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Healing the Gut with Herbal Remedies & Surprising Foods Killing Your Gut Microbes

Guest: Sayer Ji

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Dr. Axe: Welcome to the Heal Your Gut Summit. I'm your host this week, Dr. Josh Axe. I know along with my partners Donna Gates and Dr. Eric Zelinski. We are so excited to bring to you today one of the top health experts in the entire country.

His name is Sayer Ji. He's the Founder of GreenMedInfo, which is one of the fastest growing and largest natural health websites in the world. If you've never been to GreenMedInfo.com, I highly suggest you check it out. Sayer is a researcher at heart. In fact, he has some of the best medical research on his site that you can find anywhere. And so without further ado, we're going to talk to Sayer Ji about some pretty interesting things including the DNA of your gut. Sayer, hey, welcome to Heal Your Gut Summit.

Sayer: And thanks so much for having me. And you're going to make me blush if you say so many nice things. So I'll try my best and live up to a fragment of that wonderful introduction. So thank you, Josh, for that.

Dr. Axe: Well, great. Well, Sayer, I know we have a lot of great stuff to cover. I know I've interviewed you, and you've interviewed me before for several things. And I know that in our interviews I always come away with something new that I didn't know. And I think one of the reasons is I know that you are on top of the current research as much as or more than anybody else I know.

And one of the things that you had said to me is as I asked you this interview



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is you said there's several things you wanted to talk about. And you had a lot of just sort of what I believe is sort of surprising material for some people. But one of the first questions I would have for you is why is there an epidemic of gut issues today, whether it be IBS or leaky gut or Crohn's or colitis or any of these issues? Why is there such an epidemic today of these issues?

Sayer: It's a great question, Josh. The interesting thing or absolutely fascinating thing about the gut is it's this tube from mouth to anus, thirty feet long. And it technically contains the environment that we're trying to consume, a very select portion of our environment we call food. And we try to ingest it through this tube.

And so even though it's deeply within us, we think it as essential as far as ourself, it actually houses, as you know, mainly microorganisms that are technically not really part of our genome. They're carrying their own DNA around. And there are viruses. There are fungi. There are bacteria, literally trillions of them.

So it's this fascinating topic because on the one hand you think of your gut feelings and your deep, down inside you it's what makes you who you are. And you think about what's actually happening, which is this is where we're exposed literally to all the different pollutants out there in the environment and all the things that are going wrong out there because we're eating food that comes from the environment, and it's interacting with our bodies.

And that's also why most of our immune system and lymphoid tissue is actually housed in this tube because it's there to protect us and actually differentiate between self and other. If we can't perform that basic function of saying, that's food or that's a bacteria we want to keep out or this is a chemical we don't want to ingest, if we don't perform that function properly, then obviously everything falls apart.

And so gut health, of course, when not intact, leads to autoimmunity because



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the immune system's trying to figure out, wait, I thought that was self, but it's actually other. I let it in. And now my immune system is going haywire trying to identify again what is self and other. So it's a pretty fascinating area.

And as you know Hippocrates himself said all disease begins in the gut. And the same could be said in positive terms. All health begins in the gut. So it's a fascinating topic. You throw in the microbiome and you look at it in terms of its genetic contribution to this total meta organism which is what we are, these trillions of viruses, bacteria, fungi, and then of course the genome in our own cells. You put it together, and it's just so confounding. It really opens up an entire new way of looking at what it means to be a human, what health is.

So I'm sorry if it's sounding like a big soup of ideas, but at this point I think we can say that because the microbiome has only been a recent discovery and of course it's primarily housed in the gut about three to four pounds in terms of its weight, but 99% of our DNA by number is sort of like a Copernican revolution. Everything's been turned upside down. So I'm hoping I can help clarify some information today that's actually practical, but also hopefully still really interesting.

Dr. Axe: Yeah. Well, Sayer, I know that so much of this information for a lot of people both the layperson and even a lot of physicians today, it's new. Especially I know over the last five years that word "microbiome" has been used more and more frequently. And there's several books that I know have touched on the subject.

