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*\* \* \* Intro Music \* \* \**

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[1:43] *Cassy Price*: Hi, everyone. Thank you for joining me today for another episode of Supplementing Health. As the holidays draw closer, many of us are preparing festive dinners and treats, which is why Dr. Laura Brown and I thought it would be a timely discussion to talk about digestion and the role it plays in overall health.

[2:02] Dr. Laura Brown is a naturopathic doctor from Guelph, Ontario, who has her first book coming out in early 2021. She has battled many health challenges of her own, which ultimately prevailed through naturopathic medicine. Welcome, Laura.

[2:14] *Dr. Laura H. Brown*: Thank you, Cassy.

[2:17] *Cassy Price*: I'm super excited to dive into our digestion chat today. However, before we start, I'd love to hear a little bit more about your story and what led you to naturopathic medicine and an interest in digestion in the first place.

[2:30] *Dr. Laura H. Brown*: For sure. I think the thing that drew me the strongest was the energy to heal, the fascination with the power of what the body can do when obstacles are removed,

and the individual is provided with what it needs for optimum health. I find it amazing what the body can take on and make the changes and heal on its own. We always say that we're not the healers; the body is the healer.

[2:58] This is my second career, and I was drawn out of the technology back into my love of health sciences. Partly because of my own issues, I was searching for answers I wasn't getting through the conventional system if it was on digestion. Quite simply, it wasn't something I started out looking for, but quite simply, everything starts in the gut. When we get the gut right, the rest of the health seems easier to manage. It's like the foundational structure, like building your house on a rock. No matter what people come to me for, I always consider how the gut might be involved.

[3:35] *Cassy Price*: Yeah, absolutely. I think more and more science is coming out that supports that notion of the gut is the root of so many issues. Why don't we get our poop-in-a-group per se, and we can start talking about some of the signs of poor digestion, maybe starting with what a healthy bowel movement looks like, and are there indicators that people should be on the lookout of poor digestion?

[4:02] *Dr. Laura H. Brown*: Absolutely, and this is something that's funny. People come in, and they're often really shy about talking about what their poop looks like. They start to glow and smile when I show them the chart I have in my office. It's one you can get off the web. You can Google for Bristol Stool Chart, and you'll have the chart come up. It categorized what a healthy and unhealthy stool looks like. It categorizes from Type 1 to Type 7, and 3 and 4 are the ones that are in the middle, so not too loose and not too firm. They typically look brown, soft, and long, like a sausage, and firm. Typically, when you flush, it's not breaking up. That is a typical sign of a healthy stool.

[4:56] With that being said, sometimes, you can have a healthy appearance to the stool and still some things that are going on in there that we can't see just by looking in the toilet. For symptoms relating to the gut, I would do a stool analysis, which is genetic testing of what's in the stool and a microscopic evaluation.

[5:20] *Cassy Price*: What are some of the long-term impacts of poor digestion if people just leave it untreated?

[5:25] *Dr. Laura H. Brown*: Typically, it goes in order of an imbalance of the microbiome from external sources such as drugs like antibiotics, antidepressants, birth control pills, non-steroidal anti-inflammatory drugs, for example. Sometimes, gut lining irritation from food sensitivities.

[5:45] Breach of barrier typically happens next. You've heard of a leaky gut, and that's where we get the leak of toxins from the microbiome, the microbes, or things that should be put out in the stool for excretion start leaking into the bloodstream. Things like undigested food particles can leak in or off-gassing of toxins that are called lipopolysaccharides, which is a long word for gut toxins from the microbiome.

[6:14] Those types of things end up outside of the gut and in our body where it's not meant to be. Now, the immune system in our body has to handle that. It can get overloaded, and inflammation happens. Long-term inflammation and cross-reactions with our own tissues can lead to

- autoimmune disease
- inflammation that leads to cardiovascular disease
- insulin dysregulation
- headaches
- brain fog
- joint pain
- sinus congestion
- fibromyalgia
- chronic fatigue
- infertility
- ataxia, which is inability to walk properly
- liver disease
- skin rashes
- eczema
- psoriasis
- nutrient insufficiency and deficiency
- thyroid disorders
- hormone imbalances
- lupus
- ADHD
- ADD
- Alzheimer's

[7:10] You can see the list keeps growing and why it's important to start with the gut.

[7:15] *Cassy Price*: That's a lot of different things that it can impact, for sure. If someone is experiencing any of these, how do they know if they have digestive issues that should be treated versus maybe some other cause of hormonal imbalance or something like that that leads to their symptoms?

