



Transforming Mood by Healing Digestive Function

Guest: Dr. Michael Ruscio

Alex Howard: Welcome everyone to this session, which I think is a really important one and I'm really excited to be talking with Dr. Michael Ruscio. Dr. Ruscio, firstly thank you so much for joining us.

Dr. Michael Ruscio: Pleasure to be here. Thanks for having me.

Alex Howard: So in this session we're going to be talking about the relationship between the digestive system and moods, emotions, brain function, brain health. And I think this is often a really underestimated or missed piece sometimes, when people are struggling significantly with anxiety issues or mood issues or trauma more broadly. Sometimes the resolution is not just working with the mind and the emotions and I think this is a great example of that.

Just to give people Dr. Ruscio's background, Dr. Michael Ruscio is a doctor, clinical researcher and best selling author of *Healthy Gut to Healthy You*, which I personally think is my favorite and the most accessible book on digestive health. So I think you did an amazing job of bringing along the practitioners and making it accessible to lay people, so I highly recommend the book.

His practical ideas on healing chronic illness have made him an influential voice in functional and alternative medicine. His work has been published in peer reviewed medical journals and he speaks at integrative medical conferences across the globe.

So Dr. Ruscio, I think perhaps a good opening point here is just to open up a little bit. The relationship between we could call it stress, we could call it trauma and how that impacts upon digestion.

Dr. Michael Ruscio: It's a great question, and I'm really happy that you're including that in this conference because it could almost be portrayed as trying to drive your car forward, but having the emergency brake on. Because of the connection between the gut in the brain and how that interfaces with someone being able to deal with trauma is really important, but it also works the other way.

There's also trauma and stress can impact the gut and then you can get caught in this loop, where stress and trauma may skew what's going on in the gut. That may feed forward into the brain and lock someone in or make them more prone to having things like brain fog, anxiety, depression, maybe even things like fatigue and insomnia, which then makes your life just kind of harder to do anything if you don't have any energy. There is scientific documentation to back this up.

There's been a number of studies, but one interesting line of research has looked at students who are under exam stress. And this provides a good model because, you know when the exams are going to come and so you can kind of monitor someone normally. You can look at their stool samples and then when they're really stressed pre and during an exam, you can do another follow up stool test. And see what happens in the gut with these various levels of bacteria and fungus. So that provides a good model.

It's not to say that it might not be better if we studied someone who had other types of stress. But sometimes, you don't know when that stress is going to occur. So it's hard for researchers to be able to kind of map that out. So using this model, what has been demonstrated is you'll see skewing and a reduction of some of the healthy bacteria levels in the gut, like *Lactobacillus acidophilus*. We've all likely heard of that or various species of the *Bifidobacterium*, another very healthy player in the gut. So we do see that exposure to stress does cause a dwindling of these bacteria.

Now really quick, why does that matter? Because it's one thing just to say, well, here's something that happened underneath the hood of the human machine, can we tie that to something relevant? This is a little bit of an inference, but I think we're gonna go into this in a bit more detail later, but just to kind of drop this hook here.

Studies have been done showing that supplementing with these healthy bacteria vis-a-vis a probiotic can improve anxiety and depression. And this data is numerous clinical trials, this isn't some obscure finding from a non-accredited journal. This is really top shelf scientific information. So stress does have an impact on your gut and the gut has been tied to better impact on cognition and mood, which ostensibly makes it much easier to deal with that stress.

Alex Howard: Because I think one of the things that happens is that we can go through a period where we have a lot of stressful events that impact upon the body. But then we're living with the impact of the symptoms of that perhaps many years later. Bessel van der Kolk, famous book, *The Body Keeps the Score*, well, this is in a sense, one of the ways the body keeps the score in terms of the impacts upon the digestive system and one of the mechanisms of that is inflammation.

So perhaps say a little bit about, I guess about what inflammation is, but also the relationship between that and some perhaps mood disorders, some of the symptoms, some of the emotional, and brain symptoms that people can experience.

