Deep Dive: Butyrate | A Paradigm Shift in Gut Optimization

Michael Roesslein: Today we're going to talk about butyrate with my friend here, Mr. Steve Wright. And as I mentioned in the emails that I sent out, inviting you all to this webinar, what I've recently learned about butyrate, thanks to Steve and watching some videos of his and having a conversation.

He's going to be on the new podcast soon, and it accidentally turned into an episode that focuses a bit on butyrate. What I've learned recently has really shifted my own kind of baseline understanding of some things with gut health and microbiome optimization and leaky gut. And we did a webinar on butyrate a few years ago, but I don't think that the research was quite where it is now with a lot of things, or at least you weren't as well researched as you are now on it.

And it came up as a topic in the podcast that, you know, learning about butyrate has been one of the biggest things that you've learned in the last five years or so, and that a lot of people in this functional health world tend to get stuck and teach the same things for 10 years and never read new research. And I was pretty blown away, and it's not complex. It's really simple, the importance of this. And to me, well, the biochemistry can get really complex, but the reasons, like the overarching what it does and why it's important is pretty simple to understand.

And it's been a long time since I heard something that was like, huh, that could really explain why a lot of people tend to go up and down and backwards and forwards and never really truly fix certain situations. And I thought we need to bring this back to the attention of everybody that follows our stuff here and our education here. So before we get started, we've done so much stuff with Steve. I feel silly introducing him at this point, but Mr. Steve Wright is the founder of the Healthy Gut Company. He was also one of the creators of SCD Lifestyle, which is a platform that reached, I don't know, hundreds of thousands of people with gut health challenges.

He's a voracious researcher. He was trained by Dr. Dan Kalish as a practitioner in functional medicine type approaches. And Dr. Kalish is one of the OGs of the functional medicine world. And he's helped, I don't know, a gazillion people over the last 10 to 15 years that have frustrating, embarrassing, challenging gut health issues because that's what he had to figure out for himself. And so Steve, thanks for being here.

I'm sure I missed a couple of credentials or things in there, but I think that's all the main stuff. And we always have a lot of fun. Everybody learns a lot of things. And like I said today, we're going to talk about butyrate. And so I think a lot of people in the health world, I knew what butyrate was before any of this new information that I have. But I think we should probably start with, like, what is butyrate? What are short chain fatty acids? Like what are we even talking about? We'll start from square one and kind of build. Yeah.

Steve Wright: Well, great to be back again, Michael. And yeah, I think everybody on this call, you yourself included, would say, if I said like, is the microbiome like absolutely critical for gut health and for total body health, you would say, yes, I assume. If I said, what is it about the microbiome that's absolutely like causes that criticalness for the health?

And I think that's where there's this massive gap in understanding and this massive just missed opportunity. And so we're going to fill in what I think is the most essential part of what the microbiome does for us today, which is butyrate. And so there's a lot of things the microbiome does not just butyrate and those things are also probably absolutely helpful and essential as well. But your microbiome and your diet determine basically your butyrate production and butyrate is a short chain fatty acid that, you know, I actually built like a butyrate equation.

So I did, I did put together a bit of a G doc that I could share that might help here in a second. But butyrate is the outcome of your microbiome plus your diet. If you have the right microbiome, the right species, and it's not just one species, not two species.

It's, it's, it's a hippie community down there. And so you need species ahead of the butyrate producers to break down your polyphenols, your starches, your resistant starches in order to make them ready to make butyrate. And butyrate is not the only short chain fatty acid.

There's others, but butyrate is the most beneficial at this point in time in the last, you know, 30 years with the research. And you could argue a lot of different ways in which it's essential. And I would say like there's no point in it because if you have a health concern, you have a butyrate concern. If you have a gut problem, you have a butyrate problem. So your gut consumes the majority of the butyrate that's produced by that hippie microbiome community. 70 to 80% of it is consumed by the colonocytes, which are the just the gut cells basically they prefer butyrate. It's beta oxidation metabolism basically how they make energy. When they do this they suck oxygen out of the gut area and into the cells with the butyrate and then that's how they do that metabolism that's the preferred way of metabolism. That type of metabolism is associated in human cell culture studies and all different types of rat studies as non cancerous as mitochondria are healthy. And anytime it switches to glucose metabolism for extended periods of time, you see all the hallmarks of colorectal cancer, you see hallmarks of mitochondrial dysfunction, and all different types of just nasty problems that occur.

And so in a healthy human, there's a plentiful amount of butyrate 70 to 80% is consumed in this metabolism of the gut cells. And when this happens, it keeps the atmosphere the oxygen atmosphere correct for that hippie community to live. That is absolutely essential to understand because when things break down, that's pretty much one of the reasons why things never get

repaired. And so the other 20% or so of butyrate production that you make on a daily basis goes systemic and it goes everywhere. It goes lungs brain bones, immune system heart muscles. There's all these papers that you can Google, you know, butyrate muscle access butyrate brain access butyrate lung access butyrate, and you name it access. And so, Buri is essential to our human health as vitamin D3 as magnesium like it is that level of a compound. And without enough of it, you see these wide ranging systemic breakdowns and then you see localized gut problems that just never quite resolve.

Michael Roesslein: Okay, you answered a few of my questions faster than I was going to ask them so I'm going to recap just a little bit of what I caught there.

Steve Wright: We can drill down there. Yeah, yeah, yeah, is that butyrate is a short chain fatty acid. It is produced by microbes in the gut. In order for those microbes to produce it adequately one there needs to be enough of those microbes. Two, there's other microbes that break down things in food to the point where the butyrate producing microbes can actually metabolize that stuff. So it requires kind of a harmony of organisms which we've talked about for 10 years now is like the diversity of the microbiome is more important than having like a trillion of one bug that does something good because if you just have the trillion of one bug that does something good, it may not be able to access its food for this example like the bugs that break down the stuff so I can eat it aren't there so

Michael Roesslein: microbes that break down the you mentioned polyphenols a few other things break that down goes to the butyrate producers the butyrate producers make butyrate among other short chain fatty acids but we're talking about butyrate. The gut cells colonocytes which are the cell lining the cells that line the gut consume 70 to 80% of the butyrate and they use it for their own food like they metabolize butyrate and oxygen, which removes oxygen from places in the gut where we shouldn't have oxygen and I don't think we got into that too much yet, but too much oxygen in the gut in that area leads to bugs growing that like oxygen, and those bugs do a lot of negative things and are associated with a lot of disease processes and symptoms and bad digestion. And then when they, there's not when there's too much oxygen, the good bugs can't exist in the same quantity that they need to. So it should be a low oxygen environment and if there's enough butyrate, the gut cells eat metabolize the oxygen a lot to lower the oxygen. So it keeps the oxygen where it needs to be to facilitate the growth of a healthy microbiome.

