Total Gut Restoration with Kiran Krishnan

Shivan Sarna: Hi everybody! I see that you're popping in which is great. Thank you. Kiran is going to be right here. My little kitty cat is saying hi. So, we're going to have a great time. I'm just approving a few more people. And you know I like to start on time, so we'll be super efficient today as always!

Tell me where you're from and what's going on with you. How are you guys today?

Hi. Hi! Great, Lisa. Hi! Hi Leanne. Hi Jen. Hey, girl. Hey, Carleen.

A couple of announcements while we're waiting for Kiran to join us.

Hi, glad you guys are here.

I have your questions in the event area of the Facebook group. And I have to look at it on my phone, so I don't keep popping out of here because it gets really distracting. And I don't want to do that. I want to make sure we're in the right spot.

And then, the other thing is I wanted to let you know that, on November 1st, we have a special chance to do a Q&A with Dr. Steven Sandberg-Lewis.

Kiran Krishnan: Hi.

Shivan Sarna: Hi! How are you?

Kiran Krishnan: Good! Sorry, I was actually on a radio interview that was going long. So I apologize for that. But I'm here!

Shivan Sarna: No problem, no problem. There you are. Okay, good. Look, we're happy for anytime that we get with you.

Kiran Krishnan: Excellent! Well, I'm glad I'm very glad to be here. And I love talking about this particular topic. So hopefully we can give people a lot of good information.

Shivan Sarna: Okay, hang on for just a second because I need to make sure that I've done this right. I know you know how to share your screen too, right?

Kiran Krishnan: On this? Yes, I believe so. Press the share button. So…

Shivan Sarna: So, we are live. Lots of people here—Pat and Chris. I just want to make sure I'm broadcasting and I'm also recording.

Kiran Krishnan: Okay, great!

Shivan Sarna: All good, all good. Just… I've learned the hard way, right?

Kiran Krishnan: So, so for those of you who are not familiar with this incredible gentlemen, Kiran Krishnan, he is the person who brings us Megaspore Probiotics as well as a variety of products to help us heal our gut and have that good balance of our microbiome.

He is a philanthropist. He's a great dad. He's a great friend. A great leader in this field! And he educates other educators, other doctors and practitioners and researchers, in the field of microbiome health.

And Kiran, how many studies have you guys accomplished even just this year alone?

Kiran Krishnan: So, this year alone, we've done I think seven. And we've completed I think now a total of 13 or 14 together over the last couple years. And we still have about eight or nine studies initiated. So we've got a whole total of about 20 trials going on in some form of the other all over the world in different regions.

I have the great fortune of traveling around and working with all these researchers in different parts of the world to figure out the science behind a lot of this stuff and create some really powerful tools for people to take their health in their own hands.

Shivan Sarna: So today, we're going to be talking about rebuilding our gut.

Kiran Krishnan: Yeah!

Shivan Sarna: And I have a couple very specific questions for you from the group.
But I'd love it if you would get started and just talk to us about this protocol that you have designed within the world of your products and the results of your research.

And then also, guys, we have some discounts for you! You know I love a good discount. So we'll be telling you about that as we go. And I'll also post it in the thread. And I'll post it in the email and that kind of thing.

So, go ahead and tell us about a way we can all get our gut restored.

Kiran Krishnan: Yeah, so I'm going to talk a little bit about something we call *Total Gut Restoration*. This is a version of a talk that I do at a lot of health and medical conferences. And the inception of this really came from working with functional medicine doctors and health practitioners and understanding their pain points. What are the difficulties that they're having in treating their patients?

[05:10]

Kiran Krishnan: So, this is a scenario that I hear about all the time. Imagine you're a functional medicine doctor or a health practitioner. Your first patient of the day comes in. And here, he/she is dealing with diabetes and weight issues and metabolic dysfunction. And you know, because of your training, your instincts, you're reading, that they have something wrong with their gut that's driving these conditions.

And then, the second patient that comes in has an autoimmune condition whether it's lupus or Hashimoto's or eczema or psoriasis. Again, you know that there's something wrong with the gut that's driving that condition.

And then the third person that comes in is somebody with anxiety, depression, mood disorders. And again, you know that there's something wrong with their gut and that it's driving the condition.

But here's the question. And this is where it gets difficult. How do you know what is wrong with each of their guts? And if you don't know what is wrong with each of their guts, how do you go about treating it? It's a guess!

So, functional medicine has done a lot of guessing work on figuring out what could be effective to treat people's gut. So they throw probiotics at you—prebiotics, some aloe, some glutamine, some charcoal, in some cases, antimicrobials. So, admittedly, every functional medicine doctor will talk to you—if you're talking to them casually, they'll tell you—yes, it's all trial and error. We're just throwing stuff to see what works because it's very hard to pinpoint what is wrong with each individual's gut.

So, that became a problem for me to solve, right? That was to me something that we shouldn't have to deal with. That's something our functional medicine docs and practitioners shouldn't deal with. That shouldn't be something that individuals shouldn't deal with where you really have no idea what is going on within your digestive tract that's driving your condition.

So, we started digging in. We've got about seven or eight years with the research work going into this part of the talk. And we were trying to figure out what are the most common dysfunctions that are driving chronic illness within the digestive system.

And as it turns out, the vast majority of chronic illnesses, as different as they can be—as different as diabetes is from an autoimmune condition or as different as anxiety is from reflux disease—they present completely differently, but they still have the same root cause. And it's the same thing going on dysfunctionally in all of those digestive tracts. So that's the basis of this particular talk.

Now, there's a lot of studies in this talk. I'll just kind of run through those really quickly and not inundate you guys with a bunch of research papers and all that. But I will just kind of go through them in a very cursory way just to show you that there is evidence behind what we're talking about here. It's not something that we just made up.

And again, this kind of talk, we often do for continuing education credit. So these research papers and all have been vetted by committees that look through all of this stuff. So you're getting kind of a preview and a very fast version of what a lot of doctors and I will get at these conferences.

So, let me jump into that. I will share my screen here. Tell me if this looks right. Shivan, can you see this normally?

Shivan Sarna: I did, yup! I can see it. And it looks like it's still like a little bit in preview mode because I can see the slides on the left as well.

Kiran Krishnan: Okay, how about now?

Shivan Sarna: There we go! There we go.

Kiran Krishnan: Okay, sounds good. Alright!

So, the title of this talk is *The Most Common Dysfunctions of the Standard American Gut As It's Related to Chronic Illness*.

So, when we started looking at what is going on in the gut that starts to break down that drives chronic illness, we basically came down to this particular systemic problem.

So first, it's important to understand what a healthy gut looks like in general and what are the important structures and conditions in a particular healthy gut.

So, if you look here, this is a typical example of an intestinal lining. You've got two very important structures in the intestinal lining. The first one is this mucosal layer. So that's basically a mucus layer on your intestinal lining. And the lining itself, this is what we call the *epithelial layer*.

The epithelial layer is a one-cell thick lining of intestinal cells that make up the barrier between the outside of your gut (which is out here) and the inside of your gut (which is here).

Now once you get here, you're already in the circulatory system. You're entering the portal vein. You're entering the circulation. It's called the *basolateral circulation*. So, this little lining of intestinal cells is your last line of defense from things like toxins and all that, moving in from the outside of your body (which is up here), the lumen of your intestine, to the inside part of your body (which is in the circulation right here).

[10:11]

Kiran Krishnan: So, this mucosal barrier is a very important barrier to preventing things from migrating through that shouldn't be migrating through.

And in the mucosal layer, there's two distinct sections to it. There's this top part of the mucosal layer which is kind of a watery layer. It's more liquid-like, more viscous. And this inner part is a thick gel-like structure. So it acts like a physical barrier to things entering into this intestinal lining and beyond.

So now, there's a reason why these two things have different colors. One is this physical structure itself is different. Number two, as you can see, all the microbes are predominantly up in this top section of the mucosal. You get a little bit of microbial function and colonization on the inner part of the mucosa. This inner sanctum is supposed to be relatively sterile.

If bacteria start to enter this area, all of the immune cells in your intestinal lining start to think that you've got a bacterial invasion coming in, and they start to freak out. They recruit a whole bunch of immune actors into this space and cause a lot of inflammation and damage.