Dr. Michael Ruscio: One way of thinking about this and this is likely that the relationship between stress and inflammation likely has multiple mechanisms, but just one or two that are interesting. We know, well, firstly, to your other question to define inflammation.

Inflammation actually isn't a bad thing, it's just unchecked inflammation. And much of inflammation, not I don't think we can say all but much of is a derivative of your immune system. And if you think of your immune cells like little police officers, their guns or their clubs or their pepper spray, whatever they're going to use to kind of take someone's who's unwieldy and get them to comply would be inflammation, that's the main instrument the immune system uses.

But due to early life factors, our environment, not enough breast-feeding, too much antibiotics, too much junk food, too much stress, not enough sleep. All of these things kind of skew the development of our immune system and lead it to be overzealous. And this is kind of the pro-inflammatory, this part of the milieu that leads to people being really prone toward inflammation.

When that inflammation is unchecked, it can lead to tissue damage, irritation, and this does tie into stress. One of the mechanisms that where these all connect is stress can lead to an increased level of stress hormones like adrenaline, cortisol and again, some of that isn't a problem. But if it becomes excessive to your earlier point and you get stuck in this imbalance, then we can see things like a drop off of some of these bacterial populations in the gut that are healthy. That helps to keep us in an anti-inflammatory state and then that can lead to inflammation in the gut, and then you can get into this syndrome where the guts unhealthy every time you eat there's inflammation because the system's not working correctly.

It's almost like if you injured your ankle, that wouldn't be a problem. But if after spraining your ankle, you were running three miles every day. You could be three months post sprain and saying, gosh, why does my ankle hurt so much every day? You never gave it a chance to rest, right? So we need to have the chance to rebalance and recover from that stress.

So, yes, stress is tied to the gut, does tight inflammation and that's one example of a few for how these things kind of interplay.

Alex Howard: And can you say a bit about how that then impacts upon things like one's mood and some of perhaps things like brain fog, depression, anxiety, some of the symptoms that can then come from inflammation in the digestive system?

Dr. Michael Ruscio: Certainly. And this is a super important tie-in and I'm really glad you raised the question. And this comes back to the gut brain connection that we discussed earlier.

Something that I see in my clinical practice where, it's mainly a population of people with various GI maladies. If I eat a food and then I have brain fog or fatigue or depression, and this is because there's an unhealthy gut lining. There's too much patentee there, and so one of the ways these things all tie together is an inflammatory response in the gut, does seem to tie to an inflammatory response in the brain. And this might be because the gut and the brain are connected either indirectly through inflammation or maybe even directly, more recent research is showing there perhaps is a direct lymphatic connection between the two. But said more simply, we certainly see that for some people, eating foods that don't agree with them can cause them to have a neurological reaction. And this has been well-documented in the celiac literature.

Now, it's not to say that gluten is a problem for everyone, but this is just one model where we know people with celiac have a hard time with gluten. And for some people with celiac, the reaction to gluten only manifests as brain fog or anxiety or depression or some kind of neurological sequelae. They'll have no digestive symptoms. They'll perhaps have some GI inflammation, but they won't have gas or bloating or pain or diarrhea, it only manifests

neurologically, so we know that this can happen. And more research is starting to document that either eating foods that don't agree with you, or because of long term stress or trauma or perhaps imbalances in the gut bacteria.

Now, the GI system isn't working properly and even somewhat normal foods can start to elicit some of that gut brain connection, where people start having anxiety and depression and they're stuck in this, I feel terrible all the time, why can I get my mood to shift? And I do think it's important to look at this as one of a few things to include in a comprehensive model of, let's say there was abuse or trauma. And now we're going to try to work through that with a therapist. Great. But if your biology is stuck in this inflammatory mode, where your brain is getting skewed by this brain inflammatory connection, it's much more difficult to get through the therapy successfully because you keep getting steered into this inflammatory, foggy, anxious, depressed state.