I know that I'm actually currently authoring a book called *Eat Dirt*, coming out very soon. We're really hitting on how to heal and retrain your microbiome. But for those listeners who are new to the microbiome, can you explain exactly what is the microbiome and what is it responsible for? What does it do?

Sayer: Yeah, that's a great question. So basically we have these



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microorganisms which before the advent of modern microscopic technology, we didn't even know was there and therefore that's why the term "microbiome" has stuck. But I like to think of it almost as a macrobiome because it has such large effects and implications and of course, as I stated earlier, our identity is primarily bacterial, viral, and fungal more than it is eukaryotic cells of the species that we are. So it's a fascinating.

In a way the term "microbiome" is a little misleading. So what do they do? Well, it's interesting because we're finding out that the microbiome, especially the bacterial section of that, is capable of doing things that we have a hard time with.

For example, gluten is a good topic. I know you focus a lot on this. And a lot of my own work has been on trying to educate people as to how many harmful effects gluten-containing grains really do cause. Incidentally in the literature, I've identified over 200 signals of harm so far which you can look at the abstracts on GreenMedInfo if anyone's interested.

So what's so fascinating to me, Josh, is that we don't really have the protein-digesting enzymes in large enough amounts because we didn't adjust to gluten-containing grains through the many hundred thousands of years of time it takes to do that.

We had the agrarian revolution between 10,000 and now some are saying it goes back to 30,000 years or longer, but that's still relatively a short time when you look at really how long it has been that we've consumed more of the ancestral diet of root vegetables and carbohydrates from plant matter, not anything you have to cook because cooking and pyro technology and pottery implies civilization.

And, again, we identify that primarily as the fertile crescent which is again about 10,000 years ago in the Middle East is when they suddenly seem to have appeared out of nowhere. And the gluten-containing grain culture



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started to proliferate which we're one of them.

So now new research has surfaced where they took fecal samples of individuals and identified ninety something strains of bacteria that were capable of breaking down gluten for us and some of those peptides, because people don't realize this but 23,000 different proteins have been identified in the wheat what's called the proteome, the total set of proteins that that plant produces.

So when we think of gluten, we think of this monolithic entity. Oh, it's just one protein. But technically it's 23,000 which when you're dealing with the issues associated with gut health and the inability to break down all these proteins, which are "antigens" when they go into our body and digested which happens in leaky gut syndrome, as you know.

So then what happens, of course, is if our microbiome doesn't have the right strains to break down those proteins, then they could end up causing quite a lot of inflammation and of course autoimmunity. And again, since we're primarily composed of proteins, our body says, oh wait, these wheat proteins look awfully similar to the proteins, say, in my kidney or the protein, say, in my muscle. I'm going to start producing antibodies against that protein, and then it ends up cross-reacting with cell structures.

And that's the definition of autoimmunity. Or another way they put it is a lack of self-tolerance, immunological self-tolerance. So again the microbiome swoops in and performs this function for us.

But there is a dark side to this, Josh, which is that some of the strains come from what are traditionally considered pathogenic opportunistic bacteria like clostridium botulinum which of course produces the most deadly natural agent, botulinum toxin on the planet. I think it's only something like a few grams is enough to kill everyone in the country. That's how toxic it is which is ironic considering people inject it into their faces to kill their nerves and



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hopefully look younger.

So the idea here is the bacteria in our gut are able to perform genetic functions that even our own genome doesn't have the ability to perform. There's a dark side to it, of course, is yes on some level that's good because if you don't break down these wheat proteins, they could end up ultimately killing you with autoimmune destruction. But on the other hand, you might be more prone to infection.

So the microbiome is really capable of a number of things- breaking enzymes down, producing antibiotic-like substances like bacteriocins, which are very powerful at killing certain types of pathogenic overgrowths. They're also capable of producing a whole series of vitamins. The B group vitamins themselves are largely produced by those bacteria in our gut.