So, that's the important things to remember. There's two parts to the mucosal—the top part that is more of a liquid layer where most of the bacteria exists, you've got the inner part of the mucosa which is relatively sterile and is a thick kind of barrier structure. And then, you've got the intestinal lining itself which are the cells that control what gets through your intestinal lining.

Now, the way this is maintained and protected is with having high diversity within your microbiome. And you've got very particular strains that we call *keystone strains* that protect this entire structure. They produce the mucus. They regenerate the intestinal lining cells and so on. They also improve the secretory IgA and other immunoglobulin activity against pathogens in this upper part of the mucosa.

You also need high production of short chain fatty acids. That's what *SCFA* stand for, *short chain fatty acids.* Most people are familiar with butyrate as an example of a well-known short chain fatty acid. When butyrate is produced at high levels, it stimulates these green cells called *goblet cells* which produce new layers of this mucus.

Now, imagine this mucus is continuously produced from the bottom and is driven up, and all of the toxins and all that it captures is driven out and you end up defecating it out on a regular basis. This entire mucosal structure can regenerate itself within about 72 hours. So you're constantly, in a healthy gut, generating new mucus. It's pushing pathogens and toxins and all that out which are captured in this mucus layer. And you're defecating it out.

So, that production of short chain fatty acids are absolutely critical to the integrity of this structure.

And then, lastly, the well-formed tight junctions. Tight junctions are the spaces in between these intestinal epithelial cells. And these spaces are supposed to be dynamic and remain closed. In some cases, they will open to allow certain nutrients through. But all of that is heavily controlled by these cells.

When your gut becomes leaky and dysfunctional, these tight junctions in between the cells break open because you've got proteins in there that control it, those proteins get inflamed and damaged, and they break open… and now you've got massive gaps in between the cells. That's how things go awry and people end up with severe leaky gut.

So, this is what it looks like in a healthy gut. In a dysfunctional gut, it looks something like this. And how this starts is it always starts with something called *dysbiosis*.

Most people have heard that term. And it means a dysfunction or a disproportion in your bacterial population. It means the bacterial population has gone from well-balanced and functional to imbalanced and really not functional.

Now, there's two ways of really defining dysbiosis. One is through low levels of keystone strains. So those are those important protective strains that I talked about whose job it is to regenerate the mucosal lining, to upregulate the immune system so that you can produce more secretory IgA, to bring down inflammatory response, to rebuild the gut lining itself, the intestinal cells. All of these functions of keeping this system healthy fall upon many of these keystone strains.

So, as you start losing these keystone strains, you start seeing dysbiosis. Some of these keystone strains are *Akkermansia muciniphila, Faecalibacterium prausnitzii, Bifidobacterium longum, Bifidobacterium adolescentis*, these *ruminococcus*. So there's several of them that have been identified to be really important strains in protecting the host from this issue developing.

[15:13]

Kiran Krishnan: Now, once you have low levels of keystone strains, you also start to get overgrowth of certain types of microbes and under-performing of other beneficial microbes, so

you end up with something called *low diversity* within the microbiome. And diversity is absolutely critical within the microbiome in order to maintain health.

I'll show you a couple of studies in the upcoming slides. But if you look at the last 10 years of microbiome research, the one thing that is that is always consistent across the board is diversity in the gut microbiome is associated with health, it's associated with resistance to infection, it's also associated with longevity—which I'll show you a study of. So, the diversity in the gut microbiome is really, really important to overall health.

And as these keystone strain levels start to drop, you start to lose diversity in the microbiome.

Then you also start losing the production of important post-biotics. These post-biotics are things like short chain fatty acids (which we just talked about) which are really important for rebuilding this mucosa, for regenerating these intestinal cells, for providing energy to these particular intestinal lining cells, to bring down inflammation in the gut, to feed the liver, feed the brain, all of these really important things. And they also control numerous metabolic signals, especially glucose metabolism. So I'll talk about that a little bit.

But when you have low keystone strains, you end up with low diversity. And when you end up with low diversity, you end up with low levels of production of these important short chain fatty acids.

So then what happens is microbes that are good at breaking down this mucosal layer as part of their diet start to become over-abundant because you don't have the keystone strains keeping them in check, you have low levels of diversity which means you don't have a lot of competing bacteria. So certain bacteria that break down the mucus layer end up growing too much. And when they do, they start eating away at this inner part of the mucus layer.

When they eat away at the inner part of the mucus layer, this upper part starts to flood in to this area that I call *the inner sanctum* where you're not supposed to have a whole bunch of bacteria and viruses and bacterial toxins and all that.

So, as you start getting a flooding in of these microbes into this inner part, you start getting a disrupted mucosal barrier system; and then, a disrupted mucosal immune response. And that's really important because most of how your body responds to things that you're exposed to are dictated by what happens in this mucosal layer. Whether you're sensitive to certain food types, whether you have environmental allergies, you have pet allergies, all of those immune reactions

to the most common things that you're exposed to are dictated by the mucosal immune response. That's immune cells in your mucosa seeing things come in and then reading what those things are and trying to decide how it's going to respond to that.

When your mucosa is broken down like this, and you get a constant flooding in of bacteria and toxins and viral particles and food particles into this inner sanctum, your mucosal response gets disrupted in that your mucosal response, inflammatory, towards everything that you're exposed to. That's how you develop all these sensitivities and allergies and all that.

The problem with this inflammatory response is it does two things. Number one, it translates to the rest of the body. The gut lining is like the central command center for the immune system. So if the gut immune system or the gut mucosa immune response is inflammatory, you're going to have an immune response that's inflammatory all throughout the rest of your body as well. Whether it's in your nose, your upper respiratory tract, your urogenital tract, or your skin, no matter where the section is, if the gut mucosa is responding to everything in an inflammatory fashion, everything else in your body becomes inflamed as well.

Then you get a whole bunch of recruitment of immune cells to this area. Inflammation damages the lining, so you end up getting a dysfunctional gut barrier. And now you have what becomes full-on leaky gut or metabolic endotoxemia (that's the more accurate scientific term for it).

But basically, what you get now is a completely disruptive various functions. You've got microbes in your gut that are acting pathogenetically and are releasing toxins that are being absorbed into your system, and the toxins are causing further and further damage down your gut lining as well.

So, it's very important to keep these things in mind. Dysbiosis is how it all starts. And then, it leads to low levels of keystone strains like akkermansia and faecal bacteria bacteria. Then you end up losing diversity in the microbiome. Then the next step is these post-biotics, like short chain fatty acids, start to become reduced in their production. That automatically allows for the disruption of the inner part of the mucosa without adequate regeneration of the mucosal. And then, you get a flooding in of bacteria, viruses, food particles, environmental toxins, and all that in this inner sanctum, which causes a recruitment of severe inflammatory response in the gut lining, which eventually damages these gut lining cells. And then, your gut becomes very leaky. And all of that stuff ends up leaking through and into your circulatory system.

[20:47]

Kiran Krishnan: So, that's how people become really sensitive. And it starts the process of setting people up for chronic illness.

So, when we look through this very specific process that starts with dysbiosis—and keep in mind, the dysbiosis can be driven by a single course antibiotics you took when you were seven years old. Your gut just never recovered from it because we didn't do anything specific to recover the gut microbiome from it. It could be from years of eating processed food and making poor lifestyle choices. It could be from chronic exposure to RoundUp or glyphosate, the strong antimicrobial pesticide that a lot of people get exposed to. So, there's a number of things that can drive this dysbiosis. It could be a gut infection when you go and you travel abroad somewhere.

But no matter what starts the dysbiosis, this is the cascade of events that leads to a dysfunctional immune response and chronic systemic inflammation and significant sensitivities to lots of things because now your body is responding in an inflammatory manner to anything your mucosal comes across and touches.

So, this is the dysfunction that we identified as being the most common dysfunction.

Then we started looking to see: "Is this dysfunction responsible for driving various kinds of chronic illnesses?" So, the next few slides, I'm going to show you what we call *review papers*. If you're not familiar with them, they are meta-analysis or review papers where authors or scientists that are experts in the field, they review hundreds (and in some cases, thousands) of research papers on a particular topic, and they publish the consensus of all of those reports in a single review paper, a meta-analysis paper.