Alex Howard: And I think it can sometimes be really quite confusing for people, because they're experiencing a really unstable mood, for example, or they've got this constant brain fog that leads to a depressive feeling towards the world. You can go deeper and deeper down the psychotherapy path, trying to figure that out and resolve that. And actually it's unresolvable and in that way, in a sense, because you're just not dealing with a problem at the level that it's being caused. I imagine that there are people that come and see you that have been, perhaps many years just completely confused and bewildered by the symptoms they are experiencing.

Dr. Michael Ruscio: Yeah. I mean, even I myself had some of these same problems. I didn't have trauma in the past, but I was having a lot of depression from food and I thought maybe I was too stressed, maybe I wasn't slowing down enough. I would literally do a prayer before I ate, listen to relaxing music, I mean the whole night, go for a walk in nature, all the lifestyle things as far as I could. And I was still having this neurological implication and it was because I needed to fix my gut.

But definitely there are other people who've maybe been doing psychotherapy they're on some type of medication. And after a while they say, I feel like there's something else here that I haven't addressed. And for some of those cases, it's the gut, yeah.

Alex Howard: Let's also perhaps talk about the relationship between inflammation and neurotransmitters. So I think it's another way of understanding this and again, perhaps just define what neurotransmitters are and then, I think it's another helpful piece.

Dr. Michael Ruscio: Yeah. So neurotransmitters are essentially signaling molecules that your body uses to propagate communication between two different cells, unusually different nerve cells and two different neurons. You have quite a bit of neurotransmitters in the gut for signaling in the gut, you also have them in the brain. And these neurotransmitters like serotonin and dopamine, at least according to the serotonin and dopamine model of mood, can have a strong impact on how happy you are and how much drive you have. And this is what is proclaimed to be the primary impact of serotonin and dopamine to being happy and being driven. I don't think it's quite that simple, but it is a helpful analogy for people to get some of the rough concepts.

When we teach someone addition, there's more to math than addition, but it gets you some of the basics, right? So serotonin and dopamine and then some of the research here is quite interesting in that it shows that inflammation can skew how some of the precursors to, let's say, for example, serotonin are used. Because your body's always taking food and then turning it into things, and so one of the things that certain proteins get turned into is serotonin. But if there's inflammation, those proteins get pushed on a different pathway to help make inflammation, you don't have enough serotonin and your mood drops, that's at least a theory.

But it does seem that when we use anti-inflammatory interventions like someone who is gluten intolerant going off gluten or someone who has a problem in the GI taking probiotics. When we change that inflammatory diversion people seem to see an improved mood. So there's a mechanism there and there's also clinical outcome data reinforcing that that mechanism actually does improve the way someone feels.

Alex Howard: That's really interesting. I wanted to take a bit of a sidestep here, and I think it's another piece that then we'll link back in that I think's really important, which is the relationship between digestive function and adrenal health and there's a few pieces I wanted to touch on here.

But perhaps just again, just to open it up for some people, explain a little bit just what the adrenals are and what their role is and then we can talk about the relationship.

Dr. Michael Ruscio: Yeah. And so we're hitting kind of a controversial wellspring of information here, because the older school of thought here was that. Well, let me just define things, then I'll get to some of the controversies. So your adrenal glands are on top of your kidneys and they make various hormones, cortisol, adrenaline or epinephrine and norepinephrine. And they also make a little bit of testosterone, estrogen and progesterone, aldosterone for regulation of blood salinity. And so they're definitely an important part of human physiology.

We then get into the controversy where, someone's tired, they can't focus and in some circles, it's been thought that that could be because your output of adrenal hormones is diminished and this is why you're tired. And it really kind of fits from a well, this all makes sense and it's kind of an attractive hypothesis.

Unfortunately, as the science has evolved and we've had a chance to really assess how adrenal testing results in fatigue scores track. There's not really a great correlation about 50 percent of the time there's no correlation. So it's kind of a coin toss if it's going to correlate, that tells us that there's likely something more beyond the adrenals. It doesn't diminish if someone is experiencing the more traditional adrenal symptoms of being fatigued or perhaps being depressed or not having good exercise tolerance. But the mechanism likely isn't that the adrenal glands aren't squirting out enough hormone, but rather it's likely what happens when someone is chronically inflamed or chronically stressed.

