we can all agree that good nutrition is very important. I hope that we all can agree on that.

Michael Roesslein:

I don't think you'll find argument on that in this audience. It depends on where this video broadcasts.

Michael McEvoy:

I hope that the people that may have higher spheres of influence get that very basic, obvious point, but it doesn't seem to be coming across from the major media outlets that I've seen so far. So this is like a glaring kind of open wound that isn't being looked at. So, I can go on and on forever about the importance of vitamin A and zinc, just to illustrate some of these points. So again, according to NHANES data, 35 to 45% of adults in the United States have zinc intakes below the recommended daily allowance. Zinc deficiency may also be common if you have an underlying gastrointestinal disease.

Michael McEvoy:

If you're vegetarian or vegan, or if you consume alcohol and higher amounts on a regular basis, all of these things could equal zinc deficiency. It's important to point out that zinc deficiency can cause a deficiency in vitamin A, because you need zinc in order to absorb and utilize vitamin A and vitamin A, as we'll talk about in a moment is critical for lung immune epithelium functions. Stomach acid is required for zinc in order to be absorbed from supplements as well as from food.

Michael McEvoy:

If you're one of the many people in this country that take acid blocking medications, such as proton pump inhibitors, which is common among older vulnerable populations, or if you in fact have lower stomach acid which is by itself independent of proton pump inhibitors common in older populations, you may be deficient in zinc. In these instances, it might be a good recommendation to supplement with zinc citrate or zinc L-carnosine, which may help to support the absorption of zinc if you continue to take these drugs and medications.

Michael McEvoy:

We know that there are a few other drugs that can possibly reduce your body's ability to absorb zinc. This includes interestingly enough, ACE inhibitors, chemotherapy drugs, penicillamine, thiazide diuretics as well as deferoxamine, which is an iron key chelating drug. Zinc supplementation or lozenges can be useful and it's also published on government websites that the zinc lozenges may in some way benefit the upper respiratory tract, should be considered in a 30 to 50 milligram dosage.

Michael McEvoy:

Some people say that copper should be given with zinc at a higher dose. My thinking on that is that if you go above 50 milligrams daily with zinc, you should probably be supplementing with additional copper. There has been some papers that have been circulating, including from Chris Masterjohn, who's somebody that I like and follow, that if you're giving above 15 milligrams daily of zinc, you should probably supplement with one milligram or maybe two milligrams of copper. Copper could potentially be considered a therapeutic agent, particularly in these instances.

Michael McEvoy:

So that's zinc. So there's there's many important reasons why a person could be deficient in zinc. We know that many people in the United States, a very high percentage of people United States are in fact deficient in zinc. Let's talk about vitamin A for a moment. So vitamin A works in combination and concert with vitamin D. It's a fat soluble nutrient. It's actually considered a type of a hormone when it activates in its nuclear transcription sites. Vitamin A is, I want to say that the actual pre formed version of vitamin A is exclusively available in animal fat.

Michael McEvoy:

Vitamin A is not actually found in any plant food. That's a scientific fact that the USDA still ignores. Carrots do not contain vitamin A, although they contain carotenoids, the body can

convert some of those carotenoids into vitamin A. a significant percentage of people in the US population and the world population carry a gene variation known as BCMO1 which can significantly reduce your body's ability to convert beta carotene from plant foods into vitamin A and I carry that gene variation.

Michael McEvoy:

So I sometimes will say I need to supplement with 5,000 to 10,000 IU of vitamin A but I do eat animal fats. So I typically don't need to do that. Butter, liver are sources of vitamin A. Some people right now are arguing that vitamin A may not be recommended to do because of its interference with different elements of the COVID-19 viral situation, those are still very subject to debate. I'm talking about on a very basic level, to try to prevent, using vitamin A more as a prophylactic treatment to basically get your body to not be overtly deficient in vitamin A.

Michael McEvoy:

When myself and other colleagues of mine run plasma vitamin A tests on clients, we actually often find that they are low or very close to being low in vitamin A. We suspect based upon some of the literature that if you have low thyroid function, you might also not be able to utilize vitamin A appropriately. This is the RXR/VDR connection of which the thyroid is tied into. As I mentioned, according to the NHANES data, which is published to the US government's own site, you can read about it, 44% of people in the United States are likely deficient in vitamin A.

Michael McEvoy:

Vitamin A does have a toxic threshold and it's controversial to use for this reason. I don't like to recommend long term vitamin A supplemental use. However, in the short term, 5,000 to 10,000 IU of vitamin A may be beneficial. I try to recommend using whole foods first, and again to prevent a vitamin A deficiency, which is occurring in almost half of the population, I would recommend getting a combination of carotenoids from plant foods as well as some form of vitamin A from animal fat butter, for example, or ghee, would provide some good amount of preformed vitamin A, as well as other animal fats as well.