Now, those are the most important kind of research papers because it's not just one study that showed one thing. They are analyzing hundreds of studies on the topic and coming up to a scientific conclusion. So that is really important. I'm going to show you a few of these research papers that basically show you that these same dysfunctions are at the root cause of numerous types of chronic illnesses.

So, here's one. This is again a review paper looking at modulation of the gut microbiota. They concluded that the disruption of the gut microbiota has been implicated in many conditions and

diseases including obesity, inflammatory bowel disease, irritable bowel syndrome, type 2 diabetes and colorectal cancer.

So, these things on the right-hand side here are direct quotes from the paper itself. And they say: "As we gain a deeper understanding of the specific relationship between the gut microbiota and disease," they recommend something called "*intelligent modulation* of the intestinal community which could have considerable interest and possibly extremely beneficial for human health" because they have shown that dysbiosis and this specific kind of dysbiosis is where you see low diversity, low keystone strains, overgrowth of certain pathogens, seem to be responsible and at the root cause of all of these various conditions—obesity, IBD, irritable bowel syndrome, type 2 diabetes, colorectal cancer and so on.

So, it's clear from this review paper, from this analysis of dozens of other studies, they found that dysbiosis is at the root cause of many of these conditions.

Here's another example titled *The Gut Microbiome and Inflammatory Bowel Disease*. This is again another review paper. They showed that, looking at people with IBD, they compared the gut microbiome of people with IBD against age match and sex match cohorts that did not have IBS. And they found that the most consistent observation in I BD is reduced bacterial diversity.

So, of all the things that are going on in the gut in IBD, all of the inflammatory and disease processes that are going on, the one thing that they found that was really different between those that have IBD and those that don't is that bacterial diversity tends to be very low in those with IBD.

So, they also talk about—and a number of trials have shown this—that therapies that correct dysbiosis (in this case, they talk about fecal microbiota transplants and probiotics) are quite promising in IBD. And again, this is a review paper.

[25:11]

Kiran Krishnan: Another review paper on one of those keystone strains, *Akkermansia muciniphilia*. This is a mini-review because they looked at something like 10 or 12 papers. But they showed *Akkermansia muciniphilia* is inversely associated with obesity, diabetes, cardiometabolic disease and low grade inflammation.

"Inversely associated" means, when this bacteria is high, the risk for all of these conditions is low. When these bacteria is low, the risk for these conditions go up higher.

So, this particular bacteria, this single species in your gut, a keystone strain, protects against almost 30-something conditions that fall under cardiometabolic disease, including obesity, diabetes, low grade inflammation, and so on.

So, they've shown that the administration or increase of *Akkermansia muciniphilia* in certain studies has been able to drive the reversal of things like sugar dysfunction, diabetes, inflammatory bowel disorder, obesity and so on.

So again, remember, dysbiosis, that first review paper showed all of these chronic conditions associated with dysbiosis. Low diversity drives things like inflammatory bowel disease. Low levels of this keystone strain, *akkermansia,* is associated with increased risk of all of these different conditions.

Then here's another keystone strain called *Faecalibacterium prausnitzii.* Again, it's a review article. They found that the abundance of *Faecalibacterium prausnitzii* was decreased in IBD patients compared to control.

So, using a systemic review, it shows that there's a protective benefit with *Faecalibacterium prausnitzii* against the development of IBD. And they suggest perhaps probiotics and prebiotics to increase the level of *Faecalibacterium prausnitzii* I in IBD. It could be a very successful attempt at treating this condition. Again, that's another really important keystone strain.

Another perspective paper, they talked about leaky cell cell junction. Those are the tight junctions that I talked about in between the cells which become disrupted and open up, and there's a lot of inflammation going on. They talk about how this contributes to inflammatory and autoimmune disease. They list things. They list three big studies that show that this epithelial barrier dysfunction, this leakiness in between the cells, is involved in IBD, autoimmune disease and systemic infection.

So, it makes people more susceptible to things like infections from spirochetes, for example, like in the case of Lyme or Epstein-Barr virus or cytomegalovirus, all of these chronic, latent infections that people seem to be suffering from that trigger their autoimmune response and other immune dysfunctions.

They also show that pathogenic bacteria that induce intestinal barrier deflects will translocate, meaning it will pass through the intestinal lining and will translocate into the lymph node and liver. So now you've got pathogenic bacteria that are supposed to be in that top layer. But because that layer gets broken down, and the inner layer gets broken down, and the tight junctions open up, you now have pathogenic bacteria that move through.

And once they're in the circulation, they end up in the lymph nodes, and they end up in the liver. That can trigger systemic autoimmune disease such as lupus.

So, these studies and these review papers are very clear in that initial dysfunction I showed you is a major driver of all of these conditions.

Here's one that's actually quite different. This is the gut-brain barrier in major depression. They looked at mucosal dysfunction and inflammation in the mucosa. Like I showed you, when that inner part of the mucosa gets broken down, and bacteria and all start flooding in, and you get lots of inflammation in that inner part of the mucosa, the results show that intestinal mucosal dysfunction is characterized by increased translocation (so that's a movement from one place to the other) of gram-negative bacteria which is the main type of bacteria that ends up in leaky gut causing problems. It plays a role in the inflammatory pathophysiology of depression. So, that same mucosal dysfunction is driving conditions like depression.

So, think about it, the same dysfunction driving depression, driving cardiometabolic syndrome, obesity, diabetes, autoimmune disease. These are all very different conditions and are seemingly unrelated, and yet they're all driven by the same root cause, the same dysfunction.

Here's another one that's quite different from everything else. And again, this is a review paper showing that gastroesophageal reflux disease (GERD) is due to mucosal inflammation. So, once you get to that mucosal inflammation, it significantly increases your risk of developing chronic GERD.

So, gastroesophageal reflux disease again is very different than depression. And yet, it's the same kind of dysfunction that is driving both of these conditions.

[30:09]

Kiran Krishnan: There's a lot of study on this mechanism in HIV-AIDS because they've been able to show that the biggest driver of the convergence of the disease from HIV positive to

AIDS—which is a full acquired immune deficiency syndrome, which is what ends up killing the subjects that are dealing with it—is the mucosal dysfunction itself. It's how leaky the gut is and how dysfunctional the mucosal structure is. And in fact, they show that severe mucosal immune dysfunction is associated with the progression to AIDS.

So, when an individual who's infected with HIV goes from having HIV (which you can live with for decades) to having full-blown AIDS, that progression to AIDS is driven by mucosal dysfunction. And this is a really great model to study how severe that mucosal dysfunction is in terms of compromising your immune system and driving inflammatory conditions.

Again, same mucosal dysfunction drives reflux disease and drives depression. And those are all so different in terms of the way the conditions present themselves, and yet it's the same root cause.

Here's a study on diversity and aging. And they found that individuals who lived over the age of 90, who had really good, healthy outcomes had diversity in their gut microbiome that was similar to those in their 30's. So, those who are older with low diversity—and as diversity drops, have significantly increased their risk of chronic illness—if you can maintain diversity like healthy people have in their 30's, you can actually live over the age of 90 without much complication at all. So that's what this study showed.

So, diversity is extremely important for maintaining health and wellness within the microbiome.

So, that's the overview picture. When you have these dysfunction—and I could have gone on, there's like 15 more slides to show you on the research papers. But I'll spare you guys that torture. But I do want you to see that there's a significant amount of science showing the support for how this particular mechanism which starts with dysbiosis and ends up with leaky gut, is a major driver of a variety of chronic illnesses.

It's not just gut dysfunction, right? It's not just IBS. It's not just cramping and bloating and IBS and Crohn's and colitis. It is with reflux disease, depression, immune dysfunction, autoimmune disease. All of these things are driven by the same dysfunction.

And ultimately, one of the main things that occurs when you have this dysfunction and this breakdown in your gut is these little pesky things called LPS, lipopolysaccharide, end up leaking through your gut on a regular basis. And that drives something called metabolic endotoxemia.