That leads to numerous changes, some of what we've already talked about, neurotransmitters, inflammation, gut, brain and all those things collectively lead to those symptoms. And why that's important is because sometimes people go really deep down the

rabbit hole of quantifying the adrenals and then using a very intricate adrenal support protocol, which is something I did early in my practice.

But I then learned that it doesn't really get you that far. And oftentimes the reason why these patients are expressing these symptoms is because there's a deeper root issue oftentimes in the gut, but not always, but many times in the gut and or an inflammatory issue. And when that's addressed, that's the underlying cause of the adrenal looking symptoms. And that's really how we get through a long term resolution.

Alex Howard: And then what people can get into is quite tricky, a little bit like what we were saying actually with trauma and stress and mood and digestion. That can be a similar vicious circle with inflammation and poor digestion and then this impacts on the adrenals and how that can go round.

Dr. Michael Ruscio: Yeah, I mean, a lot of these things, fortunately or unfortunately, depending on if you're on your way up or on your way down. If you're on your way down a lot of these things start reinforcing you into a downward spiral. And then if you're on your way up a lot of these things are getting you to an upward spiral.

The key, I think, discernment that's either an individual or a clinician has to help an individual come to is, what is the root factor that's driving this whole syndrome, that's kind of cascading out of control?

Alex Howard: Yeah. And I was thinking also about blood sugar as part of this. That one of the things that can also have an impact is when people get fatigued or indeed people get stressed, that tends to impact upon one's diet. And so people tend to eat more sugar, use more coffee like they use things to try and keep them going.

Dr. Michael Ruscio: Yeah.

Alex Howard: But then that also throws out blood sugar, that also then has an impact upon the adrenals, which then has another impact in terms of this inflammation side.

Dr. Michael Ruscio: Yeah, exactly. And that's where some of these things may help in the short term. Eating a little bit of sugar or using a little bit of caffeine and certainly no problem with a degree of that. But if someone is kind of self-medicating because they can't function without caffeine, and their cravings are so strong that they just don't feel right unless they eat sugar. Part of that tells you that there's something going on. And there's something else that is important to mention, which is some people go way too low in their carbohydrate intake. And I think this is more common in women.

They read about the benefits of fasting or keto or low carb, which are all true to a degree, but they don't mean that they're true for everyone all the time to the same extent. And what you end up seeing in some cases is a woman is going very low carb for a long time.

Now her sleep and her energy are negatively impacted, but she hasn't connected the two because she's never heard from the keto camper, whoever it is, that prolonged ketogenic dieting in some people can actually lead to them falling off an energetic and metabolic cliff.

And so she did bang her head against the wall in terms of why don't I have better energy and sleep? Or if they're trying to have enough vitality to process trauma, that's also more difficult because they don't have good sleep and energy.

So, yeah, the blood sugar piece here is definitely really important to get it dialed in per individual.

Alex Howard: It's interesting you say that, a patient actually pops to mind exactly that, a chronic fatigue patient where exactly this happened. Where they were put by a very brilliant and well-intentioned doctor onto a pretty hard core, almost keto diet, certainly kind of a very strict stone age diet. And just completely screwed with all the hormones and particularly thyroid issues. And it just became clear that although it was the right diet in terms of what should be eaten, in terms of supporting bacteria and that sort of thing, it completely threw everything off on another level.

It really shows how subtle and how nuanced a lot of this can be. And I think one of the problems could be when people read a particular book or a particular protocol, and it's that sort of one size fits all approach.

Dr. Michael Ruscio: Right. And to your point, certainly I would think anyone who is recommending any type of diet is doing it with the best intention. I think it's really important to always be saying that, so people never feel like they're being attacked, it's a great point. And regarding the stone age or paleo diet, to tie into your comment about nuance.

Definitely, some people inadvertently do a stone age or a paleo diet that's low carb, even though it doesn't have to be low carb. It's just let's say all the carbs they were eating were grains and now the diet says reduce grains. And they say, well, I don't really care much for potatoes or for some of these other tubers.