Michael McEvoy:

So let's just talk for a moment about some of the facts about vitamin A and the immune system. The inflammatory response that the body mounts against a virus or any micro organism for that matter, when it causes an inflammatory response can lead to an infiltration of what are called cytokines, which are fast acting molecules, that kind of organize immune responses. So, the viral situation can lead to an infiltration of cytokines within a lung epithelium, and vitamin A in turn plays a crucial role in the integrity, in the maturation of the lung epithelium.

Michael McEvoy:

So we need vitamin A for healthy lung function and there's a process known as keratinization, which plays a really important role in how cells are able to protect themselves. They also like vitamin A, keratinization, forms a sort of outer barrier that the cells will use in a protection response. So, vitamin A is also crucial for what's called mucin synthesis in both the gastrointestinal tract as well as in the lung epithelium. If you're deficient in vitamin A, this

impairs the immune system's ability to produce and appropriately utilize different types of immune cells like macrophages, natural killer cells and neutrophils.

Michael McEvoy:

Studies in mice have found that if you're deficient in vitamin A, that the mice that are deficient in vitamin A will impair the ability to form antibodies, which is part of the TH2 response. Again, as I mentioned before, if you're deficient in zinc, you may also be deficient Vitamin A because of the synergistic relationship between the two. Vitamin A is essential for the differentiation of a number of different types of immune T-cells, which can be both pro and anti inflammatory.

Michael McEvoy:

The research that I read showed that vitamin A deficiency, which about half of the population in the United States has, produces more of an immune phenotype that promotes the inflammatory T-cell response. Whereas, if you have sufficient vitamin A, you have more of the tendency to produce an antibody phenotype. So, you need to have vitamin A as a key core fat soluble nutrient and nearly half the US population is deficient in that according to published data. So, I want to talk for a moment about vitamin C. So, something like 21 million Americans have been proposed to have a severe vitamin C deficiency.

Michael McEvoy:

Less than 30 million Americans meet the daily requirement and about 66 million Americans are at a higher risk of vitamin C deficiency. Vitamin C has been shown to down regulate the inflammasome assembly, which this is an intracellular signaling complex that can set off what's called the cell danger response and the formation of these pro inflammatory cytokines like IL-1 Beta, IL-17, which can lead to autoimmunity and that's important because what we know is that lung injuries and lung pathologies occur in large part due to the infiltration of interleukin one beta and the activation of the inflammasomes in the lungs.

Michael McEvoy:

So, vitamin C is as is actually being talked about, by a lot of people right now and, obviously humans, it's important to know that humans don't make vitamin C. Unlike other animals carry the gene that can convert glucose into vitamin C we don't, which means that we need to get vitamin C from plant foods on regular basis. In terms of therapeutic dosages, I like to recommend mixed ascorbate and I load it every six hours, about 1,000 to 1,500 milligrams. It's because vitamin C has a life of approximately six hours in the blood will rise and then fall and in this current climate that we're in, it'd probably too good to keep levels of vitamin C high throughout the day. So one to one and a half grams divided three times a day would probably be something that is endorsed and recommended.

Michael Roesslein:

I know we'll get this question and I have it myself, so I'll just throw it in here. So mixed ascorbate I do have some of that but there's also, the Pure Synergy, the food based C, there's also liposomal C which can either be purchased, there's a few companies that make that or there's a lot of ways to make it at home. Liposomal, my understanding is that it has a higher absorption



rate, so there'd be a lower amount causing the same effect. So the number might change a little with liposomal or can you just speak a little bit on the different types of vitamin C and how they might-

Michael McEvoy:

Yeah, liposomal vitamin C is going to be much more readily absorbed and if you're doing vitamin C liposomally that's already been pre made, there's obviously some brands that are probably going to be better than others, but I would say that a 500 milligram dose three times a day would probably get you, the same if not better vitamin C levels. I know that some brands claim that their liposomal form is far more potent, et cetera. So that's all sort of an individual basis but generally know that liposomal requires less of a dosage than if you're taking a dry form in a powder.

Michael McEvoy:

Now in terms of whole food vitamin C, I like whole food vitamin C, I eat plenty, and I recommend plenty of plants and vegetables and fruits and certainly, if you're trying to get more vitamin C, but the, and I wish and I should say that bell peppers, I believe yellow and red bell peppers, yellow and orange bell peppers, yellow, red, orange, are going to contain a pretty high level of naturally occurring vitamin C. While I like natural supplemental vitamin C, I've yet to find, and please somebody send this to me if it's been done and I haven't read it.

Michael McEvoy:

I've yet to find any published studies that show that naturally occurring vitamin C, wholefood vitamin C supplements is better in some way to actually treating somebody with a viral situation, I've not seen that. So I'm sort of more going for the higher dosages and something that has been shown to be working clinically, the orthomolecular organization is endorsing the use of vitamin C in a synthetic form, and I am as well I like mixed ascorbate simply based on the likelihood that it's not going to cause nausea or digestive upset with people, that would be sodium or calcium ascorbate or even magnesium ascorbate if you can find that.