And then the other 20% of the butyrate gets absorbed and goes all over the body. You shared a bunch of studies and a bunch of examples. And I think it was the video I watched and then we talked about it a little bit on the podcast, and you just mentioned some, but the butyrate is utilized systemically.

And there's really strong research showing that deficiency in butyrate in the gut leads to less than optimal function across a wide range of health stuff and that increasing butyrate levels in the gut improves those functions and improves those situations. How do I do? How do my notes do?

Steve Wright: You're doing great, man. I think you're getting this butyrate thing.

Michael Roesslein: Okay, it only took three times. This is my third time learning it. So if everybody else didn't follow along 100%, I did. I have heard this two other times. So I think that leaves like, let's talk about the oxygen, because I think that that really hammers home. You mentioned that it's a reason that people go up and down and backwards and forwards and like there's certain conditions where somebody, you know, hyper bombs themselves with a bunch of antimicrobials or antibiotics like conventional antibiotics. And it maybe knocks down their symptoms for a little while. But if the oxygen balance is wrong in the gut, if there's too much oxygen, then the things that like oxygen, the bugs that like oxygen are going to be the first ones to come to the party and then the symptoms come back and oftentimes probably worse than they were beforehand. So can you speak to this situation with oxygen in the gut? And I think a lot of people have, we have it in our head like oxygen's good, right? Right. Thumbs up for oxygen. No oxygen, bad day. But certain places in our body, not so much.

Steve Wright: Yeah, yeah. And it was kind of shocking and surprising to me. And I think it's still counterintuitive to most people. I think it will be until you hear it like five or 10 times. But it's the basics, right?

It's the basics that always trip us up. So anaerobic bacteria, anaerobic, that word basically means without oxygen. Anaerobic bacteria are basically the types of bacteria that we would consider healthy. The types of bacteria that thrive in oxygen, aerobic bacteria, are typically the types of bacteria we consider not good for us, especially not good for us in high numbers. And then you have some bacteria that can exist in oxygen and in states of non oxygen. And these are called faclative anaerobes.

And those are, they're kind of like in the middle, right? Like they make the communities happen. But if they grow too much, they can also be bad as well. And so the weirdest, you know, the human body has a lot of weird things about it. But one of the weirdest things is that, yes, the, all of our tissues, all of our blood needs to be highly oxygenated. And it's a really tight tolerance.

If we lose too much of it, you're dead. That exact same kind of narrative is very true for the bugs. They, this is not like you can take a probiotic or pre-biotic or you can just kind of eat vegetables whenever you want.

And like, it'll be okay. They need no oxygen. They don't, they, they die in the presence of oxygen, all the really, really good species that you see in the news and things. And so we need this oxygen gradient to stay very low oxygen in order for us to have a healthy microbiome and to produce butyrate and all the other good metabolites from the microbiome.

How do you lose the gradient? You know, why do we have all these like yo-yo gut healers or yo-yo chronic disease people who, for instance, going to, you know, this is a very normal pattern. If I describe you and don't like, I did this pattern, Michael probably did this pattern. This has been the old way of thinking about healing the gut and we need to move into a new way. But the old way is, oh, you're having, you're having gut issues.

Let's go on an elimination diet. It used to be, we just cut out like gluten and dairy and then it moved to paleo and then it moved to autoimmune paleo, which cut out even more polyphenols and more starches. And then it moved to low FODMAP, which is basically anything fermentable.

And then we layered in low histamine or low salicylate or some version of an extra, extra. Pretty much every time you go past just cutting out gluten, you start cutting out types of food that are very helpful for the microbiome's overall diversity and health. And the double bind here is that you feel better. Your symptoms go down because you already currently don't have a healthy microbiome and a healthy gut. And so by cutting the fuel supply to an unhealthy gut, you feel better.

And I did it, everybody, I think, has done that. The issue is, is that that cuts the butyrate production, which immediately starts increasing the oxygen. And then if you go through some sort of killing program, I don't care if it's herbal, I don't care if it's antibiotics for facemen, it doesn't matter. What it does is it causes a huge die off of bacteria and some of them are the bad guys for real.

Like you have to use these, these protocols when you have to use them. But a lot of them are also the good guys, which were making the butyrate. And so you have this immediate, and this is from research.

This is not Steven's ideas. This is from research studies that you immediately see the oxygen gradient increase, meaning there's more oxygen. And that part of the reason why microbiomes do

not recover very quickly after antibiotics, like what is an antibiotic induced injury to the microbiome is the oxygen issue. Because once you either temporarily or permanently change the oxygen environment, the same stuff just isn't allowed to grow anymore. And then we have this issue where you start to reintroduce foods, right?

Because, you know, that's the thing, right? You remove the issues, we feel better. Now we're sure we got to kill some stuff. So we kill some stuff. Now we want to reintroduce stuff. And that reintroduction, sometimes it goes okay. Sometimes it doesn't go okay. But part of the problem is, is if you have the wrong bugs already in your body and then you throw fuel in there, they're just going to multiply and bloom.

And then you're going to feel really bad again. And people are very confused by this, but my analogy is always like, if you throw sugar on the floor in your kitchen and you get ants, like you shouldn't be surprised that if there's food on the floor, nature is going to grow to do that, even if it's not the nature that you want. And so what we need to just take into account is that this whole time we could have been taking care of our butyrate status and our butyrate species. And then the whole, this whole yo-yo thing can begin to change.

Michael Roesslein: I keep thinking of that meme, you want ants? This is how you get ants. But no, it totally makes sense. It's one of the mechanisms by which post antibiotic injury happens is shifting the playing field, essentially.

And the good bugs that you want to come back aren't the ones who come back and definitely not fast enough. So this issue of oxygen is extremely important. And again, I'll hammer home the gut lining, consuming the butyrate, but it needs oxygen to do it, right?

Like, so it's two parts. It needs the butyrate. It needs oxygen.