[7:36] *Dr. Laura H. Brown*: We're going to talk about stress in a little bit, but we know that stress is a big one. But finding out what's going on in the gut, typically, there are three tests that I'll look at.

1) The comprehensive stool analysis that I mentioned before that looks at the genetic makeup and the microscopic analysis of the stool, which tells us what's going on in the microbiome, which can help us understand what microbes are in there, what bacteria, virus, fungi are in there, whether there's inflammation and that type of thing. How well we're digesting our food.

How well our microbiome is producing the things that it needs to produce for us. So, a test like that is very helpful.

2) Doing a Cyrex Array 3 – in the States, they have a wheat zoomer, a vibrant zoomer test to find out if you're sensitive to wheat or gluten. The non-gluten forms of wheat are also common offenders.

3) Then, the other food sensitivities. So, doing a good sensitivity analysis. There are a number of ones out there.

[8:45] So, stool analysis, wheat sensitive or gluten sensitivity analysis, and any other food sensitivities are ones that I would do off the mark as the three top important ones.

[9:00] *Cassy Price*: Yeah. That makes sense. The gut-brain connection has been all the buzz over the last few years. More and more research is coming out to support it and speak to it. So what does this connection mean to you, and how does digestion play a role in it?

[9:17] *Dr. Laura H. Brown*: That's a really good question, Cassy. Thanks for asking that one. The gut-brain connection, there are tons of resources on the market talking about this. It involves the health of the gut microbiome, the impacts on the vagus nerve, food sensitivities and nutrition status.

[9:36] You have to think that before we were upright citizens, the gut was our first brain. It's our primary sensing organ. The vagus nerve plays a significant role in the digestive process. It's really the highway of the gut-brain connection. Your microbiome is a communication network that acts within the nervous system, the hormone system, and the endocrine systems, and it makes an integral part of the gut-brain access. That's why your mood can be a reflection of or a reaction to what's going on in your gut.

[10:13] It's not a one-way street. The gut bacteria actually can directly stimulate the nervous system of the gut, that's the enteric nervous system, which, in turn, triggers the vagus nerve to send messages to the brain. The vagus nerve is a key nerve that transports information to and from the gut and the brain. We can see this with studies with *Lactobacillus* and *Bifidobacterium* to key microbes in our microbiome.

When they remove the vagus nerve in study models, we can see that the microbes no longer have a route of communication to the brain. In one model with colitis, the *Bifidobacterium* actually help reduce the colitis-related anxiety. Then when the vagus nerve is removed or cut, the anxiety behaviour returns.

[11:04] So, these microbes are actually helping us calm our anxiety. It's their contributing to things, and they're running along, whether they're actually running up and down or sending messages – more likely sending messages along the nervous system. It's going up to the brain, but it's also things coming down from the brain, and this is the gut-brain access.

[11:26] Your gut microbes actually influence how you feel and make you think, literally, in addition to the actual microbes themselves, their short-chain fatty acids, which are by-products of their metabolism. They actually communicate directly to the nervous system, and they stimulate gut serotonin release and influence our memory and our learning. It's pretty significant.

[11:53] We're seeing so much going on. We make 400 times the amount of melatonin in our gut than we do the brain. Ninety percent of the serotonin that we make is in the gut. It has lots of different purposes, but it's very interesting to see common neurotransmitters that we think typically would be in the brain. They're actually made in the gut as well.

[12:15] *Cassy Price*: Fascinating. What are some of the reasons why the vagus nerve may become dysfunctional?

[12:24] *Dr. Laura H. Brown*: That's been a key part of the whole discussion. Stress and fear – that's the #1. We also see

- viral because viruses often impact nervous systems
- impact injury, like car accidents
- excess alcohol
- poor posture

[12:44] The vagus nerve runs from the brain down the neck, and then they call the vagus nerve because it's the vagrant wonderer. It wonders all over:

- cardiovascular
- lungs
- digestive tract
- impacts so much

[12:59] It becomes dysfunctional. As I said, #1 is stress and fear.

[13:04] *Cassy Price*: You had mentioned that it plays a role in anxiety as well. Does the growing trend in anxiety and depression disorders in Canada have a correlation with the rapid increase of IBS and other digestive disorders that we're seeing?

[13:20] *Dr. Laura H. Brown*: Yes, they do. The onset of digestion and gastrointestinal issues often begin in times of grief, abuse, or other major negative life events. Really, what the patient takes beyond his or her ability to digest does them harm. From the scraps and stats here, 2019 statistics from the *American Association of Anxiety and Depression* – and I would imagine Canada is closely relatable to these stats.