Michael McEvoy:

So now, again, these are all sort of, everything I've mentioned so far as to sort of prevent a sort of basic, to correct for the basic nutritional deficiencies which are known to exist. Again, we have to compound for the fact that I don't know the percentage but there's an enormous amount of people in the United States that take prescription medications. There's been books and studies that have been published on looking at how drug induced nutrient depletions do, in fact exist and are probably a cause iatrogenesis.

Michael McEvoy:

In other words, drug induced disease or medical procedure induced disease. We cannot ignore that information right now, we need to take that into consideration that some people may have a much higher requirement for certain nutrients and may actually become deficient in those nutrients, which, in fact, are critical for the immune system because of a drug or medication

that they're being prescribed. That data needs to be pushed forward by some authorities right now and as far as I know, it's not. So, did I get to all the vitamin C questions?

Michael Roesslein:

Yeah, I think so.

Michael McEvoy:

Okay. So looking at some of the molecular mechanisms here, and I started looking at papers that were talking about the disruption in the interferon system, in the interferon one system. So the model of the immune system that's still being taught in medicine today is that we have an innate immune system and an adaptive immune system, but that sort of model is actually outdated and in fact, it's usually that science and scientific research that occurs in science studies, usually the conglomeration that research is usually years ahead of what actually occurs in hospitals, and in medical practices.

Michael McEvoy:

So, we know that now there's other systems that are now considered part of the "immune system." So the microbiome for example, and the virome, which are actually interacting, it turns we have 380 trillion viruses that are in all of our bodies all the time. Then viruses are the most abundant entity in the entire earth's biosphere, and that the microbiota effects the patterning and organization of the virome. So, the virome and the microbiome are also parts of the immune system.

Michael McEvoy:

We want to make sure that our mucosal immunity is healthy and our mucosal immunity is going to consist of the different epithelial tissues. I mentioned vitamin A in an important basic level to generate healthy epithelial cells. If you have, I want to talk about just on that note, the FUT2 non secretor. This is a genotype and we can get more into genes in a bit. The FUT2 non secretor, this is a genotype that about 30% of Americans have that can make them more susceptible to different types of infections.

Michael McEvoy:

It's basically a gene that encodes for fucosylation and that has to do with the fucoses attaching, is sugars. There's different kinds of sugars that are able to sort of capture different micro organisms on epithelial linings and those basically can prevent different kinds of immune storms and immune inflammatory states from taking place. If you're a non secretor, you might have a difficult time with different infections. From a clinical observation, I can tell you that the FUT2 non secretors that I've worked with are prone to gut inflammation and gut infections as well as bladder infections and there may be other infections.

Michael McEvoy:

Remember that the mucosa and the fucosylation can occur in the lungs as well as the respiratory tract as well. So the non secretors may be more susceptible. Now we don't have any definitive workarounds but we know that the bacterial composition of their gut flora is

different. We know that the bifida strains tend to be lower, there's dysregulation in the Akkermansia muciniphilia. All of these are microbiology bacterial colonies that play a critical role in the first line of defense when we inhale air that has a pathogen in it or a virus in it.

Michael McEvoy:

There's an interaction that's occurring at the mucosal surface layer and the non secretors may be, I don't know about coronavirus because I've never read a paper on it. I don't think anything's been published on it, but we know that certain flu viruses can affect the non secretors. So if you don't know what your genotype is, if you have your 23andMe data, you can easily find that information by looking at about two or definitely two snips, maybe three. We don't know definitively, but we know that probiotics play a critical role, particularly the bifida strains to help support the non secretor genotype.

Michael McEvoy:

We also know that there is a prebiotic that is lacking in these FUT2 non secretors and that prebiotic is called 2'-Fucosyllactose. 2'-Fucosyllactose or 2'-FL and that is a prebiotic that it's an oligosaccharide sugar that we know that it's deficient because this is one way in science they can determine secretory status is by identifying this in the breast milk of a non secretor. If they don't have it, they're a non secretor. So it runs with it. Now, there has not been, up to the date of this video, a single trial or even a proposed treatment for using, because you can get 2'-Fucosyllactose as a prebiotic.

Michael McEvoy:

There's a company, that I'm not going to name, you can buy this as a prebiotic supplement. Now we have a very small number of anecdotal reports that does suggest that the non secretors are getting some benefit from 2'-Fucosyllactose prebiotic. So if you are a non secretor, you're going to want to pay attention to your secretory IgA which you might want to be looking at colostrum, you might want to be looking at chlorella, which may raise IgA levels, you might want to be looking at the 2'-FL prebiotic especially if you're a non secretor. So we kind of have to think about the mucosa and a lot of people, I haven't heard are talking about that yet and I'm only starting to get into that. Do you have any questions about that, Mike?