Now, there's a bunch of studies I could show you after this on metabolic endotoxemia and what it does. I'll just breeze through them in like a couple of minutes. Basically, the clinical manifestation of that LPS leaking through that dysfunctional gut on a regular basis fall under everything in the metabolic syndrome umbrella, heart disease, lipid problems, hypertension, type 2 diabetes, dementia, cancers, polycystic ovarian syndrome, non-alcoholic fatty liver disease…

All of these things are driven by LPS endotoxemia or metabolic endotoxemia. That means, in a dysfunctional gut, you've got that barrier that's broken down, you've got the leakiness in the tight junctions. And this LPS, lipopolysaccharide, that's made by your commensal bacteria in your gut microbiome is allowed to leak through and enter your circulation. When it enters your circulation, it causes massive systemic inflammation that has been shown to be a major driver and root cause issue in chronic illness as well.

Here's one that shows that it actually initiate obesity and insulin resistance, a number of the studies done by the American Diabetic Association. Here's another one that shows it causes something called *central insulin resistance*.

Oh, I can hear myself.

Shivan Sarna: I just hit the wrong button. Everything's fine.

Kiran Krishnan: Oh, okay. Good. So, are we good?

Shivan Sarna: Yeah, great!

Kiran Krishnan: Okay. So, this shows that, even in in younger people, irrespective of body weight changes (meaning you don't have to be obese, you can be perfectly lean), you can still end up with type 2 diabetes because LPS, that lipopolysaccharide, from the gut can induce low grade inflammation, especially in the brain, in the hypothalamus, which causes something called *central insulin resistance* which disrupts the communication between your brain and your body where your brain is trying to read your blood glucose levels. So, this can occur in people who are 15, 16, 17 and who aren't even obese. And it's because of the leakiness in the gut and the systemic inflammation it drives.

[35:05]

Kiran Krishnan: Here's another major study that was published just last year. 6And they showed that the number one predictor of whether someone develops diabetes is the degree of weakness in their gut and the presence of LPS, lipopolysaccharide, in the plasma. So how much of it is leaking through on a regular basis?

Here's a study showing, on Alzheimer's, the major driver of the onset of Alzheimer's is microbiome-derived lipopolysaccharide. It leaks from the gut through that dysfunctional barrier and gets into the circulation. It goes into the brain in the perinuclear region, and it creates inflammation that starts killing off brain cells which is the characteristic start of Alzheimer's brain disease.

So, here's the thing that *that* can lead to things like hypogonadism (very low testosterone in men), it can lead to cardiovascular disease, cardiometabolic syndrome, diabetes, Alzheimer's, and then we see the same thing in Parkinson's as well.

It's also the number one driver in mortality in cancer. You know, one of the things that cancer patients are susceptible to is something called *kakeksia*. Kakeksia is that body-wasting syndrome. They used to think that kakeksia was driven by the chemotherapy and driven by the reduction in what people tend to eat because their guts are upset, they're not feeling well and they're very sick. But as it turns out, kakeksia is driven by lipopolysaccharide, by leakiness in the gut. And kakeksia accounts for almost 60% of cancer mortality.

So, if we can reduce the incidence rate of kakeksia, that body-wasting, that the dropping of a lot of weight, slowing down the metabolism in cancer patients, it can be a significant help to them.

And I'm very excited that there are a number of groups that are studying this quite closely together. And as it turns out, it is independent of any chemotherapy, of food intake reduction, in these cancer patients.

So, there's a huge variety of implications.

Here's a whole bunch of other ones. I'll highlight just a couple of them that are quite interesting. But all of these together is about 70 reference papers, to look at this. Things like mood and appetite disorders, the LPS can actually disrupt ghrelin function in the brain. It can actually cross the blood-brain barrier and cause a dysfunction in dopamine and serotonin in the brain. It causes leptin resistance which is a weight issue. Anxiety, it can drive anxiety by inhibiting the binding of serotonin and dopamine. It can cause chronic pain in people in the periphery by stimulating

something called the *dorsal root*. These are sensory neurons. And they stimulate these *nociceptors* which give you a bunch of pain signals when you don't actually have any injury to your body.

It's a major driver of Parkinson's disease because intracranial LPS stimulates an immune response that starts eating away at your nerve cells; of course, numerous types of autoimmune conditions as well.

So, to summarize all of that, basically what you have is it starts with the dysbiosis. And we showed you, just the dysbiosis alone in that review paper is a major driver of numerous chronic illnesses. Then you end up with low keystone strains like *akkermansia, faecalibacterium,* which have been shown in review papers to be protective to the host (it protects against cardiometabolic syndrome, against IBD, Crohn's, colitis, colorectal cancer and so on).

You also end up losing diversity. We know that diversity is absolutely important in maintaining a healthy overall outcome. It's associated with longevity. Diversity is also associated with a good barrier function, so you don't end up with the other problems. We also see low short chain fatty acid production is part of this process (and that drives loads of conditions as well), disrupted immune mucosa and disrupted immune mucosal response, and finally a broken down barrier and a leaking in of LPS and other toxins (and I just showed you a bunch of papers that show LPS drives central insulin resistance, pancreatic insulin resistance, Alzheimer's, autoimmune conditions, Parkinson's, anxiety, depression, all of these things).

So, the purpose of all of those papers and all that is that it becomes really clear that you can understand that this same dysfunction that you see on the screen right now is a driver of so many varied conditions, conditions that are seemingly unrelated. But now we know that this same thing drives all of those conditions.

And that's exciting in a way because it gives us a roadmap to how to reduce our risk for many of those conditions or even go about supporting our body to try to heal from those conditions if they do exist. We can basically reverse this whole process and fix the dysbiosis and fix the barrier function and go back to having lower risk for all of those.

[40:10]

Kiran Krishnan: So, do you want to do Q&A?

Shivan Sarna: I do! How many more slides do you have? It's just that I know you have to go in about 20 minutes. And I want to make sure that we get to some Q&A's.

Kiran Krishnan: Yeah.

Shivan Sarna: And also, what do we do about it?

Kiran Krishnan: Exactly! So, this is the part that the *Total Gut Restoration* comes in.

The way we looked at it is because dysbiosis is the first thing that goes wrong—and remember, that means diversity and low keystone strains—we need to start by fixing the dysbiosis.

Once we fix the dysbiosis, and we change the microbial population in the microbiome—meaning we have higher keystone strains, we have higher diversity—than we can come in and start to repair the mucosal structure and start to repair the intestinal lining itself. So, that's the important part. And that's where this system comes in.

This is a very specific systemic approach to fixing all of those things that are going wrong.

So, it starts with what we call the *recondition* phase of the microbiome. And that's done with the MegasporeBiotic, the spore biotic because we've shown in a recently published study that, when you add in the spores into your gut, they automatically increase the growth of keystone strains, those really important *akkermansia, faecalibacterium, Bifido longum, ruminococcus.* All of these important keystone strains that fix all of those dysfunctions are repaired by the MegasporeBiotic.

So, in fact, some of those keystone strains like *akkermansia,* we saw a hundred-fold increase in that bacteria in just three weeks of taking the Megaspore.

Shivan Sarna: What?!

Kiran Krishnan: Same thing we saw… a hundred-fold. We're not talking about two times, five times, 50% increase. We're talking about a hundred-fold increase.

In *Faecalibacterium prausnitzii,* we saw a thousand-fold increase in the number of the subjects' microbiomes when we added in the spores.

So, it's really an important way of increasing those beneficial bacteria and changing the microbiome population in general… so fixing the dysbiosis.

The other thing that it does is it helps to bring down the overgrowth of non-beneficial bacteria, ones that could be harmful that are overgrown because of dysbiosis. It brings those down. We also see an increase in diversity in the microbiome (which now you know is extremely important when you add in the spores). So, we have studies on all of these things that we're looking at.

Now, once you start reconditioning the gut, you would do this for the first four weeks. You would start on the MegasporeBiotic. And then, you would slowly dose yourself up over the first couple of weeks. By the end of the fourth week, you should be on the full dose or two caps a day. And we could talk about how you scale that dosing up.

But at the end of the fourth week, what you do is we want to reinforce those positive changes by bringing in a precision prebiotic.