So that helps us of course deal with very common vitamin deficiencies since B vitamins aren't retained. They're water-soluble. You can imagine if your microbiome isn't healthy and you're not producing these B vitamins for yourself, then just a few days going without could have some really bad effects.

And then, of course, there's things like candida, which often times we focus on as being the enemy. And the *Yeast Connection* by Dr. Crook argued that really yeast overgrowth is behind a huge amount of health issues. And it's true. But technically candida is a commensal fungi which works in balance with all the other communities of microbes.

But when you have antibiotics and you've killed off these good bacteria that keep the candida at bay, of course it grows out of balance and then we blame the candida. But technically even fungi within our gut are performing essential functions.

And then bacteriophages are a type of very small virus that actually attacks



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certain bacteria and those are capable of killing a very pathogenic bacteria, as well. So there's a lot of research going into looking at the bacteriophage viruses in our gut as potential alternatives for antibiotic-resistant bacteria. So that gives you a sampling of some of things the microbes in our body do.

Dr. Axe: Yeah, it's incredible. I think people just assumed all bacteria was bad, any virus, any germ, any of these things. And today we're finding we even need what we would consider bad or pathogenic in ways, certain things to help balance out and train our systems. And so I love what you're sharing there. One of the other things that I was real excited to hear your talk about, and I know you kind of touched on it here, but if you have anything else to elaborate on, it would be great. But really how our gut is related to our DNA.

Sayer: Well, that is a fascinating question because for so long the assumption dominated that we can explain our body and health and disease really by just identifying the protein coding genes in our genome, which are only about 2% by number. So 98% of our genome has been called basically junk DNA because we didn't understand it.

Only recently though have we been able to comprehend that much of that 'junk DNA' is extremely useful and helps to produce things like RNAs which help to regulate up to 60% to 70% of the expression of our genes. And RNAs don't necessarily code for proteins. So again, the messenger RNAs and micro RNAs were not as important as the actual primary sequence in our genome. That's all changed.

And so then we have this huge gap, okay, after the human genome project which tried to map out all the protein coding genes in the genome started to get completed around 2005, they were like oh my gosh, how could there be only 20,000 about genes in a genome when we have at least 100,000 different proteins?

So this gap is now opening up this field of epigenetics which is the idea that



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it's not really the primary sequence within the genome that counts but how those genes are expressed and interpreted. And so epigenetics is also very much part of the discovery of the microbiome and the way that food, for example, through fields like nutrigenomics affect gene expression.

And what it has done is open up this whole new field of acknowledging that the environment, our diet, our lifestyle even mind-body processes, which directly affect physiology...So if you're afraid, you get fear that releases adrenaline and that starts this whole bunch of cascade physiologically of events.

So we no longer look at what we think and feel and anticipate as being abstraction in that context. So now we look at all of the different genetic material that's contributed by the bacteria, viruses, and fungi in our gut. And it's so much more by number than the actual genes in our genome that in a way we have to acknowledge we're more microbe and more bacteria and virus than we are actual human DNA. So it's a fascinating new way of looking at what it means to be human, at least on the microscopic level.

Dr. Axe: Yeah. One of the terms that we'll often hear with this is *symbiotic* as you've been elaborating on, that's it's so important. Like we need these bacteria in order to survive. We need these viruses. And they make us who we actually are.

Sayer: Yes!

Dr. Axe: It's just incredible.

Sayer: Well, and then if you think what happens when there's an indiscriminate use of an antibiotic which often unfortunately in this country is prescribed for a viral infection, which will sometimes, you know, you get influenza, and you end up getting a secondary overgrowth of a bacteria called *hemophilus influenzae*.



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And that's why antibiotics will actually "do something" is that it does sometimes help to suppress the secondary effects of a viral infection. But of course, it does nothing but deplete the body often of really essential bacteria and support the growth of not-so-essential fungi and then, of course, breeds the driving of the escape mutants or bacteria that are now antibiotic-resistant in the body.

So of course now when we look at our microbiome as essential for our gut health and overall health, we have to take more a precautionary, principle outlook when it comes to chemical exposures including obviously medical chemical exposures or drugs.