So I'm just not going to eat them at all, and they inadvertently get low carb. So sometimes to your point, it's just making sure that you're aware of some of these nuance pieces, which is, oh, you went paleo and now your energy is crashing. Let's check back in on how many carbs you're eating per day and if you're going really low carb, 60 grams of carbs per day.

Maybe we need to kind of branch you back into some of the fruits and starches so that you're not going lower carb than your metabolism can handle.

Alex Howard: Yeah, one of the things I mentioned at the start that I really appreciate your book. One of things I really appreciate about it is this nuanced and subtle approach where it's like, this might be true, but this also might be true, for a percentage of people this can be true. Because it very much matches my clinical experience of working with a lot of people of chronic fatigue, of how subtle and how nuanced it can often be.

I guess it raises the question as well of how important it is, from your perspective, of one using the patient's own symptoms and feedback as data, as opposed to just going, well the lab's say that or the lab tests say this. But the real feedback of one's own experience of how they respond to things.

Dr. Michael Ruscio: Right. And again we get into another contentious area and with testing. Especially in the realm of natural and integrative medicine. I think there's been this overcorrection where, let's say maybe 15 years ago there was very little testing, there was much less published science, and so there was this insecurity and criticism in the field that we're not very scientific. And so once the testing became available, everyone wanted to try to do better and rightfully so and document, well, here is a lab finding and here's the corresponding protocol and we're being scientific and we're doing our due diligence, which I fully support.

The problem is, with many of these newer tests, they haven't been fully validated. And so a marker that's proclaimed or labeled as positive, or negative, or low, or good, or bad, that may not be scientifically associated with any meaning. And I know that's hard for some people to wrap their head around.

But there have been labs that have been shut down by regulators because they have zero evidence to support their claims. Or even some labs that have skewed the ranges to make more people flag positive, so as to draw the other arm of the company, which was a supplement company.

Alex Howard: And to justify the test as well.

Dr. Michael Ruscio: Yeah, exactly. So labs are not completely absolved of culpability. And I don't think labs are doing most of the time these things with any mal-intent. But a challenge in the field, I think is many the lab companies are marketing and educating directly to the doctors, and the doctors are taking their word on faith, on good faith. And we really need an intermediary body to interpret that data in-between the labs and the providers. Because a problem today definitely exists that clinicians are using labs with too much faith in the labs, that they've actually been scientifically validated and they haven't.

So if we have an equation, here's Mary Sue and we're trying to solve the equation of fatigue plus brain fog plus X equals, I feel healthier. If the X that you're gonna get, if that variable of the equation is an inaccurate variable, it's impossible to solve the equation. If I give you an equation, if anyone has done any algebra, you need to have enough variables to solve and if you don't, it's impossible to solve. And so one of the challenges is, if the data you're getting from a test isn't factual, isn't accurate, it muddles your ability to solve the equation of healing the patient. So an antidote to that can be using what's oftentimes a very accurate piece of data, which is someone's symptoms.

If a lab says do this and you do that and the person feels worse, it tells you that perhaps the lab isn't giving us the complete data or accurate data, and so we want to listen to the patient's experience. And unfortunately, that empiric approach to medicine, I think has been forgotten at the expense of these tests, which looks scientific. And I think the pendulum is swinging where we're starting to realize that, okay, we put a little bit too much talk in the tests and now we need to come back to the center a little bit.

So, yeah, to your point, listening to someone's response can really, it sounds so simplistic to say it, but can be very effective in solving that equation that is the person.

Alex Howard: Yeah. And I think it's also very empowering for the patient as well. I really appreciate what you're saying, I think lab tests really have their place. And we've had times where we've got some odd lab test results and then we've tested labs.

We've sent samples taken on the same day to two competing labs, interesting conversations have come out of that. But there's something that I think, it's so important about people watching this and listening to this to realize that, yes, working with a skilled practitioner is often very important.

Yes, that lab data can be very helpful, but nothing trumps one's own experience on what one's own body is saying. Particularly when you have those atypical cases that don't really, they don't respond the way they're meant to. But it's still a valid response to what person is having.