Michael Roesslein:

Not really. I'm just like a bunch of notes.

Michael McEvoy:

Okay, yeah. So, remember it's the microbiome. We have micro, Mike, we have bite. We have bacteria all over. Some people would even say we have multiple microbiomes. In our brain-

Michael Roesslein:

Microbiome has a microbiome. No, but it's changed so much. Because when I first got into this stuff, it was thought that like, in utero it was sterile, or that there are other areas that were sterile that didn't have any microbiome. Just in doing the webinars with [inaudible 00:39:24] over the last five years, every year or so he'll come on and say, oh, guess what, there's a

microbiome here. Oh, guess what? They found a microbiome here. I really don't think there's any part of the body, I'm sure even in my eyes, there's organisms. It's been fun to watch that ignorance kind of turned into an acceptance that there's just, there's bugs everywhere.

Michael McEvoy:

There's bugs everywhere. There's viruses everywhere. There's again 380 trillion viruses in the human body and this is called the virome and as you start to go down this rabbit hole of research about viruses, you just realize that there's a really important quote that actually I'd like to say, to maybe help maybe ameliorate some of the fear that people are thinking about and to try to think more critically about the totality of our current world situation. This is a quote from 1974 from a very famous physician, Harvard physician, Lewis Thomas, and the quote goes like this, pathogenicity is not the rule.

Michael McEvoy:

So we know pathogenicity means some kind of a disease from pathogens. Pathogenicity is not the rule. Indeed, it occurs so infrequently, and involves such a relatively small number of species considering the huge population of bacteria on earth, that it has a freakish aspect. Disease usually results from an injury inconclusive negotiation for symbiosis and overstepping of the line by one side or the other, a biological misinterpretation of borders.

Michael McEvoy:

One of the things that I learned about some of the virology research is that there's a co-negotiation between viruses and our eukaryotic cells that make up our ourselves. That sort of negotiation is that we've sort of co-habitated for so many years, we've evolved with viruses. In fact, our genome is comprised of eight to 13% retroviruses. We're made of them, and the viruses that are in us actually played a really important role in how our bodies work, how the fetus develops when we were pregnant.

Michael McEvoy:

So one way that I am telling people that now about how to look at this is that viruses, there's a cohabitation and it's like, we've learned to sort of get along. Yeah, we don't like each other but we've learned to get along. It's sort of like China and the United States, right? We're not necessarily the best of friends, but we rely on each other, don't we? So this is a similar analogy to the sort of current world event is that, most of the micro organisms that line our mucosal lining, strep-staph, clostridia, they're dormant.

Michael McEvoy:

They don't elicit an immune response. They don't cause our bodies to go crazy. They don't cause our immune system to produce inflammation, but under the right circumstances, they suddenly become pathogenic. So there's a much more dynamic, what's called symbiosis, that occurs between our host cells and these microorganisms that inhabit our body. This symbiosis is a intertwined, interconnected relationships that are very complex and dynamic.

Michael McEvoy:

I always sort of meet with a lot of skepticism, people that are sort of ascribing blame of a particular disease to a single vector. Again, it has to sort of do with the fact that there are no single causes in a world where we have nothing but continuous influences that are happening on a moment by moment basis. So and also, in that same sense, scientists should study more why some people get sick with a COVID-19 virus, but majority may never show symptoms. How is it that one person will die, but somebody will never even become symptomatic?

Michael McEvoy:

That's a big gap. So these are the sort of things that need to be really studied and understanding the patterns and the differences between these groups is really critical to understanding what the problems might actually be and how to address those problems. I would probably say that, as some of the scientists that I really respect like Dr. Nabeel has pointed out, that in virology research that the pre existing conditions of the host, I'm paraphrasing Dr. Nabeel, the pre existing conditions of the host, largely determine the sort of response and outcome to a viral threat.

Michael McEvoy:

So if we aren't talking about the pre existing conditions, if we're only talking about the treatment when becoming symptomatic, or when becoming so called admitted to a hospital, we're sort of in a desperation state. I think that in order to, if this is in fact a viral pandemic, I think the best thing to do is to address prevention. So when you start to go into that rabbit hole, you start to look at all of these other variables that are going on, that are influencing a person's stress response and immune response, all of the things that we've been so far talking about here.

Michael McEvoy:

So, as a first line, I also want to talk about the use of sulfur agents as well as selenium and I don't want to forget these. So, the interferon system has been shown to be disrupted in this current illness according to the clinicians and the initial studies that have come out and the interferon one system is not the same as the interferon gamma cytokine that we often hear about. The interferon one system, it's likely the case that you want to enhance interferon one as a prophylactic as well as in initial line of treatment if you are to become sick. Probably one of the simplest ways to do that is through the ingestion of either raw garlic at two grams daily or allicin at 180 milligrams daily.