Dr. Axe: These are great points. One of the other things—and I wasn't going to ask you this—but I actually would love to really get into a little bit more you had mentioned antibiotic resistance. Can you let us know what is causing that today? How big of a problem is it? And how does that relate to our gut health?

Sayer: That's a great question. What I find so fascinating, Josh, is that we often blame the victim, of course. So we use antibiotics indiscriminately often for conditions that have nothing at all to do with the "overgrowth" of antibiotic susceptible bacteria.

So MRSA, for example, is methicillin-resistant staphylococcus, right? And it's not that we have this super germ that is so deadly that we're just defenseless against it. It's rather that we have created a monster, and we're blaming the victim because we have used a chemical—methicillin or penicillin class antibiotics—overused them to the point where it's driven resistance within this relatively genetically diverse set of bacteria in our body.

And of course there's subpopulations that are resistant to the kinds of chemicals we're throwing at the "infection." So then we actually make those bacteria even stronger. What happens often is you kill 99% of an infection, maybe 1% stays resistant, builds biofilm around it, and then over time could



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take another whack to the immune system, maybe a shot of bleached water to kill off the good bacteria. And that 1% grows back. But this time not only is it resistant to the antibiotic, but when you give that same antibiotic, it makes it grow even faster because it's already killed off all of its competing commensals.

So what the point is is that we think about it in terms of a nightmare bacteria scenario. That's literally what the director of the CDC has been saying. And it's sort of this very scary prospect, but you know better than anyone because you educate on this, there are all these natural compounds that have been identified that are very effective against this class of bacteria, the "antibiotic-resistant" forms.

So if anything, what's happening is this discovery of antibiotic-resistance as a common type of infection is just forcing us to go back to the ancient ways which are using things that have a broad range of chemistries that, you know, if an oregano is growing in the wild, it's not wearing a rain suit. It's not got chemicals to protect it. It got its natural defenses.

So plants will convey that to us if used in the right way and carefully with a medical professional helping, you often end up with results that are obviously far better than what the conventional model is throwing its hands up in the air now saying, "I'm sorry. There's nothing we can do. The nightmare bacteria are going to basically defeat us."

Dr. Axe: Yeah, it's absolutely wild that so often our conventional medical system today they cause all these issues and say, "Oh, there's no way to fix it." It's sort of this doom and gloom mentality.

So one of the things that I'd love to, whenever I'm doing an online Google search, so often if I'm searching natural treatments, healing herbs, all these things, I see your content come up. And I know you've kind of scratched on this. I want to get into those things next. But let's talk about GI health. What



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are some things that might surprise people that are damaging our intestinal lining and maybe they don't even know that they're self-harming?

Sayer: That's a great question. Top of the list actually are NSAID drugs, so nonsteroidal anti-inflammatory drugs. And I know you've addressed this actually in articles as well. It's funny. I search sometimes as well, and I find yours top on the list, Josh, so you're getting the word out.

But so just basic baby aspirin has been recently confirmed to cause almost universal damage to the intestinal causing mucosal erosion and inflammation. And so people have been taking it for cardiovascular prevention for some time and not recognizing that ultimately intestinal permeability can also contribute to autoimmunity in the blood vessels.

In fact, that is what technically arteriosclerosis is. It's an autoimmune stimulated process. There's an injury to the lining of the blood vessels, usually in the arteries. And then what happens is the immune system comes and try to heal it, and then it gets all gummed up in that mess. And it causes this snowball effect. And so the white streaks you see in the arteries are often a combination of white blood cells that have tried to gobble up debris and gotten really large, caused more release of inflammation.

So my point I guess is that even really small things like taking an aspirin and recently ibuprofen have been shown to compromise the lining of the intestine which is, as you know, only one cell thick. Those epithelial tissue are supposed to be really tightly laterally placed to one another, and if those junctures get loose or there's damage to those cells, really quite a lot of, it's a Pandora's box that's opened. So that's obvious.