Dr. Michael Ruscio: And I mean, these things if and when clinicians start pulling on the skeptical string regarding labs. I think you'll be shocked at how much you find is, like you're saying you'll take one stool sample, put it in two different vials, to two different labs testing the same thing, and I was doing this for years in the clinic.

It is more often that both of the results do not match than they do match. So you see enough of that and after a while you say, how accurate are these labs, actually? They can be helpful, they do have a time and a place. But the good news is we can curtail down the labs, greatly reduce the cost, simplify the care model and try to keep only the vital few tests that seem to have the most relevance.

Alex Howard: Yeah, that's great. Let's broaden a bit now to probiotics. Probiotics are something that I'm pretty much, I think everyone watching this from, those that are deep in functional medicine, to those that have heard that term for the first time in this conference, about probiotics, particular things like acidophilus and those things which are pretty much everywhere, on the side of buses and on TV adverts and everything else.

Maybe let's start off, but I'm sure we'll come into some of it again, some of the nuance here. But let's perhaps just start with some of the big picture of some of the benefits of the correct use of probiotics, for things like depression, like some of the mood issues that people can have and some of that relationship.

Dr. Michael Ruscio: Yeah, well, this is something that's been exciting over the past few years, is seeing this host of clinical trials pour in finding that either in a model of anxiety or a model of depression, probiotics have led to significant improvement in anxiety or depression. And again, what's so encouraging about that is, well, A, this is a safe intervention. Probiotics have little to no downside and other side benefits. If you have constipation or diarrhea, probiotics tend to be corrective and normalizing in that, they can help with bloating, they can help with abdominal pain, they can help with reflux, they can have a modest impact on blood sugar and cholesterol.

They can be anti-inflammatory and help with leaky gut. They can combat fungal and bacterial overgrowth in the intestines. Yes. I mean, in fact, some head to head trials have even looked at antibiotics or antifungals for an infection next to a probiotic. And they found

equivalent results between the two, but less adverse events when using a probiotic. So there are a lot of great stuff that probiotics can do. Not to say they are a panacea, but they are definitely one of these fundamental pillars that's very safe and can lead to a lot of side benefits. So then we see documentation that they can improve mood. A clinician like myself was really kind of nodding his head in agreement.

Yep, this definitely matches with what I've seen in the clinic, where patients come in with various GI inflammatory issues going on in their gut. We clean those up and they say, oh, my psychologists and psychiatrists, they took me off of the anti-anxiety medication because I felt I didn't need it. Or I self-weaned, even though I never recommend people do this without checking in with their prescribing, off my bipolar meds and I feel great now.

Again, I wouldn't recommend doing that, but having had seen these things in the past when the probiotic research showing that they could improve anxiety, depression was published, it really resonated with my clinical experience. So in terms of what a probiotic is, it's a healthy bacteria that confers health benefits to the host and there's many, many of them. But that's the high level in terms of what a probiotic is. It's an organism that lives symbiotically with us, helps us and improves, as we just discussed, numerous health functions in the individual.

Alex Howard: And there are many different types of probiotics, there are differences, I guess, categories, you could say, of probiotics. And perhaps say a little bit about some of the delineation of some of those and why that can be important?

Someone might be thinking, well, I saw something advertised, I'm taking probiotics, I can tick that box. It's a little bit more complicated than that.

Dr. Michael Ruscio: Yeah. Well there's a system that we can use. And after I mean, my gosh, I've read so many studies on probiotics to this point it makes my head spin. But after a few years of really staying abreast of this research there's a few realizations that you come to, and some of the really astute researchers are making this simple categorization in some of the papers.

Where there are essentially three different categories of probiotics, there might be a fourth, but some countries don't sell the fourth type. So I say for all intents and purposes, let's discuss what people have access to. So we have these three categories. And this is how we partition the maybe 30 odd species that have been using these various studies. And we can say, okay, these 30 species, they cluster into one category, a second category, or a third category. And that makes it much easier because when you go to the market you see tons of products on the shelf.