Michael McEvoy:

There was a study that was done on healthy people that showed that the consumption of two grams of raw garlic daily but not boiled, raised interferon one levels and had major benefits on that cytokine system. Garlic has actually been studied quite a bit with respect to flus and colds and there's an enormous amount of data on garlic as a prophylactic treatment as well as even as a treatment for somebody that is sick and how it can decrease the duration of frequency and things like this.

Michael Roesslein:

I've been eating them like apples. My breath smells awesome. No, but we talked about this, you told me this first a few days ago and I was like, how is my breath not going to just smell like shit. So two grams is about half of a big clove. You can take it out, smash it up, don't just leave it untouched because there's something with the oils and something with the way the garlic responds to being smashed or chopped or mushed and then just swallow. Again, this is not a cure or a treatment for COVID-19. We're talking about general knowledge with garlic and interferon one and benefits with cytokine situations and colds and flus in general. I just want to make sure that we're not saying garlic cures coronavirus.

Michael McEvoy:

I want to quote examine.com, and I want to give my thanks to them for having a wonderful scientific advisory board and team and I think they do phenomenal work. I'd like to mention from some of their research on garlic that they've aggregated, I'd like to just point that out to direction to people to go as a resource. What they do is they aggregate hundreds or thousands of studies on natural therapeutic agents and supplements and even foods. Then they sort of create a rating system on how well something has been studied and they give it a sort of one, two or three, arrow up or down depending on if it's promotes something, reduces a symptom or improves some outcome.

Michael Roesslein:

I think I know the guy that runs that.

Michael McEvoy:

Kamal, yeah, he's great guy. Yeah, rate of sickness, garlic. Very strong, actually. So, two very high quality studies that they're citing here. The rate frequency of the common cold has twice been found to be reduced by 60 to 70% in people who take garlic supplementation daily. This is associated with both allicin as well as aged garlic and requires higher doses. 2.5 grams to 180 milligrams daily with allicin. So this was on the common cold frequency. There's some amazing things that I never even knew about, like a 32% reduction in prostatic hypertrophy with huge doses of garlic in 30 days. BPH, that was like unbelievable. I never heard that before.

Michael McEvoy:

That's unrelated of course, but if you're an older man, that may suffer with that. Again, all of this is on examine.com, but natural killer cell activity has been shown to be increased moderately with garlic, which is an important immune cell. Severity of sickness decreased with garlic, symptoms of the common cold reduced, upper respiratory tract infection appears to be reduced, lung infections with garlic supplementation, and again interferon alpha, their rating it is a like a plus two, examine.com rating it. The [lone 00:50:01] study noted that interferon alpha which is one of the type one interferons, mind you, again a potential target. The [lone 00:50:09] study noted that interferon alpha concentration in serum increased 384% when measured two to four hours after two grams of raw garlic clove ingestion.

Michael Roesslein:

Just a refresher, you talked about interferon one, you talked about that at the beginning before you started talking about garlic, and then that study related to interferon being increased significantly. Can you just explain once again for the audience the significance of that and regarding-

Michael McEvoy:

Yeah, the interferon system is a part of the immune system that is actually shown to be a key part of the viral defense, the antiviral defense and the type 1 interferons which include a huge super family of interferons that includes interferon one, interferon alpha, and then there's a huge just set you can go on read about it, but they're critical for the anti viral response.

Michael Roesslein:

In a Morse, I know this is going to be question, because there's all these articles flying around, cytokine storm and inflammation storm and all these things. So it's a healthy response, it is not dangerous to upregulate.

Michael McEvoy:

So again, this kind of goes back to what I was talking about earlier, which is that I think that if you look at the stage of a person's condition as it progresses, if somebody, for example, develops the initial symptoms of a sore throat, the sort of therapy that might work for that may be very different than if that sore throat suddenly develops into full blown pneumonia. The treatment may be different, the effect of the agent that you're using, you may want to, in that case suppress interferon one at that point, because the cytokine storm can have essentially be the thing that makes you even sicker and sicker and sicker.

Michael McEvoy:

So ultimately, it's the immune system's response that becomes, the inability for the immune system to sort of contain itself and the sort of free radicals that are being produced. I should really point this out, and this is really important to understand is that the immune system produces noxious inflammatory agents. Those noxious inflammatory agents are reactive oxygen species, they're free radicals. They're lipid peroxides. They're malondialdehyde. They are Leukotriene B4, which comes up a lot when you study viruses and other infections.

Michael McEvoy:

These are immune compounds that are very, very noxious agents that wind up not only creating destruction of pathogens and microorganisms, but they create collateral damage in the body's own tissues. So this is the major problem is the out of control inflammatory response that eventually creates the comorbidities and the dire symptoms and eventually death. So the initial treatment at the earliest onset or even before that may be very different than what you're doing later at the end stages. I want to be clear.