And there's alcohol, for example. It's sad but true. In the animal model when they're trying to induce ulceration, they use alcohol often because it's very effective at helping to cause permeability.



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Gluten is notorious because there's a receptor in the intestinal cell wall that activates this little protein called zonulin, which upregulates these gaps in the wall. And recently there was a study that found that irrespective of the genetic locus for autoimmunity in celiac disease, didn't matter if they were celiac susceptible or not, they all experienced an increase in intestinal permeability when exposed to this particular protein in wheat called gliadin.

And then here's one really unfortunate problem is that a lot of gluten-free products today actually contain materials, ingredients, that are promoting the very same types of celiac disease and non-celiac disease triggers. There's gluten sensitivity that's non-celiac. And those things are potato flour, rice flour, believe it or not, actually contain a lectin, which is really kind of like an invisible thorn.

I wrote an article called "Opening Pandora's Bread Box: The Critical Role of Wheat Lectin in Human Disease" a few years ago. And in it I document the research on wheat lectin causing a lot of damage that is not even related to the gluten content because you buy Ezekiel bread and sprouted organic wheat. And technically the gluten content is reduced to the point where it doesn't seem relevant. But the lectin content is still there, and it's sometimes higher.

Well, it turns out wheat lectin is very similar to what's found in potato and rice. And on top of that, you have the fact that those are usually higher glycemic ingredients. So a lot of us are struggling trying to go gluten free, but haven't really gone far enough which is to eliminate the packaged gluten-free products and start getting back to an ancestral diet, looking more at alternatives to grains which include quinoa, amaranth, buckwheat, and of course root vegetables and actual vegetables which we just don't consume enough of.

Dr. Axe: So many of these things I think are surprising because somebody would typically think, "Okay, I'm gluten free. That's it. That's all I need to do."



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I'm home free. I'm healthy now." As you're saying, there's so many other factors and so many other foods out there that can still continue to damage your gut health. Let's go on the flip end here and talk a little bit about let's say somebody is struggling with a health condition. Let's start off with IBS, and I'd like to talk to you about a few different conditions. Let's start off with IBS. What are some of the best natural treatments or herbs today for treating IBS?

Sayer: Okay, yeah. With IBS it's interesting. On our website we have listed now fifty substances that have been studied to ameliorating IBS symptoms. And peppermint is the most clinically validated intervention. And this is peppermint oil capsules that are often enteric coated so they get through the stomach into the large intestine.

And they have been found to be really effective as far as ameliorating symptoms without the side effects unfortunately that are sometimes linked to conventional drug approaches. So we have six clinical studies on peppermint for IBS on our site right now.

The rest actually if you go down the list, it's fascinating. There are so many strains of bacteria. A lot of them you'll recognize as far as lactobacillus acidophilus, bifidobacterium longum. There's a lot of them—plantarum lactobacillus—that have been shown to be helpful with IBS sufferers.

And then you have artichoke, which is a fascinating source of silymarin, a regenerative compound often. You think of milk thistle primarily for its silymarin content. So I would definitely suggest looking into artichoke. Artichoke is also excellent as a coloretic. So it helps to get stagnant bile to be secreted into the bowel. There are quite a few folks that have stagnant bile which can obviously lead to gallbladder issues. So this is one way that you can encourage the elimination of what are essentially a lot accumulated toxins and oxidized hormones and fatty acids in the gallbladder.

Artichoke is also one of the best sources of a prebiotic, and that's a pretty



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important point because we like to throw probiotics at ourselves. They're often centrifugally extracted in a void without a matrix to nourish it and help protect it in its journey from the mouth down into the gut. So one of the approaches to support that of course is giving the body things that those bacteria thrive on.

And in the case of artichoke, it's relatively plentiful in these carbohydrates, fructooligosaccharides that help to feed those bacteria. And that also speaks to why I think cultured food is really the most important step to regenerate gastrointestinal health in the case of IBS and similar conditions because it provides not only sometimes trillions of living cultures but the natural environment that helps protect it and nourish it is there as well.