Now, what we've done is we've carefully selected very specific oligosaccharides that are designed to only feed the beneficial bacteria in your gut.

You know, one of the dangers of just general probiotics and fibers is, if your gut already has dysbiosis, they can feed the dysfunctional bacteria just as well as any good bacteria. So you might be making the problem worse and perpetuating the issue.

But in this case, we have a precision prebiotic that has been clinically shown to come in and basically feed all the good bacteria that the probiotic is now enhancing the growth of.

So, we actually just recently published a study (and I'll show you just a paper of it) where you combine the probiotic and prebiotic. And basically, the prebiotic more than doubles all of the beneficial effects of the probiotics… so *affirming* that new non-dysbiotic microbiome. That's the first step in fixing the gut. You cannot fix the gut without fixing the dysbiosis.

So, you start first four weeks Megaspore with reconditioning. The second four weeks, you stay on the Megaspore, but you add in the prebiotic. And then, at the end of that second four-weeks (so now you're at eight weeks), then you're ready to start *rebuilding* all of those mucosal structures.

And in order to rebuild the mucosal structure and the intestinal lining, you have to provide the tools for the microbiome and your gut lining to repair itself.

First, one of those important tools are immunoglobulin. Bovine IgG has been shown, even in HIV patients who have very severe leaky gut, to be able to reverse some of that process of leakiness in the gut and bring down the inflammation that's occurring in the mucosa of the gut lining. So that's really important. That's why we put it in there. There are numerous publications on this effect.

Polyphenols are going to become one of the most important compounds for gut function. These polyphenols have been shown to improve the tight junctions, bring down the inflammatory response in the gut mucosa, and help the gut mucosa rebuild itself.

[45:09]

Kiran Krishnan: It also has been shown to increase the diversity within the microbiome itself.

And then, the last thing is four critical amino acids. These four critical amino acids have been shown to be the major building blocks of the gut mucosal structure, especially that inner part of the gut mucosa that is supposed to act as a significant barrier.

In studies, they've shown that, when they damage the gut lining—of course, you do this in animals. You can't do it in humans. When you purposely damage the gut lining, when you add in these particular four amino acids, it rebuilds the gut mucosa by 95%. So, it's a very important tool in rebuilding the gut mucosa.

So, the last four weeks, so weeks 8 through 12, you're staying on the spores, you're staying on the prebiotic, and then you're adding in this last product called the MegaMucosa into your gut-building regimen. And in that last four weeks, you're doing all three products at once.

So, the first four weeks, you start with just the probiotic; second four-week, you add in the prebiotic; the third four weeks, you add in the MegaMucosa as well. This is basically how you restore your gut.

Now, the next several slides is a whole bunch of studies showing—and these are *our* studies that we've done in many cases showing you the data on how these different components fix all of those parts of the gut that I've talked about being dysfunctional. The diversity, it almost doubles

the diversity of the microbiome. It increases that *akkermansia* by a hundredfold, the *faecalibacterium* by a thousand fold. It almost doubles the *bifidobacteria* level. It doubles the *lactobacillus* level and *ruminococcus* and all that in the gut. It reinforces those changes so you get a strong diversity in the microbiome. Now, when you put in the MegaMucosa, you start repairing the lining, the mucosa and all of that. And you start to totally restore your gut and protect yourself from this particular scenario here… this thing here.

Shivan Sarna: Woo-hoo!

Kiran Krishnan: This thing here, yeah.

So, remember, this drives huge numbers of chronic illnesses, many of them that are seemingly unrelated. Your doctor and you would have never thought that gastroesophageal reflux disease had the same root cause as anxiety and depression. Those two things are so different, and yet they're driven by the same root cause. So this is the simplistic way in which you do it.

Shivan Sarna: Okay! Kiran, we have so many questions for you. I'm just going to do my best in the next…

Kiran Krishnan: Yeah.

Shivan Sarna: You have to leave in about 12 minutes, right?

Kiran Krishnan: Yes. We'll do a fire round! We can do it.

Shivan Sarna: I love it! Okay. Does the prebiotic have casein protein in it?

Kiran Krishnan: It does not. It does not have any casein, any dairy protein in it. So, one of the prebiotics comes from—it's a galactooligosaccharide. So it does come from dairy. But it's purified. Just the oligosaccharide is in there. You don't have any of the milk derivatives or milk protein in it at all. It's just the oligosaccharide.

Now, if you are anaphylactic against milk products, we would say to be very cautious. And maybe you don't even use it. But if you believe you're sensitive to dairy, we have not had any issues with people sensitive to dairy at all using it.

Shivan Sarna: Okay. Is it okay to start intestinal MegaMucosa when starting your MegasporeBiotic, or should we wait and do it in the order you just talked about?

Kiran Krishnan: Yeah, so that's a great question. That's very instinctive of that individual that asked.

So, in the clinic, what we've done is, in some patients, we do start them with the MegaMucosa at the same time with the Megaspore. Why do we do that? Well, in some people who are very sensitive that tend to have die-off reactions when they take a strong probiotic that is going to bring down the growth of pathogens, one of the things that can really help minimize that die-off is this immunoglobulin product in the MegaMucosa. So, for those people, it actually is a benefit to start the MegaMucosa scoops one a day while they start taking their Megaspore as well.

Shivan Sarna: Okay. And Ingrid says—and she's a regular. Hi! Hi everybody, by the way. Glad you're here. Ingrid is saying that she doesn't do well with a micro-dose of Megaspore or Just Thrive. Can she tried the prebiotic instead to try to get her gut going, and then add it?

Kiran Krishnan: Yeah, absolutely! So, you might actually even try the prebiotic and MegaMucosa combination. One of the reasons you may not do well even with tiny doses of the spores is the die-off symptomatology is just too strong. You may need some gut-rebuilding even before you get the spores in there—or at least minimizing the immune response in the gut to the die-off. And the combination of the MegaMucosa and MegaPrebiotic can certainly help with that.

[50:01]

Kiran Krishnan: So, in your case, you might go reverse. You might start with the MegaMucosa for three or four weeks, just do one scoop a day. And then, go to the MegaPre. And then, add in the spores at the end. You could do it that way as well.

Shivan Sarna: And can you stay on the IgG and this whole entire program for that matter long-term?

Kiran Krishnan: Yeah! So, the way we do it with doctors in the clinic is we say, "You go through this. This is basically like a 90-day gut restoration program." And so, at the end of the 90-day period, you basically reassess how you're feeling.

If the issues that you're dealing with are completely under control, you feel great, everything is where it should be, then what we recommend people doing is continuing on the Megaspore as your daily protection because we do live in a toxic world. There's lots of stuff around you that's always trying to create dysbiosis.

But you can keep the MegaPrebiotic and the MegaMucosa and use it intermittently if you don't want to use it every day.

Now, I use it every day. I always have it in a bottle like this because I put my body through a lot of stress. But if you've got a pretty clean diet, clean lifestyle, you don't travel a lot, you may be able to get away with just using them a couple of times a week while you're taking your Megaspore every day.

Now, at the end of that 90-day period, if you're symptomology and issues are much better, but are not quite there yet, then we recommend people just doing another 90-day cycle and seeing where you are at the end of that.

Shivan Sarna: Okay. And guys, I have a discount code coming up for you, but I'm not going to do it right now. I'm going to wait because we only have eight more minutes with Kiran, and then I'll post it. You'll like it.

Okay, here's the question. When people take those GI-MAP test, spore-based probiotics are listed as opportunistic. And I think there's a fear that they're going to take over your entire being. I remember reading and listening to a podcast years ago (before I knew you) where that has really put a fear in my life. And now of course, I've been loving Megaspore. It's changed my life. I don't have that fear because that's not what happened to me. But what do you say to people who are misinformed in that way?

Kiran Krishnan: You know, the problem with those GI-MAP tests, and many of the stool tests, is they're completely inaccurate. They were developed well before the microbiome research even came out. They use a technology called 16s sequencing which is very inaccurate. They look at 30 different species when your gut as up to 500 to 600 species. They can't make sense of what's high, what's low, in any accurate fashion. And there's been a number of studies that have come out to show that their methodology of testing the fecal sample is extremely inaccurate.