Michael Roesslein:

So with the garlic and things that would increase these type 1 interferon, it would probably be more something prophylactic and early-

Michael McEvoy:

We're talking mainly about prophylactic and early. That is my interpretation of that. Now, with that said, I've yet to see published studies that show how garlic and other natural agents fare in later stage treatments, when something is far more progressive.

Michael Roesslein:

Plus, this whole thing is brand new. I mean, it's apples oranges too. I was talking to someone this afternoon, Brodie Welch, you guys can watch that another video how this virus looks similar to other viruses like SARS and similar but it's behaving differently, and therefore treatments to it will be differently even within the individuals and that we can't entirely, there's no way to predict how anything's going to respond plus there's about seven billion variables.

Michael McEvoy:

I do want to say in terms of the lung related symptoms that are suspected to develop or can evidently develop, there's the potential use of what are called mucolytic agents, mucolytic agents to sort of break up the mucolytic response and this is, if you track down the system, this is like the TH9 immune response pathway. If I remember correctly, I could be off on that, but I think that's accurate. The mucolytic response is what sort of creates this sort of stagnation and phlegm accumulation and that is in Chinese medicine can often be referred to as phlegm-dampness. So we know from the literature that N-acetylcysteine, NAC is actually a very notable mucolytic agent, as well as Serrapeptase. Serrapeptase is also a potent mucolytic agent.

Michael Roesslein:

I sent both of those out in an email yesterday, if you guys get our emails just as potential lung support in general.

Michael McEvoy:

So NAC has been shown to be somewhat beneficial. Serrapeptase seems to noticeably according to again, I have to quote examine.com for aggregating this very valuable usable data right now. The somewhat notable decrease in mostly the viscosity of mucus elasticity is somewhat unreliably decreased due to the mucolytic properties of Serrapeptase. So that's a fibrinolytic enzyme and it has been proposed as a potential treatment for nasal discharge in lung sputum for cystic fibrosis. So, those are potential things that would be useful to look at, at a later stage of comorbidity development with this current situation, for the clinicians and physicians out there listening.

Michael Roesslein:

Was there any other...

Michael McEvoy:



I wanted to talk about selenium and selenium is a very important trace element and its primary role is in the fulfillment of selenoproteins. Selenoproteins are a major regulator of cellular redox. This is a key component of how cells maintain their electrical state and their protection against the sort of loss and stealing of electrons and the ability to maintain normal cellular functions. Selenium is critical for the selenoproteins. Glutathione is one of the selenoproteins. Thioredoxin is a selenoprotein.

Michael McEvoy:

So you've got these sort of master thial systems that are really important, excuse me, they're really important for maintaining cellular function and it turns out that the research literature which I have not found on this particular coronavirus, because I don't think it is published yet but, selenium deficiency is actually considered to be not very common. It may become more common during a viral infection and selenium supplementation has actually been shown to be significantly beneficial for multiple types of virus infections including Hepatitis B, HIV AIDS, SARS, H1N1, H5N1, and Ebola.

Michael McEvoy:

This is a quote from a research paper, "When selenium-deficient virus infected hosts are supplemented with dietary selenium, viral mutation rates diminish and immuno competence improves." So, again, selenium plays a key role in cellular redox, fulfilling these selenoproteins and selenium may also, there may be certain drugs that decrease selenium. Some people with thyroid conditions may have a higher requirement for selenium, because as it turns out, the thyroid gland is one of the most abundant tissues that have selenoproteins in them.

Michael McEvoy:

So, if you have an underlying thyroid condition, your need for selenium may actually be higher than for somebody that does not. Some people would argue that thyroid conditions are vastly under diagnosed and we already know that there's a huge percentage of people that do in fact take thyroid medications for hypothyroidism. So I want to address one thing here that there's a recent publication that's been circulating that claims that selenium may be disadvantageous to use with COVID-19 due to the possibility that selenium inhibits the ACE2 gene and then ACE2 inhibitors actually raise ACE2 expression.

Michael McEvoy:

The Lancet published a paper suggesting that ACE2 inhibitors may be at a higher risk of COVID-19 infection and while it may be that avoiding ACE2 inhibitors should be warranted for higher risk populations, the evidence that selenium inhibits ACE2 is weak at best. I researched this a little bit and I found that the paper that they were referencing here on why selenium might be not recommended, that was actually based upon an in vitro study that was using rabbit lung, and a form of selenium known as [selenine 00:59:58] and furthermore, that study was not actually studying ACE2, they were studying ACE, which is not the same gene that's implicated here.