Let's see, we also have research on psyllium, which is a very absorbent fiber that I have used in the past. It's one that you have to be careful with because it can absorb I think up to thirty times its weight in water, and if you're gastrointestinal tract is dehydrated or you're maybe mixing it with insufficient water and then drinking it, it can actually bind you up significantly which is ironic because it's used often for the opposite problem which is to help you be more regular.

Then, let's see, there's also some basic research on turmeric, and that's pretty clear because when you're dealing with inflammation of the gastrointestinal tract, it's one of the safest and most heavily studied of anti-inflammatory compounds. Now, keep in mind, people often buy curcumin, which is one polyphenol, a very powerful one, and only one of hundreds of different compounds in the whole plant.

And a lot of curcumin products to get it into the body systemically will be bound to lecithin or some type of substance to help it become more water soluble. In the case of IBS, you actually want to take theoretically the whole plant root extract. So it would be spice like a teaspoon of the spice for example because then it will literally paint the entire alimentary canal yellow on the



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way down and help to modulate the inflammation in a way that nature intended as a food. So those would be some basic ones.

Of course for IBS, the primary thing, of course, is to identify causes, and a number of them that have been looked at. One of them (very fascinating) is sucralose of Splenda which is really one of the worst chemicals that I think has ever been introduced into the food supply because it is really more like I think a pesticide than an actual food.

In fact, it's so resistant to biodegradation by anything living that it's accumulating throughout the world now in the oceans and rivers because it just doesn't break down, sort of like a pesticide wouldn't break down. But since they started introducing it—and this happened in Canada—is that over the course of about a decade Canada had one of the lowest incidence of IBS and then after introducing Splenda into hundreds of consumer products, it had the highest.

And so one researcher has hypothesized that sucralose is the primary reason behind this. But of course, as you know and advocate for, there's so many reasons why gut health is going down the tubes and why we're so inflamed. And of course, GMOs are a big part of that. And I'd love to talk about that one when it's relevant.

Dr. Axe: Yeah, well, let's go ahead and dive right in and talk about GMOs because I think that's another thing. You mentioned Splenda and sucralose and the studies on how it damages microbes. Yeah, let's go ahead and jump right in and talk about GMOs.

Sayer: Okay. Well, so the main concern I have presently is the contamination of our food supply with Roundup and some of its metabolites because glyphosate is the active ingredient, but these glyphosate formulations like Roundup herbicide have sometimes dozens of different chemicals none of which have been studied in terms of their synergistic toxicity. They're just



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been given a free pass by regulatory agencies.

But if you just focus on glyphosate, you will find that it is extremely destructive in terms of binding up minerals, for example, because it's a chelating agent. And that will affect a lot of different processes in the body adversely because we're already dealing with mineral deficiency.

But so then it also will contribute to the overgrowth of certain bacteria. There was a very disturbing study a few years ago that showed that animals, particularly chickens, fed Roundup-contaminated food, they ended with clostridium botulinum infections more readily.

And now I just had a discussion with Stephanie Seneff just last week regarding research that has existed for now twenty years that's showing pseudomonas aeruginosa, which is a very problematic bacteria that is now being identified as one of those antibiotic-resistant strains, which is also notorious for causing morbidity and mortality in cystic fibrosis patients, is actually using glyphosate a source of food.

And so technically, like we talked about earlier, the microbiome is so pliable and able to adjust to shifts in our environment that in some cases it's doing us a favor. It's breaking down pesticides like glyphosate, which are going to cause us long-term harm and using it as food. But then that bacteria itself when fed this inordinate amount of the wrong type of food will grow out of bounds and then could cause a deadly infection.

So that's one of the problems, Josh, is that when you're dealing with GMO food and even non-GMO products like oats, this is a very big issue because some oats could be labeled non-GMO project certified. But because of the way that they use glyphosate as a pre-harvest desiccant basically to make grass actually dry out so they can harvest it more efficiently, it's widely contaminated.