So if it's short on butyrate, it's not going to be gobbling up the oxygen. And then it's going to switch to glucose, which this was the first time I've heard you mentioned that there's studies that show when colonocytes switch to glucose metabolism. There's increased, I don't remember the word you just used, not markers or something related to colorectal cancer and other cellular metabolism dysfunctions like cancer and other things like that. And that's, I mean, glucose metabolism, like, that's not just in the gut. Like, it's not really usually the preferred, there's usually other preferred means of metabolism in the body. And so if your oxygen is out of whack, the gut cells can't consume the butyrate as much. And if you don't have enough butyrate, the gut cells can't consume the oxygen.

And so in a perfect world, there's plenty of butyrate. They're consuming it. They're eating all the oxygen up or using metabolizing the oxygen.

So the oxygen is super low. Then you have the diverse levels of all the good bugs, everybody's happy. You eat the things that are food for bugs and it doesn't cause you all kinds of problems. It actually just makes you more of this good stuff. As in my oversimplified version works, the checks out. Okay, good.

I didn't need 10 times only three and a half. So butyrate in food, because when I first learned about butyrate was back in my like, I don't know, probably when I got like introduced to paleo and like, I don't know how many times I got into it. Like, like, 20 years ago, now I lose track of years, they happen like months. So a lot of years ago, and it was like, Oh, butyrate is in grass fed butter. So then paleo people were using that to justify eating like, you know, slabs of grass fed butter and they're going to get their butyrate. There's not many sources of butyrate in food. Like there's not of like,

Steve Wright: actual there's nothing that suggests that you can eat butyrate like there's nothing that suggests that butyrate and butter won't get broken down by your stomach acid in the stomach acid.

Michael Roesslein: Right. Yeah, just like a million other things like it's half. I don't want to I don't know the right word to use without swearing, but it's it's not a fully thought out idea. So no, I'm not going to go eat 12 sticks of butter for lunch.

And so I used to think it would have been a good idea I just wasn't hardcore enough. So I was like a slacker paleo or because I didn't eat the pounds of butter. But it's not really in the food and there's no evidence that shows you can consume it so it has to be made by the bugs. And I don't know how much of this whole situation with the systemic benefits of butyrate the butyrate being consumed by the colonocytes and the oxygen levels needing to be where they need to be when at healthy gut. The last time we did a butyrate webinar was like, I don't know three years ago, I don't know whenever you guys launched the product tributary and X which has tributary in it which is a mall like a way to deliver butyrate to the gut.

How much of this did I just miss the boat three years ago or did you not have this complete of a picture when we talked then because I remember being like, this is really good stuff, really beneficial but it wasn't this whole like, wow, if we don't fix the oxygen balance in the gut. Yeah, bugs are always going to win like.

Steve Wright: I didn't really put all these different sets of researchers together until about 18 months ago. So yeah, back then I was just focused on the, you know, the, the, all the benefits here. Let me share my screen real quick. You know, I was I was just focused on reading all this research right here. I don't know if I may zoom in here. Yeah, I was just focused on unlike reading about how does butyrate impact the gut? How does, you know, impact the nervous system, the cardio function, the heart, like I was just trying to learn all this stuff.

Michael Roesslein: That's a pretty strong list right there. Go back to that for a second.

Steve Wright: Yeah, it's pretty crazy. Vasodilation, nitric oxide increases like there's a whole market of supplements that try to do that. Like nitric oxide boosters and NO2 type of things.

Michael Roesslein: Lower cholesterol deposits. Yeah, that's a good. I'm getting for Jillian a Jillian dollar drug market right there insulin signaling reduced hyperglycemia improved lipid and glucose utilization. So that's blood sugar diabetes you have T 17 T reg balance which is immune system responses which is balancing. That's that theoretically could be reduction in auto immune situations or over aggressive immune responses. You have increased leptin which is the hormone that tells you when you're full. Thermogenesis burns fat.

Steve Wright: Wow. Lower gut permeability. Yeah, GLP one goes up. GLP one that's that new class of drugs that does weird stuff on top of helping people lose weight right. Yeah, yeah, it's got some weird wide ranging anti inflammatory stuff at lower doses.

Michael Roesslein: It's cool. At lower doses. Yeah. And then at the higher doses I've seen some pretty wild claims of wild side effects and things that I'm not interested in having. But that's the new target for the miracle weight loss drug is this right the GLP one that's the new target to modify that in a way. Endotoxemia down we've done tons of webinars on endotoxemia endotoxins are produced by bacteria in the gut. So I mean, and you're up here you have reduced appetite reduced blood pressure blood pressure sympathetic nerve remodeling so that doesn't necessarily mean it would always reduce blood sugar but it would reduce blood sugar if it's too high cardiac function. So there's not much that's not on this list and this is just studies that demonstrate what exactly that butyrate at higher level like adequate levels of butyrate are linked to all of these things.

Steve Wright: Yeah, correct adequate levels of butyrate are linked to all of these up down aerial

Michael Roesslein: arrows and this isn't even all of them like the long I don't see the lungs on here. I don't see the bones on here and there's a bunch of effects in other far reaching places the eyes.

Okay. Yeah, this is a pretty solid list though. Yeah, if you worked for Pfizer and you had a pill that did this, it would be making a lot of money. Right. So what were you going to scroll up to?

Steve Wright: Well, I was just going to give everybody like, you know, this is just, you know, the fiber comes in the microbiome turns that fiber into the short chain fatty acids, butyrate the red, and then the red goes and does stuff in the cell. This is one big cell blown up, but not all of it is consumed in the mitochondria of the cell. Some of it goes into the systemic circulation and then goes out to the other organs. So, okay.

Michael Roesslein: Did you draw this?

Steve Wright: No, no, no, these are all taken from these studies.

Michael Roesslein: I'm just giving you a hard time. I suck at finding good images for slides. So I'm always jealous when people find the image that they're looking for. Oh, you take it right from the graphics from the study, like the published study has graphics like that. I've never looked there. I'm looking at like stock image websites. They don't have things like this. Okay. Not relevant me thinking out loud. Thanks ADHD.

Steve Wright: So what else you got here? Well, you were going to talk about like, how do you get more of it? Like how do you get more like what makes butyrate go up on the left and what you go down. And so the things that make butyrate go down are alcohol, smoking, antibiotic use, too much hygiene. So like the whole pandemic thing was not necessarily good for our microbiome, too much sugar and not enough fiber. So, and this is mostly around processed food.