[13:52] Up to 70% of people with Irritable Bowel Syndrome, IBS, don't get the treatment that they need. The 30% who do seek treatment, over half of them suffer from anxiety and

depression. So, that equals, in the States, to 40 million adults between 18 and 54 who seek help for anxiety. That's almost 20% of the population.

[14:17] *Cassy Price*: That's insane. If our digestion is affecting our sadness, our depression, our anxiety, and all these different moods can have a positive mood and have a positive influence on the digestive process then?

[14:33] *Dr. Laura H. Brown*: Yeah, for sure. We see that positive mood reduces the cortisol release. Cortisol is our stress or our fear hormone. It will calm. Any time we focus on or feel the feelings of love, care, or appreciation for someone or something in our life, this is going to help regulate the nervous system, including the vagal nerve. When we help the vagal nerve balance, basically, that's increasing our ability to digest.

[15:07] *Cassy Price*: Many of us have either heard of or experienced stress-belly, and you mentioned the role that cortisol plays in our digestion. Is this a temporary effect when people get stress-belly, or does it have a longer-term impact?

[15:26] *Dr. Laura H. Brown*: And you're saying stress-belly is like when the fight-or-flight kicks in when you feel those butterflies?

[15:33] *Cassy Price*: Yeah. When people kind of get the butterflies, or some people start to feel sick to their stomach or that sort of thing?

[15:41] *Dr. Laura H. Brown*: Yeah. Like I said before, the gut is our primary sensing organ. We're picking up; we're digesting not just our food; we're having to digest the world around us, and the gut picks up on this energy, whether it's food energy or energy from outside in our environment.

[16:00] When we sense that we're being threatened, or we're fearful of something, our primal instincts set in for safety. This is not the time to digest food. So, the digestion shuts down in fight-or-flight mode, and cortisol is released, so you can get sugar into the bloodstream so that you can use that blood sugar for the muscles so that they can run, and run, and run away from the tiger.

[16:35] The blood flow is going all out to the extremities, so your muscles can act. So, it's going away from the digestive tract – your heart rate increases and all those other great things that come with it. But what happens is when the blood flow is shunted away from the digestive tract, and we've got cortisol running around; this is positive stress in the sense that it could save our life. We could be running from some imminent danger.

[17:03] What's happening in our modern age is it's less of the tiger is at the door and more of like the boss, or the bills that need to be paid, or the deadline at work, or too many demands within our day. It can gang up on us, and this chronic, chronic release of cortisol puts us in this

constant state of fight-or-flight, and we're not digesting. We're not digesting our food, and we're not digesting the world around us.

[17:33] When we have so much cortisol being released, and we're not running it off, and we're not seeing that fearful emotion right through to its end, we end up, and the cortisol typically builds up the belly fat. So you end up with those love handles that aren't so lovely, and they certainly weren't from love. When you start building up that central fat around the mid-section, this starts to play with our insulin dysregulation. Then this snowballs into other issues with our digestive ability.

[18:13] *Cassy Price*: Aside from the fat build-up, can it also lead to nutrient depletion if you're not properly digesting and absorbing your food?

[18:21] *Dr. Laura H. Brown*: Right. That's part of it because you're not absorbing. So if you're not absorbing, then you're going to end up with nutrient insufficiency or deficiency. We cannot be absorbing for different reasons. Stress on the gut can be food sensitivities coming in. It can be chronic cortisol release or stress; it can be impact injury; it could be surgery; it could be other things that go on that can impact that ability.

[18:59] It could be when we talk about Celiac or Non-Celiac Gluten sensitivity causing issues and harming the gut or a build-up of the wrong microbes and imbalance in the microbiome. Now, we end up with too many toxins in there and not enough protective short-chain fatty acids. We end up with issues with the gut barrier, and then, we're not absorbing our nutrients so well.

[19:27] *Cassy Price*: You've mentioned the connection to anxiety a few times. But, of course, anxiety is a spectrum. You can have your day-to-day anxiety that comes up like over a test situation or something like that at work. But then you can have more extreme forms such as PTSD or panic attacks. What do the more severe forms of anxiety, such as PTSD – how does it impact digestion or how does it tie into digestion?

[20:02] *Dr. Laura H. Brown*: I think it comes back to that constant state of fight-or-flight or the extreme states of fight-or-flight. When we're feeling intense emotions, we must first digest our emotions. Emotions are tied to chemicals in our body, and if we're creating an abundance of these chemicals, our body has to break them down and excrete them. If it's busy doing that, it's not going to be digesting our food so well. It's difficult to do both as once. I hope that answered your question.