There's very little value in most of those tests. And it's absolutely insane and may I say, *asinine*, that they would put bacillus as part of the opportunistic category because numerous papers are

published to show that bacillus is a normal, commensal bacteria in the gut microbiome of virtually everyone that they've tested. And bacillus has, of course, been used for over 60 years in the prescription market as a probiotic, since 1952.

So, it just speaks to the inaccuracy and the folly of those tests. They really haven't done much good for people because a lot of times, you get those tests, and you see like four pluses for a particular pathogen, and you go, "Oh, my God! I got to hit myself with a bunch of antimicrobials for a while," and then that often leads people into more problems than resolution.

So, take those with a grain of salt. They tend to be very little value in really figuring out what's wrong with your gut.

Shivan Sarna: That is fascinating. I wanted to ask you about people who don't have good results with taking probiotics when they have SIBO. And then, there are other people who take probiotics, and it's like a miracle when they have SIBO.

So, I have a theory. And I wanted to know what you thought about that. I think it has to do with their underlying cause. And then, if you have slow motility from your migrating motor complex, or you have adhesions or loopy bowel or diverticulitis, it might be something that you just want to super duper microdose. But then other people who don't have those kinds of motility obstacles might do really well on it.

What do you think?

Kiran Krishnan: Yeah. And I think it's important to distinguish what type of probiotic we're talking about.

Shivan Sarna: Amen! Amen.

Kiran Krishnan: That's the important part of it. So we can't generalize all probiotics.

We find, in general, that leaky gut is at the root cause of SIBO. The LPS that migrates through the leakiness in the gut—and I have a whole SIBO talk on this particular mechanism of action—the LPS goes through, and it goes into the vagal afferent nerve basically in the base of the brain, and it stops the communication between the brain and the gut. And that causes stasis, the lack of motility and lack of movement in the Bible which is a big part of the root cause of SIBO.

[55:09]

Kiran Krishnan: And what's interesting is the studies that show that also show that even prokinetics cannot help restart the gut because the signals from the brain are cut off from the gut from LPS. So, it's leaky gut that's driving that chronic stasis. And that leaky gut is allowing the bowels to stop moving. And then, that allows the accumulation of unwanted bacteria in the bowels.

Now, one of the spore strains in MegaSpore, the *clausii*, has a study showing that it can actually bring down the overgrowth of bacteria in the small intestine. And then, also, because we can stop that leakiness in the gut—I didn't show the paper here, but we've got a publication showing we could stop LPS migration in a very significant manner. We give the bowel a chance to restart itself.

So, in general, we have people that we work with (and the clinics that we work with) use Megaspore as part of their SIBO treatment. It's not going to be the only thing you use. There are other things that you're going to need as well. But it becomes a really important part because you have to stop that leakiness. And you have to stop that LPS migrating into the vagal afferent nerve.

Shivan Sarna: That is very interesting because it's truly a new way of looking at the horse-cart/cart-horse issue.

Kiran Krishnan: Mm-hmmm, yeah…

Shivan Sarna: That is very, very interesting.

Kiran Krishnan: Yeah, I did a talk on SIBO. And I gave like 20 slides of lecture of all of the things going wrong that lead to that final symptom of overgrowth and bloating and distension. That's a symptom of all of these other things going wrong. We become obsessed about that symptom. And we're trying to bring down the bloating. We're hitting with antimicrobials and so on. And we're adjusting our diet so we don't get the bloating effect. And yet, we're not really addressing all of these things that are causing it in the first place.

So, the leaky gut, there's so much good data showing that leaky gut is a big driver of stasis.

Shivan Sarna: So, here's the thing. I want to really honor your time. And I need to just read a testimonial from Carol who posted in the Facebook group: "Could you please explain how the spores reduce an overgrowth of bacteria, specifically in the small intestine?", which is what you just said (which I'm going to talk to you about getting that presentation).

And this is what Carol said: "I started the SIBO protocol and the Total Gut Restoration starting seven months ago, and I am now doing fantastic. I've been able to add more foods to my diet. And even the arthritis in my fingers is so much better. Thank you, Kiran, for all your help to me and for all that you do to share your incredible knowledge."

Kiran Krishnan: Oh, that's awesome. Thank you for reading that. That's why we do what we do, right? That's why we spend endless hours, researching, flying around, educating for that kind of result.

And the whole idea there is just kind of taking a different look at it and seeing that these spores have the ability to competitively exclude overgrown and pathogenic bacteria. They do quorum sensing. They can go in, they can read the microbial environment, including the small bowel. And when you have overgrown bacteria, they'll produce antibiotics in that micro-environment to bring down the overgrowth of those bacteria.

We see it in liver failure patients where we get ammonia levels to come down almost 40% even though these people are on rifaximin and those levels are still high.

So, it's really quite a profound thing. I'm happy to share my discussions with Carol on the procedure you should take in thinking about SIBO differently. And maybe we could do that as our next program.

Shivan Sarna: Yeah, that sounds great. I have a couple of ideas about that, so we can get that information to everybody ASAP.

We love you! We thank you, sir. Thank you for the discount. He's giving us 15% off when you buy the MegaSpore, the MegaPrebiotic and the IgG product. So we're going to give you that information.

Kiran, I want to honor your time. I love you. Goodbye.

Kiran Krishnan: You are so sweet. Thank you so much for that, Shivan. It's always an honor being part of this. Happy to send the slides too if you want to make it available to your audience. We could do a PDF.

And if any other questions come up while I've left, feel free to email it to me, and I'll try to get them answered. You can send people the answers in writing.

Shivan Sarna: Okay, I don't know if you realize what you just asked for because I have about 100 questions for you right here.

Kiran Krishnan: Yes, download them and send them over to me. I've got a long flight to Japan tomorrow. I've got about 12 hours on the plane, so maybe I can get to a good number of them on the flight.

Shivan Sarna: Okay, that's amazing! Thank you so much. That is an incredibly generous offer.

I have a couple of ideas. I'm going to send you an email. And we will connect.

Kiran Krishnan: Thank you so much.

Shivan Sarna: Okay! Love you, Kiran. Thank you.

Kiran Krishnan: Love you too! Bye bye.

Shivan Sarna: Thank you. I'm going to let him go. And I'm going to do a couple of things. I'm going to right now—

Bye Kiran. Safe travels. Talk to you later.

[01:00:02]

Shivan Sarna: Thanks so much for joining us, you guys. What a generous offer that he's just made to carry on with the Q&A's. And I know we have one of our team members who's been gathering them. And I think what we could do is to get even more questions answered, maybe he can record into his phone, and then we can transcribe it and send it to you.

Now, here's what's happening. I have a discount code for you. I want to put the link for the website in the Facebook thread and in the Zoom thread. And we will include it in an email. If

you go to Microbiome Labs, and you want to purchase this, you use this patient direct code: **sibosos**.

And then, if you want the 15% off all three products when you buy them simultaneously, it's **GutRestore15**.

I've got something else for you too. If you ever want to, in the future, buy any other Megaspore products, make it a really big bundle because I have a one-time additional 15% off coupon for you. That is **DigestionSOS**. But you can't use it when you're purchasing this particular three-pack bundle (which is actually really cool because you could get two 15% off coupons). I hope that made sense.

My cat is starving. My husband just walked in. I'm going to wrap this up. And I'm going to post the links and coupon codes in the comments.

And then, for those of you on Zoom, we will send it to you in an email along with the recording. Phew!

Okay… I love you all. I thank you so much. And I will talk to you very soon, okay? Watch for those coupon codes if you didn't just catch them. And look for an email with your recording in there in the next couple of days. We'll get it to you as soon as possible.

We love you. Thank you! Bye.

Okay… that was great! That was great.

[01:02:01]

Catch-up Questions

Leigh-Anne Curley Is this something we should do during treatment or after?

Kiran Krishnan: This will be a critical part of your treatment, so you would start it during.

Elena Vasquez: Thanks for your products!! I have methane SIBO. And I'm am starting another round of antimicrobials. I started using MegaIgG, Megaspore and RestorFlora. My gut likes them.