Michael McEvoy:

This is a form of selenium that they were using this in an in vitro study. Furthermore, I then looked on the literature search to see if there was anything that was suggesting that selenium and hypertension could possibly be related because ACE2 inhibits blood pressure. So ACE2 inhibitors are used to lower blood pressure. So I was sort of looking to see if there was any other evidence, and I didn't find anything that conclusively showed that. I did find a study that was sort of a meta analysis and that paper basically said that they found conflicting information, and they came to the conclusion that there is no conclusive evidence that there's a relationship between hypertension and selenium. So in terms of that goes I still would endorse the use of selenium at 100 to 200 micrograms as a beneficial trace element that humans need.

Michael Roesslein:

Okay, I took frantic notes on that. So you covered several vitamins, deficiencies. A C, I believe, D was mentioned in there a little bit, mostly A and C. We talked about zinc. We talked about general deficiencies in this pathetic state of nutritional status of the majority of people in this country and how that is being completely ignored and plays a huge role in the terrain and the host itself and the response of the body. What I found interesting was how you found that was cited with vitamin A deficiency. The immune response was different.

Michael McEvoy:

It favored more of a TH1 inflammatory response.

Michael Roesslein:

Yeah, and with sufficient vitamin A, it was leaning more towards the antibody immune activation, which is much safer. For a layperson, I'll explain it. As a basic layperson on immunology, the [inaudible 01:02:21] TH1 immune response, that type of immune response is more like a bar fight in what it leaves in its wake and it's more destructive to surrounding tissue and cells and things like that, where the antibody response is more like a laser guided attack. Where the antigen is identified by an antibody, something comes in, kills that antigen or envelops it or does something without just blindly rocket launching everything. Would that be a super rudimentary way to explain why one would be safer than the other?

Michael McEvoy:

Yeah, that's a fair, simple way of-

Michael Roesslein:

I should teach science. Might as well. So, and then we talked about non secretors. There's a lot here to digest.

Michael McEvoy:

There are a few other genes that I've been looking at, in terms of it was a paper that was published on, the toll-like receptor 7 would be a potential target for COVID-19. This was a study that was published earlier this year actually and they were discussing the use of a number of different therapeutic agents, happy to share with you that paper if you want to read it, and one of the things that they had recommended in addition to N-acetylcysteine, lipoic acid was on that

list. They also had suggested the use of spirulina or blue green algae, because of the phycocyanin and the ability to inhibit this NADPH oxidase which evidently for this particular viral situation, it would be beneficial to actually increase TLR-7 and inhibit NOX2.

Michael McEvoy:

Anyway spirulina was on that list because of the higher phycocyanin content, and the ability for phycocyanin to inhibit NOX. So in terms of genetics, I was looking closer at the TLR-7 and 3 genes, and there are variations in the population. I'm happy to send this information out to people that want to look at this.

Michael Roesslein:

I'm sorry, I'm going [inaudible 01:04:39].

Michael McEvoy:

Oddly enough, there's been some information research about the interferon alpha receptor, one gene and the geneticists have a hard time genotyping the interferon one gene, because these genes have pseudo genes and I find that to be interesting in and of itself, because pseudo genes can definitely interfere with the ability for a gene to transcribe and translate into a protein because of a cross interference between the active gene and the pseudo gene.

Michael McEvoy:

So, hence it's been hard for geneticists to genotype the interferon one genes. So what some studies started doing instead, and they may have figured that out. I don't know yet but I have not seen a lot of studies. You go to SNPedia and look for interferon one gene, there's nothing. Nothing aggregated, I find it curious. So anyway, but the interferon alpha receptor one which is the receptor that sort of utilizes the interferon one protein, has been studied with certain viruses and I'm happy to share that information with people if they want. I'm preparing to send this information out in a report sometime hopefully soon.

Michael Roesslein:

Sure. Anything you want to share, we can just link below this video. I'll put a link, we'll talk about it off air but I'll put a link below the video if there's anything that you want to put up. So if there's any published journals or articles or anything or even just a link to examine if people want to go there, like anything that we think is relevant, we can just stick as a link right below the video.

Michael McEvoy:

Last but not least, I wanted to at least mentioned nitric oxide. Because there was some research on a coronavirus, not this one, but another one which is related, that nitric oxide plays a key role in the containment of viruses and nitric oxide gets produced by, in the immune system by a form of nitric oxide known as inducible nitric oxide synthase or NOS2, from a gene standpoint, and that gene is variable in the population. I have tracked down about 13 or so of the snips to see what that looks like.

Michael McEvoy:

There are some studies looking at tuberculosis as well as viral infection and nitrates from vegetables, particularly beet roots that may be beneficial in some way because nitrates can increase nitric oxide activity. So, I want to just sort of mentioned that and put that out that there's other research out there that is looking at this kind of stuff as well.

Michael Roesslein:

Okay. Breathwork, yeah.