But if you had this understanding of the category system behind you, you can now really just organize them into three rows. Every product you're looking at is one of three rows and now you just select one quality formula from each of the rows and use those and personalize that to your gut. And you don't have to do what some people do as they try one, they try another, they try another and they figure them out.

They say, well, how come I don't feel like I'm getting anywhere with probiotics. It's because there's not that understanding to break these down into categories. And the categories are a blend, firstly, of predominantly Lactobacillus and Bifidobacterium strains. Lactobacillus acidophilus that we talked about, Bifidobacterium infantis or breve and there are different species, different types of it being used in the various studies. But when you, and we've done this, you lay it all out on the data table.

What you see is one formula helps constipation, a different formula helped constipation, a different formula helped constipation. All kinds of similar, all kinds of different, all Category 1. So to claim you need a special probiotic for constipation, it sounds scientific and I appreciate the spirit of that remark, but it's making things unnecessarily complicated. And same thing with depression, predominantly using the category one probiotics is what's been done in the research. But when you look at one kind of trial next to the next and the others, you see all a little bit different than all within that first row on the probiotic shelf, so that's your category one.

Category two actually technically isn't a probiotic because it's a fungus. So it's a healthy fungus Saccharomyces boulardii, that also has a number of trials supporting its use, but will presumably support the gut in a slightly different way because it's not a bacteria, it's a fungus. And then category three are soil based or spore forming probiotics. These are a little bit different than the first shelf or the first row, the first row are what's known as lactic acid secretors and the third row are a different type of probiotic species, various Bacillus, Bacillus clausii, Bacillus licheniformis, Bacillus subtilis. There's less research here, but what has been done is very interesting and this category of probiotic seems to work in a slightly different way than the other two.

Now, most people, at least in my observation, would do best to use one quality formula from each of the rows, as we talked about. Some people, not many, but some may not tolerate one of these rows. And so for people who are really sensitive, what I recommend is try one formula from a row at a time, and see how that sits and if it sits good, move onto the next row, move on the next. And what you're attempting to do, if you picture a stool you would sit on like a chair.

You want to have three legs of support underneath, what is that stool. Think of that stool like the ecosystem of your gut, a one legged stool can be a little bit wobbly. But if we have those three legs of support underneath, it's more conducive to establishing and maintaining balance in the gut ecosystem, and that simple change can be quite powerful.

There are literally patients who come in and they've been on paleo, they've been on low FODMAP, they've used probiotics in the past. We do that one thing with them and get them on all three of the category kinds all together and they will see all their symptoms resolve.

Alex Howard: That's fascinating. You said a little bit about some of the benefits in terms of mood issues and mental health issues from the first category.

Can you say that a bit from Category two and three? And I appreciate your comment that there's not as much evidence base that, but some of the indications of how they may benefit.

Dr. Michael Ruscio: I don't know that, I have not seen any research with Category two or Category three that have looked at mental health outcomes. This is likely not because they don't help, it's just the researchers haven't gotten there yet. Category one has about 500 clinical trials published. Category two, has about a hundred, and category three has 20-30. So there's much more of a paucity of data as you go down the categorical types from two to three. But in the models that they have studied, they have shown impressive results. *Saccharomyces boulardii* has been shown to be as effective as antifungal drugs as one example. And many IBS trials have shown positive outcomes.

Even one study showed a reduction in leaky gut when using Category three. So there's a little bit of an inference we draw from these two rows to mental health, which is, if we know the other gut brain connection, that leaky gut may cause problems with mood. And we know perhaps that overgrowth or imbalances and fungus in the gut may correlate also, again a bit inferential, but I think it's safe to say that it's a fairly reasonable inference to draw.

Then it stands to reason that if we're looking at probiotics, not like a drug, not like an antidepressant, rather tools to help support and cultivate the healthiest gut that we can. That using these as broadly as we can to heal the gut should have the best reflexive impact upward on the brain.