[20:39] *Cassy Price*: Yeah. For sure. When you speak about the emotional piece of it, some people cope with their emotions by eating, which, of course, will have an impact on the digestive system because you're now loading it back up. If you're not able to process it correctly because of this stress, how does that emotional eating play into the bigger picture because you're eating to calm yourself down or deal with your emotions? But then, of course, it's overloading the system that's partially at play. So how does that whole picture play out?

[21:17] *Dr. Laura H. Brown:* Yeah. It's pretty interconnected, and I think it's a bit of a tangly mass. It reminds me of a talk I did once called, "Food or Mood: What Comes First?" There are some things where the food comes, and then the mood comes after. Then there are times where the mood comes first, like what you're talking about, and then you're eating. So, what comes first? The food or the mood?

[21:43] Some people do cope with their emotions by eating. It's difficult to tease apart what message we're getting. If we're talking about anxiety, the message that goes to your brain for anxiety and hunger are often what's coming up, the sensation is what's coming up are very, very similar, and the brain has to decide, "Am I hungry or am I anxious?" Well, guess what we like to pick the most. I like picking hungry because who'd rather deal with their emotions or eat? So, we often choose to eat.

[22:19] But we need to separate that. What I find is when you feel that coming up – and I had a point in my life where I had to say out loud, "Laura, are you hungry, or are you anxious? Okay, I just ate lunch. I can't really be hungry. Am I anxious? No, no." Denial usually comes in. "I'm not anxious." Then it would be like, "Okay. What was the thought that just ran through my mind?" It's a bit like chasing a chipmunk trying to grab that furry thing, and it just slips right out of your hands.

[22:50] But if you pause for a moment and think, "What thought just went through my mind before I felt this way?" Often, it could be that sinking feeling that comes back, and you're like, "Okay. I said something to somebody that might have been taken the wrong way, or I didn't do as well with that task as I was hoping." Things like that that could promote anxiety that says, "Okay, I'm feeling anxious. I'm not really hungry." So it's separating those things apart.

[23:22] *Cassy Price:* When you're treating a patient that's been doing this chicken or the egg situation where, like you say, sometimes it's the mood first, and sometimes it's the food first. Do you treat both in conjunction, or do you tend to treat the digestion first or the anxiety first or the emotional piece first?

[23:43] *Dr. Laura H. Brown:* I think you have to go at it hand in hand. You have to give lifestyle guidance as well as nutritional or gut-based healing guidance. You have to keep in mind that some foods are comfort foods that do promote dopamine and happy hormones. It's not all bad. It's just keeping it in balance and in context.

[24:09] Maybe one cookie would be okay, but a whole bag – well, you're not going to find the answer to your problem in the bottom of the cookie bag. It's okay if I'm going to reach for that emotional food comfort, which is typically carbohydrates. Am I also working on the other side of things, so we don't get caught in what I call the nap trap, the [nom 24:36], avoid, and procrastinate? It's giving the tools to deal with that, so I try to add some tools in the toolbox that are more skills and less pills.

[24:52] *Cassy Price*: That's fantastic. In your experience, is there a link between meditation and positive digestive improvements?

[25:01] *Dr. Laura H. Brown*: Absolutely. It's the same as the cause of the feelings. When we're meditating – well, it's a couple of different ways because if you're meditating and deep breathing, then you could be through the vibrations stimulating the vagus nerve because it runs down the back of the throat, so you could be balancing out the vagus nerve, which would be really helpful for digestion.

[25:26] Also, we know when we can imagine or visualize because some meditations are visual and take us into a really nice place where we feel love, care, appreciation for someone or something. This also downregulates the cortisol, and helps balance the nervous system, increases the parasympathetic or the rest-and-digest mode.

[25:51] So there are some good ideas there. It also makes me think of fasting because sometimes meditation and fasting come together for spiritual healing. It's very interesting because people would often fast initially in times of grief. That would be so that they could digest their emotions, and then they're not digesting food at the same time.

[26:21] It also gives you a chance to connect with more divine [\[audio blip 26:28\]](#) qualities and spiritual qualities in life. That can be done through meditation and fasting. It makes me think of: "We don't live on bread alone." Sometimes, there are other things that we need to live off of.

[26:47] *Cassy Price*: Yeah. That's a very interesting perspective, for sure. And especially tying it into that spiritual aspect of why people fast. Because right now, a lot of people are talking about intermittent fasting for life extension or for weight loss or all of these kinds of physical manifestations. But to look at it from more of that emotional and spiritual aspect is really intriguing.

[27:15] In one of your blogs, you indicated that Alzheimer's starts in the gut, as well, along with many of those other conditions that you mentioned at the beginning of our discussion. Can you speak to how the digestion actually could perpetrate Alzheimer's?