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So even though oats may be are not ever going to be a GMO product that they've not been altered with recombinant DNA technology, they're widely contaminated with glyphosate so it does make it a little bit more challenging for consumers than just looking at non-GMO certification labeling or just looking at USDA certification because it's unfortunately more complex.

Dr. Axe: Wow. There are obviously so many things out there that can damage our gut as you're saying from NSAIDS to GMOs to artificial sweeteners. And I know we've talked a little bit about IBS. I'd also love to hear some of your best strategies or if there's any research out there on holistic treatments for Crohn's disease and ulcerative colitis.

I know both of those can be autoimmune in nature. I know there's a lot of similarities, but I would love to hear from you if there's any research or anything people can find on your site in terms of treatments for Crohn's and colitis.

Sayer: Absolutely. Yeah, for a while I was working with the public as a patient advocate. And there were individuals that I worked with who needed help. And so they had tried conventional approaches, often antibiotics. Steroids were used.

And I looked on Medline, and I found a wealth of data that they then used to make decisions to heal naturally and in some cases had incredible results. So what I did is I created a page on GreenMedInfo called ulcerative colitis. And there's now thirty substances that are indexed there all from Medline showing efficacy at least in pre-clinical but sometimes clinical models.

And so you'll find actually curcumin is top on the list. It's been identified to be at least as effective as mesalamine therapy, which is a chemical drug that is used often to suppress inflammation. Then you have interestingly enough fish oil. While it's well known that it down regulates inflammation by modulating what's known as the eicosanoid pathway which produces these hormones that



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are very influential in either increasing or reducing inflammation so like prostaglandins are example.

So fish oil if it's of a high quality, which means it wasn't oxidized. And ultimately getting good quality, fresh harvested fish that's fatty that doesn't have contamination with mercury of course is one of the best ways to get it because supplementing is certainly a great way to go, but the fresher the better. And the closer to the form of food it is, the better.

Then you have really basic things like resveratrol have been studied. Garlic is interesting because it is very powerful anti infective in ways. And I think sometimes, obviously, with ulcerative colitis and different bowel issues, there's an overgrowth of "not-so-friendly" bacteria. So sometimes something as simple as garlic and manuka honey are ways to "beat back" those strains and get them into their proper ratio with the other "better, more friendly" strains.

Then you also have a good number of substances that have been studied that could contribute to the cause of ulcerative colitis. Oral contraceptives actually have been studied for this, which I was surprised to find. There is research on statins contributing to the problem.

And iron supplements in the form of inorganic iron like ferrous fumarate is a good example. It can be very toxic. And sucralose was actually mentioned, as well along with IBS because this the same spectrum of inflammatory bowel diseases. And then you have, of course, the nightshade family spices like cayenne, for example, and some other in the family of foods such as potato, tomato might be worth considering at least eliminating from and then reintroducing if one feels it's necessary.

Dr. Axe: Awesome. Well, one of the last questions I have for you, Sayer, is about the condition leaky gut. What are some of the, or intestinal permeability, talk to us for a minute about that condition, what it is, how it works, and then also maybe some of the best therapies for leaky gut.



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Sayer: Absolutely. Yeah. In fact, I think it's not so much a matter of whether we have it or not. It's really just a question of degree. Not to scare anyone, but the reality is that, again, the intestinal membranes are so delicate. And there's so many different sources of exposure to things that actually either penetrate or open up the gaps that I think it's just important for us to be cautious and again reduce or eliminate those things which we know do contribute to permeability in the intestine. Gliadin, again, is really top of the list.

Now there's convincing evidence that you don't have to have the genetic locus of susceptibility for celiac disease which incidentally, surprisingly 30% of the world's population actually has even though it's not expressed in the form of celiac which is primarily having two forms of destruction of the intestinal wall. One is the adaptive immune system, and then one is the cell-mediated front line immune system. And almost everyone has that front line immune system response that causes damage. Celiac disease, of course, you have both.