Alex Howard: That absolutely makes sense. I'm thinking again, another question is important is, sometimes people can take the attitude of, well, I'll just take probiotics and I won't worry about what I eat, I won't worry about everything else, I'll just fix it that way. So I guess it's worth just touching on how important what someone actually eats is, in terms of supporting gut health as well.

Dr. Michael Ruscio: Yeah. It's a fantastic question, definitely one that we don't want to gloss over. And this is why in *Health Gut Healthy You* the first step of the gut healing protocol is diet. Diet and lifestyle are actually the foundation upon which everything else is then built.

Now, one of the challenges with diet is from a gut perspective, what on the surface looks like a healthy diet isn't always the best for someone with a sensitive gut. And this is where people who start eating more fruits and vegetables, which can be such a great thing. But for people with IBS, irritable bowel syndrome or really sensitive digestion, they can somewhat easily kind of tip over into eating more fiber than their gut can process. That flairs them and then they're, I'm doing all this work to improve my diet, yet I'm feeling worse. And that's where just some of these nuances to your earlier point, there's this menu of diets available and we want to not be dogmatic and say, well, this is the one, the right diet, as you said earlier. But rather, this could be a good diet for you and let's move in that direction, we're getting some pushback from your body, okay, let's go in a different direction.

Oh, we're getting a good signal for your body, let's continue in that direction. And that's the way I think about diet, where there is this range of lower carb, higher carb, lower fiber, to higher fiber that different people can thrive on. And we want to try to help the individual determine where to go and not necessarily kind of have our model of diet and try to kind of force people into that.

Alex Howard: So someone's watching this and they're feeling, they're going, wow, some light bulbs going off. Let's say things that kind of make sense that haven't before. Where do

they start? So what would be some of them, perhaps almost like, what could they do to test that hypothesis that what's happening with their digestion is having an impact in terms of mood, emotions, trauma, that side of things?

Dr. Michael Ruscio: Well, it kind of depends on where they're starting. If they haven't done much investigation with your diet, I would definitely start there. And I think there's two kinds of models people can move toward. They can move toward a stone age or a paleo type diet, which said another way reduces processed foods and some of the foods that can be irritants for a fair sum of the population, namely gluten, grains and dairy as well as processed food.

Move in that direction and see how you do. And if that doesn't feel good to your system, then another potential option, this is not an exhaustive list, but it's a good kind of initial fork in the road to draw would be a lower FODMAP diet. And that's for the people who maybe have some imbalances and or sensitivity in their gut.

They won't do well on a higher fiber and prebiotic type diet. And so we now can keep them in that healthy food camp, but we take certain foods that are seemingly healthy like broccoli. And we reduce how much of that we eat because that can irritate and in some people kind of flare their gut. And two to three weeks on the one or two, three weeks and the other is enough time to be able to say, yes, I'm feeling better and I'll continue or no, I'm feeling no better and I'll try the other one. You won't be fully healed and see all of your improvements in that two, three week window, but that's your first reevaluation point. If you hit that two, three week mark, you should be able to say, yep, working I'm going to continue. Or if it's not working, then I'll try the other one.

Alex Howard: Yeah, I think it really goes back to the point that you've made a few times, that listening to what and testing the hypothesis and listening to the feedback of one's own body. I'm mindful of time, but for people that want to find out more about your work, obviously I mentioned at the start your book, which I highly recommend. But you could tell people about your website and some of the resources that are out there that people can find.

Dr. Michael Ruscio: Sure. Well, thank you. The website is DrRuscio.com. You can learn more about the book there, we have a podcast, we have articles, videos for clinicians. We have a monthly publication, a clinician training newsletter. And you can also see some of the published papers as we publish more papers we're filtering them in there and that's kind of the lion's share of it.

Keeps me busy, but it's great work. I always love having these conversations, being able to chat with people who care about this and share and really try to help people, kind of like I was suffering about 13 years ago and would do anything to get out of that ditch I was in, so to speak. It's great to be on the other side of that now, helping people find their way out. And I really appreciate the chance to be able to talk about this.

Alex Howard: That's awesome. Dr. Michael Ruscio:, thank you so much for your time today. I really appreciate it, it's been great.