Michael McEvoy:

There was an anecdotal report of supposedly somebody who came off of one of the cruise ships and was infected, went to the emergency room and was put on a respirator and their blood oxygen was around 90% and the guy started doing EFT tapping and he started doing breathing exercises, and it brought his lung blood oxygen levels back up to 99. So, breathing exercises, just to point that out that it's now been studied in the literature that the Wim Hof breathing exercises showed to inhibit the innate immune response, to control and modulate the inflammatory response, you can actually use your breathing to control inflammation. That's been proven with the endotoxin study they did six years ago. So we need more research like that, because these are self practices that people can do and there's nothing more fundamental to life than air and oxygen breathing and respiration.

Michael Roesslein:

Yeah, I'm going to try to find some good resources for that. One of the yoga teacher, breathwork, she does breathwork workshops here in the Bay and everything shut down. So all these people that work teaching yoga and all these things are scrambling to get everything virtual. So actually, recording this, today is Wednesday, maybe in about an hour and a half, she's hosting a virtual breathwork workshop that I'm going to attend and I'm actually gathering up my friends who do these things, breathwork, yoga, Qigong, meditations, and I'm going to try to create a resource page on our site that has like, on Monday nights, there's Kundalini yoga, Tuesday at four, there's vinyasa yoga, there's breathwork at five, there's these because, A, I want to support my friends who are looking to try to maintain a living, but also these practices can be huge in this time.

Michael Roesslein:

Brodie talked about on our video, with the Chinese medicine approach of creating an inhospitable host is getting your nervous system out of this chaotic, which is understandable, but getting it down, getting your body into a state of rest and restoration and recovery and a lot of these breath techniques and practices like yoga and Qigong with the energy, movement and those type of things can be something that's really easy and cheap and at home, there's no reason people don't have time to do it now.

Michael Roesslein:

We're looking for these complex solutions and like you started out within this video, if people are 50% deficient in vitamins across the board and nutrients across the board and all these

things, that's a good place to start. So I know access to fresh food is challenging a little bit right now, but when I went to the store the last two times the canned food was gone, and the frozen food was gone and the dried food was gone, the produce area was full.

Michael Roesslein:

Now you got to be careful, wash your food, take all the precautions possible. Obviously less going out is probably better right now, but don't be afraid to get some fresh produce and some fresh fruits and vegetables in as well. Because that's where a lot of these vitamins are going to come from. Also, I posted a video with Dr. Maya a few days ago. She has a video series. She's a herbalist and an MD, talking about simple ways to get a lot of these vitamins in even if you can't access supplements right now or certain foods. Like boiling pine needles can produce a ton of vitamin C in the water and different things that people might have in their backyards or their herbal cabinets that can help out in this situation.

Michael McEvoy:

Time to reconnect with the land, don't you think?

Michael Roesslein:

I think so. As you said that something just posted across my feed here, that the water in Venice has cleared and there are now dolphins in the canals of Venice.

Michael McEvoy:

Wow, that's amazing.

Michael Roesslein:

Because it's been shut down for 10 days or a week or I don't even think it's been 10 days. I don't know. The time since this all started seems like six months and it's been like two weeks. So time, anyways, before we get too weird, let's start talking about time doesn't exist. That's the next video. We're going to do a plant medicine video. This has been a lot to chew on, a lot to digest. Simple vitamins, simple terrain things. Look into the breathwork, look into a lot of this stuff, take notes, re-watch it, we're not making cure claims and anything like that.

Michael Roesslein:

We're simply offering information that could be empowering to people in these times, and I'm going to be bringing people on who could do this. Michael's a wealth of information. He's dove into a lot of research on this, and anything you want to produce or publish papers-wise with this, we'll post it there. This will be up on the site. There's nothing we're selling. This is it. Thank you for sharing this. I know how much you've dove into this in the last week and I really value you coming on to share with people and share this information.

Michael Roesslein:

You were pretty much the first one I called when I found out that this was actually happening. I think I called you from the grocery store and was like hey, what have you seen about this thing? You were like, I don't know. I was like, why don't you take a look? There's people hoarding food

at the grocery store as if there's an actual zombie apocalypse outside and that was two Thursdays ago. So that was 13 days ago, and how has our world changed since then.

Michael McEvoy:

Quite a bit. Quite a bit.

Michael Roesslein:

So, thanks for coming on man, for sharing all this stuff. I hope everybody got a lot out of this. We're going to keep doing videos. I'm going to keep doing videos because I don't know what else to do right now and I'm just going to keep trying to bring information forward that's helpful. As always, much appreciated. If anybody wants to reach out to Michael for consulting...

Michael McEvoy:

I'll give you my personal email. You can just drop me an email, it's mcevoy.healing@gmail.com. That's M-C-E-V, like Victor, O-Y healing@gmail.com Mcevoyhealing@gmail.com, it's the personal email.

Michael Roesslein:

I'll put that as a button below the video as well, then I'll just say click here to inquire about consulting. So thanks, man, we'll be talking to you probably every day for the foreseeable future. So thanks for this and-

Michael McEvoy:

Many blessings and I hope everybody does well, stays well and gets through this.