I don't love this graphics. Not as good as the other one, but like basically processed food. Yeah, I'm not necessarily against sugar, but just processed food in general doesn't have enough fiber. And what you find on this left side is that polyphenols from plant foods. So diets high in polyphenols diet that foods that consume a lot of fibers and resistance starches, which process foods do not have.

And in case you can't see that that's corn, potatoes and bananas. Then you have your pre probiotics and your fermented food. So like, if you want more butyrate, if you believe these couple decades of research, you know, these are where you want to mind your, your health and your diet. The issue is, is that the majority of people can't tolerate a lot of these or they can't tolerate them in the dosages that they need. Yeah. I ate a, I ate a cup full of, you know, fermented food all week and like, well, you need a couple like every day.

Michael Roesslein: Yeah, and, and there's other foods on here too that have like a lot of polyphenol foods are also tough for people to digest, especially if they're raw and people have a lot of other digestive issues and fibers and prebiotics. You know, if you're starting behind the eight ball and you have a dysbiotic situation with it off kilter oxygen environment, and you pound down a bunch of prebiotics and a bunch of starches and a bunch of fibers and I mean there's probably people on this call here who can call did I just date myself are we in the 90s.

On this webinar here, this video this high tech educational platform that we're operating on call just happened. That if they eat a bunch of that stuff. They're not going to feel good, and you were one of those people like that's why you got into SCD diet, but SCD diet for example is specific carbohydrate diet is great for reducing symptoms of certain conditions, especially around like bloating and IBS and things like that.

But you mentioned the double bind which I see down there is diets like SCD or a IP or anti this or none of that or take away all these things. You do that for a long time. And you're losing most of the foods there on the left. So if you want to feel better in the short term, you're going to harm yourself in the long run but if you eat those foods. You're going to blow up like a balloon if that's your symptom or whatever other kind of thing so.

Steve Wright: Is that my yeah I mean that basically like there are like the walls diet Terry walls diet is super high in polyphenols because in the rainbow like the idea of eating the rainbow is a really good concept for a number of reasons and one of the reasons is high polyphenols which drives the growth of the microbiome that we want. And so yeah the double bind is that basically I built this I built this beater eight math you know how they have like girl math and boy yeah I built math here. So it's boy math. I don't know.

Michael Roesslein: It's not very good at it.

Steve Wright: I heard it when you buy a toy and then you're like oh no I got to go work hard.

Michael Roesslein: Okay, I bought a fridge this week does that count. You know you're old when you get excited about a new refrigerator anyways. Butyrate okay to butyrate math dietary potential plus I have that on here that was the first thing I wrote down microbiome multiplied by diet equals butyrate.

Steve Wright: Yeah and so this is like this is another way to visualize this like if you want a strong amount of butyrate you need dietary potential and you need the microbiome ability. The cross feeders these are like your lactobacillus your bifidobacter your acromancia, your starch degraders

are subset of species that break down starch but there's also polyphenol degraders and then you have your actual butyrate species.

And this is your F pronitiae roseberry some clostridium species. But it's all it's all affected by oxygen so you could have all of these numbers are all these bugs. But if it's in a high oxygen environment, it's multiplied by a high oxygen environment it's going to, it's potential shrink significantly because the overall size of the population is very small. And then same on the dietary potential like you could. You know you could be really high in polyphenols but eat a no starch, no fermentable diet right and so you'll have a bunch of polyphenols which is great.

Michael Roesslein: But if you're just everybody knows polyphenols are the things in plants like fruits vegetables that give them the color mostly if you want to oversimplify it but they. They're like compounds in plant foods that are responsible for color and also our microbiome happens to really like them. Yep. So I just, I don't know if we defined that and I it's a word that I use all the time and I forget not everybody knows what it is. And you said eat the rainbow I want to give a shout to Dr. Dana Minnick.

She pronounced her last name Minnick or Minnick I think she teaches her whole platform is around colors and rainbow and she's like really good with graphic design and has books around it and her posts are awesome and she's super good follow on social media. Unsolicited. Advice.

Steve Wright: Okay. And a really nice person.

Michael Roesslein: She's also a really nice person. Okay. So what you're getting at here is if there's parts of these that you have and parts that you don't the equation is not going to come out to a very solid number.

Steve Wright: Right, right. And so, like the concept of butyrate and oxygen gradients and stuff is easy. But like, when people go, well, why can't I just eat it? Or why can't I just change my diet and make this happen? It's because of the complexity in the production. It's not just one species. We can't just take the butyrate probiotic. Like even though there are butyrate probiotics that are now on the market, but even doing that, they don't have any real solid data that that that one probiotic strain can inoculate your microbiome and shift all of these, these markers. And so we have to focus on if you're in this yo-yo gut experience where you can't, you can't tolerate the foods that you need for a healthy microbiome because you get bloated, you get constipation diarrhea, you get whatever. You got to focus like both here in the environment, but then you got to also focus upstream because if you cut the feed of foods, you're never going to, I guess you could. You could

be, you could take mega, you know, you could probably take tributyrate mega prebiotic forever in high doses. But I don't think everybody wants to do that.

Michael Roesslein: I got it. It makes sense. I was just finding two questions in the chat. Let me blow this back up. Okay. Glad everybody can follow with my ADHD and introductions. Wow. Okay. I'm looking at that. Go ahead.

Steve Wright: So there's just a lot of like, um, I wish probiotics were the answer, the only answer. They're not like a bad thing. It's just they do less things than you think they do. And so what I wanted to show people is like, some people are like, I don't have a butyrate issue. I don't have a gut issue. I have an autoimmune issue. I have an immune system issue. I just have food sensitivity.

I just can't tolerate more foods. And this is just one study showing what proper butyrate does just for your immune system Well, I mean, it's your immune system, your whole body, but like the majority of your immune system is right behind in the lamina propria here. And so you got pathogen elimination goes up. You have cytokine production, which goes down, Ptolegenic DCs. These are basically this is how you tolerate more foods. You have mast cells, you get less histamine release. You know, again, you get the right types of T and B lymphocytes and Ptolegenic responses. Like the loss of tolerance. Dr. Datis Karazian was one of the first people to bring up the loss of tolerance to our modern life.