What products should I take while taking antimicrobials? Can I continue the use of MegaIgG, Megaspore and RestorFlora or should I add something else?

Kiran Krishnan: Yes, you can continue to use those while on antimicrobials. I would recommend adding in the MegaGuard to address bile flow issues, gastric emptying and HCl production.

Pam Manfresca: Does MegaPrebiotic have dairy in it? Or Casein?

Kiran Krishnan: No, it doesn't. Although the oligosaccharide is from dairy, there are no dairy proteins or fat in it. The oligosaccharides are purified extracts.

Ingrid Whitaker: If we are someone who can not take supplements easily and have to try micro-doses, how long can we take micro-doses of MegaIgG? Is it something you can stay on long term?

Absolutely, there is no risk, only benefit.

Pam Manfresca: Why are immunoglobulins low with leaky gut?

Kiran Krishnan: Because of systemic inflammation and compromised immunity.

Laurie Brett Piekarsky: Can SIBO ever truly be cured or is it life management once you've been diagnosed?

Kiran Krishnan: I absolutely believe it can be cured. There is a mechanism that causes it, and it's not genetic. If we address that mechanism, it can be reversed. Unfortunately, more often than not, the root causes are not being addressed.

Glaucia S. Lolli: What are the best digestive enzymes and probiotic strains for SIBO?

Kiran Krishnan: *Digest Gold* from Enzymedica would be fine and use HU58; *RestorFlora* and *MegasporeBiotic* for probiotics.

Jeanette T M Frenkman: Jeanette in Stockholm, Sweden here. Is Kiran in touch with any Swedish researchers/MDs?

Kiran Krishnan: Hi, not in Sweden.

Mary Kay Allen: Question: How will MegaPrebiotic affect me given that oligosaccharides are FODMAPS to which I seem to be particularly sensitive?

Kiran Krishnan: These are longer chains and should have less negative impact. However, go slow, use as little as ¼ of a scoop per day to start. But remember to use it after 4 weeks of the probiotic. If you have been on low FODMAP, your large intestinal bacteria are starving for fermentable carbohydrates which are critical for maintaining gut and immune health.

Marilyn Mac: Can one take the IgG product continuously with no side effects? Should it be discontinued gradually?

Kiran Krishnan: You can absolutely take it continuously. Should you want to stop, you do not have to discontinue gradually.

Glaucia S. Lolli: What test is recommended to find out this problem?

Kiran Krishnan: The problem is complex and multifactorial, if you are referring to leaky gut and barrier dysfunction. There isn't a single test for it. You can rest assured that if you have health issues, there is a high likelihood that the gut lining is compromised.

Robin Lord Chalifour: I had been taking Megaspore and MegaPrebiotic for several months. On a recent GI-Map, my "Bacillus spp" was flagged high. Do you think that's a problem? Can you overdo it with the spores?

Kiran Krishnan: The GI-MAP test is archaic, inaccurate and not validated in any study. Their arbitrary flagging of strains as "high" or "low" is nonsensical. Bacillus is normally in the gut at 1X10^6 cfu/g of stool, so their threshold for "high" is way off. These strains are also transient, so they don't accumulate beyond a certain level.

Marilyn Mac: I see that there are citrus flavonoids and lemonade flavoring in the MegaMucosa. Will this trigger histamine reactions in sensitive people?

Kiran Krishnan: We have not seen that at all.

Susan Gross: I recently started a regime by my nutritionist for healing my gut. Started taking Aloe Vera Gel beginning of September, 2-3 tbsp. a day. I just got back my full Metabolic Lab tests today, and my liver tests (AST/ALT) are extremely elevated (I am not at risk for hepatitis. I don't drink any alcohol. And I don't take Tylenol). I searched online and it says that Aloe Vera Gel can cause adverse liver toxicity?!

Kiran Krishnan: That may be true, but I haven't researched aloe and liver health. Leaky gut is also a big driver of liver toxicity. It is important to use a clinically studied solution for gut healing. You should consider the Total Gut Restoration.

Robin Lord Chalifour: Do you think that the GI Map is a reliable indicator for zonulin? My symptoms say my gut is leaky, but zonulin marker is well within range. Also, I was on Megapore and MegaPrebiotic for several months. My *Akkermansia* was still below detectable levels. Shouldn't it be detectable by now?

Kiran Krishnan: The test is virtually useless in detecting strains with any accuracy. And zonulin is only partially correlated with leaky gut. Use a more accurate whole-genome sequencing test to more accurately detect to the species level. Tests are not the end-all & be-all in functional medicine. Follow your symptoms and how you feel as well.

Marilyn Mac: Will your protocols help with long-standing autoimmune?

Kiran Krishnan: Leaky gut is a major driver of autoimmune conditions, the protocol is designed to fix leaky gut, so it should be an important part of supporting your immune system.

May Streetz Fees: I am currently taking Megaspore and MegaIgG for SIBO. Will I kill my good bacteria by consuming antibacterial foods like onions, garlic, and coconut oil, even if well tolerated?

Kiran Krishnan: Coconut oil will likely kill good bacteria, I would use it sparingly. The the rest of the foods are okay.

Glaucia S. Lolli: Does having SIBO mean there is leaky gut?

Kiran Krishnan: Almost certainly.

May Streetz Fees: And is it true that sugar substitutes like Splenda can affect gut bacteria adversely, even affecting eyes?

Kiran Krishnan: Not sure about eyes, but certainly gut diversity.

Glaucia S. Lolli: Can we measure LPS in a blood test?

Kiran Krishnan: In a lab, yes; not in a doctor's office.

Marilyn Mac: Will the Mega MycoBalance assist in eliminating a systemic fungal infection?

Kiran Krishnan: It is designed to do so. We have had success with it in people with localized and systemic issues.

Sonja Pokorna: Why does Megaspore increase the keystone strains?

Kiran Krishnan: Absolutely, then the addition of MegaPreBiotic increases them further.

Ingrid Whitaker: If we can't take Megaspore at a microdose, or Just Thrive, can we try the prebiotic instead to try to work on the gut? Can this be a back door way to recondition and build good bacteria when we have tried over months to get on the probiotics but it was too stimulating.

Kiran Krishnan: Sure. There is no issue there.

Karen Prevett Nelson: I am on a probiotic that was supposedly made for me based on the study of my stool sample. Can I add MegasporeBiotic (and also, your additional protocol while also on this custom probiotic)? Can you use anything like Biocidin during this time for SIBO or will your protocol alone help SIBO?

Kiran Krishnan: You can certainly use the Total Gut Restoration as well. It will only help. Use that first and give it a single round (90 days). If the symptoms of SIBO are still present, then you can look at using Biocidin.

Jordan Pahkala: What if you have SIBO? Can this get rid of it?

Kiran Krishnan: SIBO is multifactorial. This targets key underlying causes. There may be a need for other interventions, but try the system first and see how you do.

Katie James-Eberly: Is it okay to start with intestinal MegaMucosa when starting MegasporeBiotic, or does it hinder your outcome?

Kiran Krishnan: It is perfectly okay.

Sonja Pokorna: Do you distribute your products in Europe too, i.e. Germany? I could only find products in the US.

Kiran Krishnan: Yes, either from Romania or the UK. Look at www.microbiomelabs.co.uk

Eliza Dordelman: Is it okay to just take the MegasporeBiotic and MegaIgG2000 or do I need the *rebuild* and *reinforce* too?

Kiran Krishnan: Ideally, you would do all three steps. But if you do just the probiotic and MegaIgG, you will see significant benefit as well.

Sonja Pokorna: Do the spores settle in the colon or they are just transient - so they get excreted with a bowel movement?

Kiran Krishnan: They stay for about 21 days, and then leave.

Sonja Pokorna: I can barely tolerate any carbs. Do you recommend taking more than two capsules of Megaspore in such cases?

Kiran Krishnan: Go slow and build up to 2 caps. Once you are there, you can go beyond to 2 to 3 or 4 to see if the extra dosing will help.

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Glaucia S. Lolli: How to revert it and have a healthy connection with brain and gut?

Kiran Krishnan: You have to fix leaky gut.