Interestingly, cupric sulfate which is an inorganic form of copper that's found in mass market vitamins like Centrum, that's a good example if you really look at all the different types of inorganic metals like tin, for example, and iron that are used in these supplements, they are extremely toxic. Again it's dependent on dose.

But when you're looking at it from a molecular perspective and a milligram of cupric sulfate is a massive dose in relation to middle cells that are protecting your outsides from your inside, which is the intestinal lining. Then of course you have things like the NSAIDS as we discussed. So those are well established to be contributing factors.

And then when it comes to repairing, it's interesting. One of the first ways ever discovered to heal intestinal inflammation and permeability for celiac disease was a banana diet, and that was the first way that they actually treated those who were diagnosed with celiac disease. And it turns out banana has been studied as having a very soothing effect.



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And so sometimes the best way if you're feeling gut inflamed, you're feeling overloaded with food that's not breaking down, instead of doing just a fast, one could sometimes opt for a mono diet. I've done just fruit before. Banana of course some people will say, "The sugar! The sugar! It's a problem." Well, it's all about the amount. If you're utilizing that food, and you're doing a fast model, which is really you're getting below what you would normally eat, your body will probably utilize it.

The bacteria again on our page on this topic (intestinal permeability), it lists a probiotic supplement bottle as far as research showing benefits. And one of the most interesting discoveries I've found, Josh, is that oats have actually been found to heal the intestinal lining and that's a grain.

And there are a number of interesting philosophers of nutrition like Rudolf Hauschka—who I just love his work—he was also of the mindset that oats were different than other grains. They had more of a fiery principle and maybe more of a therapeutic one in certain respects. And I think the research now shows that.

Now, it is true that those with celiac disease have the potential in some cases to cross-react to the protein in oats known as avidin as if it were gliadin or a similar gluten protein. So not everyone will do one with those. But if you're not one that has a severe problem and you don't want to give up your grains, sometimes oats are actually a therapeutic intervention.

Curcumin, again, very interesting because it seems to be broad-spectrum good for intestinal health when you're dealing with inflammation specifically. And then you have lots of research on compounds like in green tea like ECGC is one of them, catechin, quercetin which is found in quite a lot of different vegetables and plants. But the archetypal one is onion. That's pretty interesting. And then you have, let's see, gosh, there's just a good number of different substances. Cultured food, for example, would be on the list.



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Again, the research is helpful because it gives us guidance. It's not comprehensive yet, but thankfully, if you looked back ten years ago, you really wouldn't have found almost anything with the key words "leaky gut" and "intestinal permeability." And now at least we're seeing a lot more published on the topic.

Dr. Axe: That's great, Sayer. Well, I want to say hey, thanks so much for being part of the interview. I know I've learned a lot, just a few things, some of things that are damaging our gut that we may not realize. Artificial sweeteners, Splenda and sucralose, are found in some many products today.

You mentioned genetically modified foods, how those can harm our microbiome and gut bacteria. Also one of the things that I think probably surprises some people is you mentioned IBS peppermint and peppermint oil. Peppermint. I think so often we hear peppermint it kind of seems like this, it just doesn't seem powerful. But it is powerful for healing the gut as you've mentioned, as well.

And so and then of course the amount of DNA we have and what resides in our body and us being less flesh, more microbial than other things I think that sort of content just blows me away.

And I want everybody to just consider going to GreenMedInfo.com, especially if you're the type of person who is looking for the highest quality research that is put down into layman's terms. No one does it better than Sayer. So check it out, GreenMedInfo.com.

And you can search any of these conditions from leaky gut to Crohn's disease, ulcerative colitis, IBS. And you're going to find the latest and most cutting edge information on GreenMedInfo.com. I want to say, Sayer, thanks again for being part of the summit.

Sayer: Thanks so much for having me, Josh. I really appreciate it.



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Dr. Axe: Well, hey, thanks, guys, for being part. I know we've got some more interviews coming up with myself and Donna Gates and Dr. Eric Zelinski. This has been Sayer Ji and myself, Dr. Josh Axe, with the Heal Your Gut Summit. Thanks, guys.