And we can, we can all blame everybody forever. It's this pharmacy company is this, is this, you know, whatever it's a glyphosate. It's the heavy metals.

It's the mold. Like I'm just past that because there's it's not going away. Like the EMS are not going down anytime soon. And so I'm like totally focused on like what, what increases tolerance inside of a human to this crazy environment we've created. And I think one of the losses of tolerance is that we've lost our butyrate. Like we like fiber, you can look up the stats for Americans. Our fiber consumption is like the lowest ever on record. We're, we're just eating less local food. We're eating less of the things that create butyrate.

We've taken more antibiotics than ever, which is also, you know, crushing the butyrate. Other things, if you want to raise your butyrate, there's actually other things you can do. Lifestyle factors, you can go outside, like get in the dirt. You can spend time exercising.

Actually, there's studies showing if you exercise, your butyrate production goes up. But again, we are leading more and more sanitary lifestyles, more and more inside lifestyles. And so we are

doing all these things that are, they're slowly killing our butyrate production. And losing tolerance to the world.

Michael Roesslein: Yeah. And there's a lot of factors in play there, but I love that you mentioned the exercise and going outside. And I've actually interviewed Datis Karazian on that topic a long time ago, like six, seven, eight years ago, he was talking about that. And yes, there's a zillion factors that ruin our tolerance to things that spike our immune system that make things go wild. I mean, we were talking about Beth before this mass cell reactions. And but this is a mass cell stabilizer, right? Like it helps reduce mass cell reactions, histamine reactions.

You've got all kinds of IELs and other abbreviations that I vaguely understand. Cytokines down here that are modulating and regulating immune responses and not having them so skewed and scattered and all over the place and reacting to things that they don't need to be reacting to. And I've seen studies because Kieran has mentioned that, too, that the current consumption of fiber in the United States is like the lowest consumption of fiber by like anything measured anywhere at any point. And that but a lot of people don't feel good when they eat it, which we've addressed in this in this webinar. And you mentioned not eating local, not eating seasonal. Quick rewind to one of the stories before we went recorded.

So whoever missed it, here you go. I was recently in the mountains in northern Italy in the Dolomites. And when I was researching restaurants, which I tend to do before I go to a place because I like to eat good food, I kept finding all these restaurants and they are called refugios. Refugios. And it means refuge, but it you can't drive to them.

So when I was getting the maps, I was like, OK, looks great. How the hell do I get to? So in the Dolomites, there are a lot of places with those cable cars like the lifts, like the gondola thing that goes up to the top of the mountain.

And then when you get out, there's all trails up at the top of the mountain. And then there will be restaurants like legit, not like gift shop. Here's your nachos, like kind of nonsense that you might find. Like, I don't know, that's my first thing.

I'm like, if there's a restaurant up here, it's going to be selling me a hot dog for like $22, and it's going to be terrible. No, they have cows and sheep in alpacas and all kinds of things up there. They have gardens up there. They sell food that they make like the dairy in their food is from the animals that are grazing on the mountain.

They're like not all of them are that a list, but like a lot of them are. And on hiking trails and skiing, I don't know what that's called, a ski run. I don't ski, but you can like pull over and there's these things on the mountain. And they're like fully loaded restaurants. And the food comes from like right there. And I was thinking like how much healthier would everyone be if this was a normal thing and not something that like blows my mind away?

Like, like if you just ate the food that came from outside. So this was a mind blowing experience that this even exists. That's how like sheltered we are from these concepts. If anybody's watching this in a country where the food is fresher, they're probably like, yeah, this is how we eat.

But I was like, oh my God, and the guy next to me is like, what? I never mind. You're from Switzerland. You won't get it. Yeah. And those foods have more of all the things that the bugs like to eat as well.

Steve Wright: I mean, yeah, that's if we could all eat that healthy, we would have a lot less, a lot less issues.

Michael Roesslein: We would need to be on this webinar. Right. Or this call.

Steve Wright: Call. OK. So I guess just to summarize here, and these are all studies. I didn't have time. I'm kind of in the middle of building actually a new course that includes a lot of this stuff. So this is like a bit of a preview. So this is not primetime ready, but I have studies that back up all of this.

So butyrate in the gut keeps your oxygen content low due to the proper colonocyte metabolism. I think we've hit that. We've killed that.

Yeah. We did not cover that increases IAP intestinal alkaline phosphatase. That is the way you detoxify LPS. It increases secretory IGA and other defensins of the gut. This is the way that the gut immune keeps the microbiome population in check, basically, as well as toxins in check. Butyrate in and of itself, if you give it, increases microbiome diversity through more short chain fatty acid production. It increases mucus production through the MUC2 pathway, and it increases tight junction production, which is leaky gut, physical leaky gut layer.

Michael Roesslein: Yeah. It lowers your mass cell expressions, suppressing excessive IgEs. And then it helps those. IgE is what's measured on a lot of the food sensitivity test, right?

Steve Wright: Yeah. Yep. Your food sensitivity test is IgE usually. Sometimes they do some of that once, but usually it's just that. And then on the immune level, it's doing that tallogenic DC act. It's doing T cell activation.

So it's causing a bunch of T regulatory cells, which are like your. I don't have a great, I used to say police, but, you know, I think that may not be the right analogy anymore, but they're like the guardians of T cells. And they're the ones that try to make sure you don't have too much T H1 activation or too much T H2 activation. And so we want a lot of T regulatory cells, basically. And so in people with hay fever, people who are allergic to grasses or cats or whatever, as well as people with autoimmune conditions, you have too much of T H1 or T H2. And if you had more T reg cells, that would bring that into balance. It may not correct the issue completely, but that's one of the missing factors for your recovery. And so this is like, this is just kind of what's happening in the gut for butyrate. And high, yeah, P3 potential.

Michael Roesslein: That's a lot. And a lot of those things are massive game changing, shifting things. And so when I saw this list, and when we talked about this, this was what kind of blew me away is that there's a lot of different approaches to doing each one of these things. And it kind of addresses each level of gut dysfunction.

So I think I'm going to cut off the teaching at this point. I'm going to talk about, because I've gotten a couple of mentions in the comments and in the Q &A about supplementation. And I mentioned that you make a product called tributyrinx, which is tributyrin.