Michele Van Orden: Can we have a link to that talk he did on SIBO?

Kiran Krishnan: Shivan will work that out.

Shivan Sarna: -

Sonja Pokorna: When will Kiran come back for a Q & A?

Kiran Krishnan: This serves as part of the Q&A.

Andrea Beth: Thanks! Can they break through biofilm?

Kiran Krishnan: Yes

Sonja Pokorna: Sometimes the spores can turn pathogenic. What helps the most from your experience to get the situation under control in such a case?

Kiran Krishnan: They cannot turn pathogenic; this is a complete misnomer and simply false info that has been perpetuated by competitive probiotic companies. We would never develop and sell and product that could turn pathogenic. They have been completely gene sequenced, tested for virulence factors, etc.

Sonja Pokorna: Does RestorFlora contain *saccharomyces?* Is it good for constipation?

Kiran Krishnan: It can be, yes.

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Kiran Krishnan: They produce L+ lactic acid which is then converted to butyrate and other short-chain fatty acids.

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Kiran Krishnan: I have not seen good evidence that EPV slows down the MMC.

Questions Continued..

Leigh-Anne Curley Is this something we should do during treatment or after?
This will be a critical part of your treatment, so you would start it during.

Elena Vasquez Thanks for your products!! I have methane sibo and am starting another round of antimicrobials. I started using megaigg, megaspore and restoreflora. My gut likes them. What products should take while taking antimicrobials can I continue use of megaigg, megaspore and restoreflora or should I add something else
Yes, you can continue to use those while on antimicrobials. I would recommend adding in the MegaGuard to address bile flow issues, gastric emptying and HCL production.

Pam Manfresca Does Mega prebiotic have dairy in it? Or Casein?
No, it doesn't. Although the oligosaccharide is from dairy, there are no dairy proteins or fat in it. The oligosaccharides are purified extracts.

Ingrid Whitaker If we are someone who can not take supplements easily and have to try micro doses. How long can we take micro doses of Mega IGG? Is it something you can stay on long term?
Absolutely, there is no risk, only benefit.

Pam Manfresca Why are immunoglobulins low with leaky gut?
Because of systemic inflammation and compromised immunity.

Laurie Brett Piekarsky Can SIBO ever truly be cured or is it life management once you've been diagnosed?
I absolutely believe it can be cured. There is a mechanism that causes it and it's not genetic. If we address that mechanism, it can be reversed. Unfortunately, more often than not, the root causes are not being addressed.
Glaucia S. Lolli What are the best digestive enzymes and probiotic strains for SIBO? **Digest Gold from Enzymedica would be fine and use HU58, RestorFlora and Megasporebiotic for probiotics.**

Jeanette T M Frenkman Jeanette in Stockholm, Sweden here. Is dr Krishnan in touch with any Swedish researchers/MDs?

Hi, not in Sweden.

Mary Kay Allen Question: How will MegaPreBiotic affect me, given that oligosaccharides are the fodmaps to which I seem to be particularly sensitive?
These are longer chains and should have less negative impact. However, go slow, use as little as ¼ of a scoop per day to start. But remember to use it after 4 weeks of the probiotic. If you have been on low FODMAP, your large intestinal bacterial are starving for fermentable carbohydrates, which are critical for maintaining gut and immune health.

Marilyn Mac Can one take the IgG product continuously with no side effects? Should it be discontinued gradually?
You can absolutely take it continuously. Should you want to stop, you do not have to discontinue gradually.

Glaucia S. Lolli What test is recommended to found out this problem?
The problem is complex and multifactorial, if you are referring to leaky gut and barrier dysfunction. There isn't a single test for it. You can rest assured that if you have health issues, there is a high likelihood that the gut lining is compromised.

Robin Lord Chalifour I had been taking Megaspore and Megaprebiotic for several months. On a recent GI Map my "Bacillus spp" was flagged high. Do you think that's a problem? Can you overdo it with the spores?
The GI Map test is archaic, inaccurate and not validated in any study. Their arbitrary flagging of strains as "high" or "low" is nonsensical. Bacillus is normally in the gut at 1X10^6 cfu/g of stool, so their threshold for "high" is way off. These strains are also transient, so they don't accumulate beyond a certain level.

Marilyn Mac I see that there are citrus flavonoids and lemonade flavoring in the Megamucsa. Will this trigger histamine reactions in sensitive people?
We have not seen that at all.

Susan Gross I recently started a regime by my nutritionist for healing my gut. Started taking Aloe Vera Gel beginning of September; 2-3 Tbsp a day. I just got back my full Metabolic lab tests today, and my liver tests (AST/ALT) are extremely elevated (I am not at risk for hepatitis, I

don't drink any alcohol, and don't take Tylenol). I searched online and it says that Aloe Vera Gel can cause adverse liver toxicity?!
That may be true, but I havent researched aloe and liver health. Leaky gut is also a big driver of liver toxicity. It is important to use a clinically studied solution for gut healing, you should consider the Total Gut Restoration.

Robin Lord Chalifour Do you think that the GI Map is a reliable indicator for Zonulin? My symptoms say my gut is leaky, but zonulin marker is well within range. Also, I was on Megapore and Megaprebiotic for several months. My Akkermansia was still below detectable levels. Shouldn't it be detectable by now?
The test is virtually useless in detecting strains with any accuracy and zonulin is only partially correlated with leaky gut. Use a more accurate whole-genome sequencing test to more accurately detect to the species level. Tests are not the be all end all in functional medicine, follow your symptoms and how you feel as well.

Marilyn Mac Will your protocols help with longstanding autoimmune
Leaky gut is a major driver of autoimmune conditions, the protocol is designed to fix leaky gut, so it should be an important part of supporting your immune system.
May Streetz Fees I am currently taking megaspore and IGG for Sibo. Will I kill my good bacteria by consuming antibacterial foods like onions garlic and coconut oil, even if well tolerated?
Coconut oil will likely kill good bacteria, I would use is sparingly, the rest of the foods are ok.

Glaucia S. Lolli Having SIBO does it mean there is Leaky Gut?
Almost certainly.

May Streetz Fees And, is it true that sugar substitutes like Splenda can affect gut bacteria adversely, even affecting eyes?
Not sure about eyes, but certainly gut diversity.

Glaucia S. Lolli Can we measure LPS in a blood test?
In a lab, yes. Not in a doctors office.

Marilyn Mac Will the Mega Mycobalance assist in eliminating a systemic fungal infection?

It is designed to do so. We have had success with it in people with localized and systemic issues.

Sonja Pokorna Why does megaspore increase the keystone strains?
Absolutely, then the addition of MegaPreBiotic increases them further.

Ingrid Whitaker If we can't take Megaspore at a micro dose or Just Thrive - can we try the prebiotic instead to try to work on the gut? Can this be a back door way to recondition and build good bacteria when we have tried over months to get on the probiotics but it was too stimulating.
Sure. There is no issue there.

Karen Prevett Nelson I am on a probiotic that was supposedly made for me based on the study of my stool sample. Can I add megasporebiotic and also your additional protocol while also on this custom probiotic? Can you use anything like Biocidin during this time for SIBO or will your protocol alone help SIBO?
You can certainly use the total gut restoration as well, it will only help. Use that first and give it a single round (90 days), if the symptoms of SIBO are still present then, you can look at using biocidin.

Jordan Pahkala what if you have Sibo? can this get rid of id?
SIBO is multifactorial, this targets key underlying causes, there may be a need for other interventions, but try the system first and see how you do.

Katie James-Eberly Is it ok to start with intestinal mega mucosa when starting soreprobiotic or does it hinder your outcome
It is perfectly ok.

Sonja Pokorna Do you distribute your products in Europe too, i.e. Germany? I could only find products in the US.
Yes, either from Romania or the UK. Look at www.microbiomelabs.co.uk

Eliza Dordelman is it ok to just take the megasporebiotic and megaiGG2000 or do i need the rebuild and reinforce too
Ideally you would do all 3 steps, but if you do just the probiotic and MegaIGG, you will see significant benefit as well.

Sonja Pokorna Do the spores settle in the colon or they are just transient - so they get excreted with a bowel movement?
They stay for about 21 days and then leave.

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