[27:35] *Dr. Laura H. Brown*: Yes. It's a similar path to what I had mentioned before when I gave that exhausting list of things that long-term gut health can lead to. There was a recent article in the *Journal of Alzheimer's* that illustrates the reduced microbiome diversity. We have like seven different families in over 1,000 different types of microbes in our gut, and we have pounds and pounds of this microbiome in our gut.

- too much of a certain type of bacteria reduce microbiome diversity
- inflammatory factors from leaky gut
- subsequent leakage of the toxins that come out of it
- too much of the short-chain fatty acids, particularly acetate and valerate – butyrate is protected, by the way

- The liver polysaccharides, the toxins, and the acetate and valerate in excess – of course, in small amounts, they're very helpful. But in excess, they appear to impact the folding of the proteins in the brain.

[28:46] We also know that there are tissue Transglutaminase 6, which can be affected by some people who are sensitive to gluten, not just Celiac, but Non-Celiac Gluten Sensitivity. More often, the damage is done in the brain than the gut, so we're looking at gluten as a culprit or another means for injury that can affect the brain and lead to some of these things going on.

[29:25] *Cassy Price*: Does increasing your butyrate levels help to decrease your risk of Alzheimer's then?

[29:30] *Dr. Laura H. Brown*: I don't have that information, but they did say in the article that butyrate is protective. So I would take from that that we want to boost the microbes that help make butyrate, which typically I think are a lot of the lactobacillus and bifidobacteriums that we see in a lot of the probiotics and foods that are out there.

[29:55] *Cassy Price*: So then, what are some of the steps that people can take to help increase that beyond just taking a probiotic off the shelf?

[30:01] *Dr. Laura H. Brown*: So many things affect our gut like reducing our stress, getting varied diet, feeding our microbiome, like prebiotics, the fibres are so important, especially if you're on a gluten-free diet because often you don't get enough fibre, and that can be huge as well. So making sure we're feeding the gut. Fibres from vegetables, fibres like cassia gum, and there's partially hydrogenated guar gum if you're taking a fibre in a supplement, psyllium husk, flaxseed, sometimes chia, slippery elm, and things like that can be protective to the gut.

[30:44] *Cassy Price*: As a general rule, how much fibre should someone be aiming to get in their day-to-day diet?

[30:51] *Dr. Laura H. Brown*: Yeah. Great question because most people get around 4 to 5 grams, and we need upward toward 28 to 30 grams.

[30:59] *Cassy Price*: Oh, wow. That's significant.

[31:01] *Dr. Laura H. Brown*: It is. You wouldn't want to add that all at once because you would end up with gas pain and bloating just from that. So it's something that you ease into. And it's good to get it from a variety of sources, both soluble and insoluble fibre. The insoluble fibre adds bulk to the stool, and the soluble fibre makes it soft and easy to pass.

[31:22] *Cassy Price*: How does protein affect these fatty acids, like butyrate and the other ones that you mentioned, especially because right now, protein shakes and with the fitness trends and stuff, a lot of BCAAs and supplements like that are being taken. Does that positively or negatively affect this balance?

[31:44] *Dr. Laura H. Brown*: I think we need our proteins. They are our basic building blocks, and the cells in the gut turn over every three to five days, so there's constant renewal. That's going to take some protein to build, so that's definitely going to help because they're building blocks. I always think food is first and foremost our medicine, and then if you have issues with getting enough food, then go to a supplement. But our body best knows how to deal with food.

[32:21] *Cassy Price*: Yeah, for sure. Well, thank you for taking the time to chat with me about this. I think there's been a lot of really interesting perspectives and information that I'm going to take away, and I hope that our listeners will as well. If our listeners want to get ahold of you or work with you, how can they contact you?

[32:40] *Dr. Laura H. Brown*: The easiest is through <https://southendguelph.ca> website. Or email me at [drlaura@southendguelph.ca](mailto:drlaura@southendguelph.ca). I thank you so much, Cassy. It's been a pleasure. I love talking about all this. It's dear to home but dear to so many people that I see, and as we learn from the stats, we're not alone.

[33:06] *Cassy Price*: Yeah, absolutely. And it's a topic that people don't always want to talk about. It seems a bit uncomfortable, so I think shedding light on it helps to normalize and make it something that people aren't shying away from.

[33:20] *Dr. Laura H. Brown*: Right. Who knew about the poo?

[33:22] *Cassy Price*: Yeah. Exactly. Awesome. Thank you so much, Laura. This has been a pleasure.

*\* \* \* Outro Music \* \* \**

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