I want to talk about butyrate supplementation just for a minute. And then there's a few questions I want to try to get to. I can't go much past the hour, but we'll see what we can do. I know because I've interviewed you on this and we've talked about it and I've watched your videos that there's multiple forms of butyrate that can be supplemented. Somebody in one of the questions asked about some sort of liquid form. There's sodium butyrate, which is probably the most widely used one, or the most products on the market are sodium butyrate. And then there's other salts or other minerals that can get put with butyrate. And then there's tributyrin, which is the molecule that you chose to go with. Can you just give a quick fly by of butyrate supplementation and then we'll go next.

Steve Wright: Yeah. So like some people want all the technical details. And I know the rebel of health drive is a lot of super technical people. I'm trying out a new way of describing this. And so if you don't like it, let's go into the technical details. But like, I'm calling it the basal method. So the basal method for butyrate's, basically, let's say you're making a, you go and visit Michael in Italy,

and Michael is going to make you a pasta dish and eat some basil for that pasta dish. You could go and get dried basil from a spice rack or whatever.

That's like two or three years old and whatnot. He could go and get basil from a supermarket nearby that's like shipped in from some other land somewhere far away that's been preserved in a way to keep it looking fresh. He could go out to his garden and pick like fresh local basil. All of those basal choices are going to significantly affect the flavor and the micronutrient composition of that food.

I think we can all agree that the freshest highest quality ingredients actually do make better tasting food and more micronutrients. The similar thing could be looked at for your options with butyrate. So on, on the far end, you have sodium butyrate. It is the cheapest, it's the most ubiquitous, it's your basil that's dried in the pantry. It's easiest to work with.

It's been around the longest. It does the job for some people, but it has downsides. Then you have your cowl and mag butyrate's.

That's like a bit of an innovation farther up the chain, but still not quite there. And then you have your tributyrates, which are fat-backed molecules. And the, there's a bunch of pharma kinetics on these molecules that make tributyrates better. There's, there's mice studies and rat studies showing that the anti-inflammatory effects of tributyrate just continue to increase the higher your dose versus sodium butyrate. At some point you get too much of sodium and then you get a negative, you get like an inflammatory effect. And so there's a lot of reasons for choosing tributyrate as the molecule.

It also lasts longer inside the body. So that's why tributyrate, their safety data on humans taking oral 42,000 milligrams a day, and they just had like some blood sugar instability and nausea, which is like 42,000.

Michael Roesslein: Yeah. That's, that's a lot of milligrams for anybody who's not familiar with milligrams. Yeah.

Steve Wright: Yeah. That's like a whole bottle. It's, it's just, I have a whole bottle of tributyrate. So maybe like 80 pills or 85 pills. So the safety data is, I think there's less research studies on the molecule of tributyrate, but the safety data suggests it's better and stronger in all the ways. And we're just need the researchers to catch up to this data and begin to roll that out, in my opinion. Now we also were able to work with a scientist out of Spain who figured out a way to get it into an enteric capsule. And one of the biggest issues with the tributyrate on the market are most people

are not protecting it from the stomach acid. Some people are trying to protect it a little bit with a acid resistant capsule, but the studies on, on this is a gelatin or a vegan capsule will disintegrate between three and eight minutes in stomach acid and acid resistant capsule.

Like if you get a DR cap, and remember I get this data, right? I know these companies, so I asked them for their, their scientific research, they will not guarantee it'll last more than 45 minutes in acid. Basically it starts breaking down at 45 minutes, a acid resistant capsule. So your food is typically stuck in that bath of acid and even pills you take is normally stuck in there for over an hour, usually between an hour and a half and two hours before it's dumping into the small intestine. So you need something that can actually survive the stomach, in my opinion. If you want to get it as deep into your gut as possible, because we really are trying to get it all the way down to the bottom of the small intestine and the, in the top of the large intestine. And so he was able to get a enteric capsule. We were able to work together with this. So we have a, he has a proprietary extraction process where you have 99.9% purity.

No one else has that. There's other ones that are like 90% pure, finally, but they're still cut with some other seed oils usually. And then the enteric capsule really does change the game. And it, it's hard to describe because you look at our price point, you look at our bottle and we're some startup company and we're not as sexy looking as other companies. We don't have this, the size and our price points higher.

Michael Roesslein: Those bottles are pretty sexy over there, man. Don't sell yourself short.

Steve Wright: But, but I'm, the difference is best explained with the whole basal idea. Like I've worked the hardest to try to deliver like a local best sourced option. And you can actually feel the difference. It's just hard to describe that in a number of different, you know, I've tried for three years and it's still struggling.

Michael Roesslein: I think you described it quite well and the capsules are tiny too. They're like little tiny, uh, Jello squish them. Actually, they're kind of hard to squish.

Steve Wright: Yeah, you can squish them. Mira likes to squish those kind of capsules. She got excited when I first gave them to her and she's like, oh, squish. And they wouldn't squish very well. So, uh, but they're tiny and so, and you don't have to take 200 of them or however many that milligrams was, but that was just to demonstrate the safety.

Michael Roesslein: So, um, that's a really good explanation. And I think it was tech enough, uh, to make sense the basal explanation versus getting into all of the weeds of it. And so it's the, it's a

very bioavailable form that works very well when it's brought into the gut. There's no level of toxicity at a normal amount of milligrams. And with the capsule, it gets it to where it needs to be versus it being broken down on the stomach and being a giant waste of money. So if you'd like to try tributyrin X, I put a link and a code in the chat. We're running a special whenever we do one of Steve's products, we discount all of them. So that will lead to the healthy gut shop on our site.

And, uh, you'll find tributyrin X there, the code's butyrate 15 for anybody listening and not looking at the chat right now, but we'll put a link down below wherever the recording is. So if you want to try it out, that'll help you try it out. I'd love to, and, and talk just a minute about supplementing butyrate, uh, to, to supplement butyrate and that whole chain of oxygen and the gut lining and the microbes. Can you explain versus trying to do it with all that stuff that was on that slide, doing all of those lifestyle modifications in the dietary things, when you supplement, supplement butyrate, how does it affect those cycles and that those processes? I think that's important for people to understand. Yeah.

Steve Wright: So the, so in my opinion, the way out of the yo-yo cycle of, you know, whether you're detoxing this thing or killing this thing or trying to do a new diet and reintroduce foods, like the way out of those cycles is taking butyrate, taking exogenous butyrate and then slowly building your capacity through pre-biotics, probiotics and foods to have your own butyrate production over the coming months and years.

That's been the missing thing when I've struggled, when I've struggled with clients and I think that's what we now have the capacity to do. The reason why is that you're directly injecting butyrate into the gut. So you're starting that, you're restarting that metabolism, you're lowering the oxygen gradient. There's no other methods that I'm aware of that can immediately do that without just going right to the source and injecting more of the needed ingredient, which in this case is the butyrate. So by taking the tributyrin, you're restarting that metabolism that's hopefully going to start, you know, scrubbing the air. It's going to start sucking the oxygen out and then that creates the potential for the bloom of the aerobic good bugs. And then if you're also at the same time able to use, maybe you're able to eat more, you know, fermentable foods or more polyphenols or more resistant starches, that's going to work in concert.

If you're not, you can use other supplements to actually break those foods down so you can tolerate them. And I think that's the way out. That's how my protocols have changed over the last two years. And we've seen success like I've never seen before.

I'm talking like people who are at seven foods going to 15 to 25 foods within 45 days, like people who are doubling their diet almost every month, which they've been stuck at like three foods or

five foods or seven foods for a long time because they did too much elimination. And so that's, I think, how to use it. We could talk about dosing if you want. People who are very constipated, like you're using stool softeners, you're using enema, things like that, you need to go really slow and really low.

So like one capsule every three days for a while and then for like two to three weeks and then you slowly keep building. In other words, my research, and this is not proven yet, but my theory and my research suggests that constipated people have the least amount of butyrate. And when you introduce butyrate, it slows them down sometimes even more. So typically what I say is if you struggle with constipation, just plan to increase your magnesium or your vitamin C or whatever you're using to work with your magnesium for the first month or two, but still go slow, like once every three days for a week or two, then once every other day and then once per day. And then your ideal dose is around three per day.

But folks who have like you have a stool test and you know your microbiome is just shot, like it's dysbiotic, it's really messed up. We are seeing with some clinics, we're seeing those start to correct around six per day. I don't think you have to stay at six per day forever, but they're seeing substantial moves in the microbiome communities at six per day. And that typically people who are between three to six per day on the dosage of this product are the ones who are writing in with the magnificent stories, if you will. There's a bunch of people who look at the price, they look at the bottle and they're like, I don't know, I only want to take two per day. And I'm telling you, we did an entire challenge earlier this year where I said, like, I lowered the price and I gave some like free calls and free education with our coaches and stuff. And I'm like, just, just all you have to do is get to three per day and you get access to all these like bonuses and Q and A's and things because people are under dosing this product. And the results were mind blowing. Just that there's this magical point where once you shift the butyrate status inside your gut, really positive things start to happen.

Michael Roesslein: And there's a lot of these little tablets in a, is that one, 2180? Yes, 90. What's 90? Okay, 90. There's, I get confused because when we smuggle supplements to Europe, we dump, like if I bought two bottles, if I get two bottles of that, for example, I'll dump it into one bottle and for travel purposes. So all my supplement bottles are like filled to the brim and overflowing when I open them. So then to me, everything has a zillion of them in it. But, but yeah, it's, it's, and they're little. So for people who don't like pills, they're very easy to take.

They're very small, probably the smallest of anything that I have taken. That makes a lot of sense. And it's really cool that you did a special thing to incentivize people to take enough of it so that they would get the results that they were looking for instead of consistently under dosing it. Most

of the questions that I answered, some of them in the, in the Q &A, do you know anything about butyrate in the eyes?

Steve Wright: There are some studies on, on butyrate in the eyes. It has an impact. There's no like this, you know, this group of rats or this group of humans took butyrate and then their eyes. So I came back or anything like that. But there is direct linkage there. It's very fresh though. I've only found two papers on it.

Michael Roesslein: Bifidobacteria, Bifidobacteria are not butyrate producers. They were in that first category that you mentioned that break down some of the fibers, right? Yeah. Yeah. They're the cross feeders. Okay. How do you test for health of parietal cells? Is phosphatidylcholine needed in addition to butyrate? We were talking about colano sites, but phosphatidylcholine is great stuff. I don't think it has the same functions as butyrate.

Steve Wright: No, no, it's not. I mean, it's part of your cell membranes and there's a lot of people that see results, especially in populations, you know, over 50 or very toxic like mold detoxing and heavy metal detoxing communities. They see a lot of help from phosphatidylcholine, but it's not, it's not necessary for butyrate production.

It's not, it's not necessarily necessary, I think, unless you have that cellular structure issue. And then parietal cell health, you can check some antibodies for parietal cells. I think Cyrex Labs has an array that does that, but there's no like, you know, parietal cells are really cool cells.

There's all these really cool cells inside the epithelial lining, the clonocyte lining, and parietal cells are part of that. But there's no like, there's no one test that can say like, oh, you have 80% health or something.

Michael Roesslein: Somebody asking about an extensive protocol at Dr. Klinghart and how butyrate would fit in, I would ask your doctor. I would ask Dr. Klinghart, he's very specific in how he wants things done, and I would not even pretend like I would know how he would answer that question. What does resistant starch, was in two-year images and some people don't know what it is. I sort of know what it is because I was also a paleo-fat where people were like eating mountains of cold potatoes and then not shitting for five days and thinking they were doing something good for their body. So what is resistant starch?

Steve Wright: So resistant starch is what happens when you heat starches. Not all of them have to be heated and cooled. That's like a misnomer out there. But I would say the most common way in which a human would consume a resistant starch would be through the heating and cooling of

things like mostly potatoes, but also it happens in rice and it can happen in other starches. But there's also like raw form. So corn is another starch that can form resistant starches. Banana is another starch. There was, like you said, that fad where everybody was consuming green banana fiber or Bob Redmills raw potato fibers.

Michael Roesslein: Yeah, man. I would stir that stuff into my yogurt, my slow cooker SCD yogurt.

Steve Wright: Yeah. Yeah. And I think it was really well intentioned. I think the research, what we know now from the research is those resistant starches that you might just naturally get by making food and then eating your leftovers or making your food and letting it cool before you eat it. Just that cooling process is how the fibers get like cross linked and relinked into resistances. If that's a word, I don't know if it is, but anyways, it is now the studies show that the type of resistant starch seems to be highly specific to the current state of your microbiome, meaning there were groups of people back in the day who ate like just tablespoons of that raw potato flour and they had miraculous results like their insulin levels normalized, their bowel movements normalized, their gut pain went away, their skin cleared up, like their brain cleared up. And then there was a bunch of other people, like probably like 60 or 70% of folks who did it and felt even worse.

And then the same thing happened with the green banana stuff. And that's what the research shows. The research shows that certain guts are already predisposed to be able to handle certain types of resistant starches very well and other guts do really correlate with them. And so I'm still working through the calculus of how you would get a product that's a resistant starch product that everybody could tolerate because we don't know who's going to tolerate it ahead of time. But I do think that that's coming and I do think if you can work resistant starches into your life that it's a, it is the superfood, if you will, for butyrate production. Like polyphenols are great, but like the number one way to bloom butyrate production is resistant starch. Like that's magnitude.

Michael Roesslein: But if you eat the wrong one and you have the wrong bugs, it's going to not feel awesome. So it's kind of playing around with combinations. And I did not have the right bugs for green banana flour. Is what I learned because I was like, I felt great and now I feel terrible. I should stop eating that. But then I did rise it wise enough to do that.

Steve Wright: Yeah, I do. I've done okay on green banana, but I do terrible on the raw potato stuff.

Michael Roesslein: And there's love raw potatoes as a kid. That's weird. That is weird. Like sliced eat potatoes like people would eat an apple.

Steve Wright: And I didn't realize things are weird when you're a kid and you do weird things. It does. But when you're a kid, you don't realize how weird things are that you do. And then you grow up and you're like, oh, wow, that was really weird that I did that. I used to eat lemons too.

Like when they bring them to the table, like a lemon with something, I'll just eat it. What are okay, do you ship? Do you ship or have any representative in the UK or any plans to get anything into Europe? We do. Yeah, we do ship there.

Michael Roesslein: You ship to the UK. All right, we ship to the UK also. So I don't know if that was asking for both of us. It's just a little tricky like with customs and things, but we know how to get we've been shipping packages to Europe for quite a while. So web link and discount code is in the chat, Jim.

It's a lot to say out loud. The code is butyrate15. I'll type the answer for you in the chat. So you should get it in there.

And then it's in the Q &A and then it's in the chat. Do infections like H. pylori, food poisoning bouts or others result in high oxygen environment in the gut? H. pylori is in the stomach.

So not directly. Food poisoning is an interesting question because I don't really totally fully understand what food poisoning is other than an infection that happens in your gut. But I don't need to know if it would leave residuals on the oxygen.

Steve Wright: Yeah, I mean, it might. I'm not a food poisoning expert knowing exactly how it all happens. I do know that there's a lot of links to SIBO and damage to the gut immune system from food poisoning. If you treated that food poisoning with some sort of oregano oil or a Z-PAC or something like that, then yeah, you would cause a oxygen change in the gut. So I think it's.

Yeah, I mean, I think it's not as linked as somebody might say it is. I would search more for are you consuming alcohol on a regular basis, especially in more excess of two drinks per day or binge drinking? Are you doing a lot of processed foods? Even processed gluten-free foods count there because you're stripping out the fibers from those gluten-free foods, which sucks. I love a good, gluten-free pizza, but it's not going to be feed and beater, right?

Michael Roesslein: Interesting. Yeah. And okay, I'm being summoned. So it is 10 after the hour. I have to adhere to my summon. I can only go 10 minutes over. That's what I promise. So because some of our webinars used to go like two hours. And when they were doing the earlier evening, that didn't matter.

But now that it's late at night here and I have a small child, the rules have changed. So we got to most of the questions. I'm really sorry if we didn't get to yours.

If you want to send it to us, send it in and we'll try to get the questions to Steve. I've put the link again to the Healthy Gut Shop in the chat with the code for some savings. And I really think this is a huge game changer, not only for the things we talked about with the gut, but also just systemically. You equated it to magnesium and everybody's familiar with that now and the systemic benefits of magnesium.

And I think it's something that is a really big game changer for people. So I've bumped it up to my own top of if there were four... I'm like you. I have a ridiculous cabinet of supplements in the other room and I try everything and I take everything and I'm playing around with everything.

But when people have always asked me too, it's a common question I get. If you had to go down to like three supplements or four, whatever, what would you take or what would you recommend to people? And this one's on my list. After I understand everything that Butyrate does, I think it would be on my Mount Rushmore of things I'm probably going to take all the time. And just for like systemic purposes for me, I don't have really difficult digestive issues, but I saw that I like those things on that slide there. And there's... And I know a lot about supplements. I know a lot about all this stuff and I've seen very few things that could put together as impressive of a list of systemic effects and benefits.

It would be right up there with like exercise. And which we still haven't figured out how to put in a pill. If you get that one in a pill, dude, your company will get real sexy real fast.

Steve Wright: So Steve's going to go figure out how to... Steve's going to go figure out how to put exercise in a pill. In the meantime, the tributary is here already. That one already exists. Thanks for dropping by and sharing all this wealth of knowledge and thanks for all the research you put into the stuff that you guys make and the cool things you do for your customers and helping us out with all this education. And we're always grateful for when you drop by and share all the stuff with us and for putting up with my ADD rants. That's great, man. I think that's why we vibe because my ADHD, you know, connects

Michael Roesslein: with yours and we can just blow around. It's like ping pong, ping, ping. It's... Do you know Dr. Eric Gordon, speaking of ADD? I've heard the name. I don't know him. Gordon Medical.

Okay. He's my wife's doctor, but he's also been on some of our master classes. He's like a doctor that people end up at after they've been to 25 doctors. And he has...

He's the world champion of ADD. And I got warned when I interviewed him and I was like, dude, just wait, see what happens. Our podcast recording went two hours and 25 minutes. We had to break it into three parts.

And we were talking about like combo and plant medicine on accident. So yeah. So yeah, I enjoy interviewing people that have ADD because it just goes ping, ping, ping.

And we go back and forth instead of really focused people because then they're like, what the hell is Michael talking about? So this is fun. I always have a good time.

Everybody's happy over there. Thank you. Thank you. Thank you. Thank you. Thank you. Thank you.

Fantastic presentation and info. Thank you all. Thank you. Thank you.

We have a lot of thank yous from around the world to you, Steve. Thank you. So I'm going to go. Don't be in trouble. You enjoy the rest of your day. Everybody will send out this recording tomorrow.