Build Your Resilient Gut
MICROBIOME & BEYOND

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Common GI Problems & Solutions:

Hypochlorhydria (Low Stomach Acid Production)

Video Transcript:

Okay, so the first condition is hypochlorhydria, right? So, hypo meaning that there is a [inaudible 00:04:01]. Okay, hypo meaning that there's a low or inadequate level of stomach acid. So this is as opposed to hyper, so low inadequate stomach acid, and the most common symptoms of this are bloating, gas, indigestion, heartburn. You've got nutrient deficiencies. You've got this feeling of overt fullness after a meal where you can't really digest the food and it feels like it's stuck there and it's sitting there like a big rock. You can start to get frequent burping that may be due to gas formation as a result of the food sitting in the stomach too long. If you remember earlier modules, we talked about transit time in different parts of the GI tract in the stomach. The transit time should be two to three hours, between two and three is ideal.

It can be as high as four for some individuals, but after about two hours, or two to three hours after you eat [inaudible 00:05:03] you feel like this food still in the stomach. So, if your stomach is still feeling heavy and full and certainly you're gassy or you're burping shortly after eating, then you may have some issues with the level of acidity and the level of HCl production in your stomach. Now, the HCl in the stomach is critically important, because it is a very important step in starting to break down some of the large macromolecules, especially protein. So protein, if you recall, are made up of

amino acids. So, if you think about amino acids as tiny little pearls and protein is a string of pearls, so that string of pearls with all the little amino acids also gets folded in secondary and tertiary folding structures. So proteins, there's really only 21 amino acids.

So, think about all the proteins in the world, including the hundreds and thousands of different proteins in your body all have to be made up from the same 21 building blocks. So, the way you get differentiation is the [inaudible 00:06:06] of [inaudible 00:06:09] and how they're folded. So, proteins differ in their sequence of amino acids in the types of amino acids, the types of little pearls, and then how they're folded in the secondary and tertiary folding structures. So proteins are very, very complexly folded. So, in order for you to actually gain any benefit from the protein, you have to be able to unfold the tertiary folding, then unfold a secondary folding, and then start chopping up those amino acids into individual pearls, right?

So, imagine you've got a twisted, knotted up strand of pearls that's been sitting in a bag or drawer for a long time. You have to start unraveling that slowly and then going through and cutting out each individual pearl. That's the job that your stomach and your intestines are trying to do with protein. The stomach is so important, because protein digestion has two components to it. One is the acid itself starts to break down the type of bonds that keep the [inaudible 00:07:09] folded.

You have this long strain of amino acids. They start folding up in all these different directions. There are these weak hydrogen bonds and what we call Van der Waal forces that are keeping the protein folded together. They're like little bridges in between strands of proteins to keep them folded in a particular conformation. Now, heat can unfold the protein, and so part of it is your stomach is warm, your body temperature is 98.6 degrees. That'll start unfolding some of those bonds and the protein, but the acid also cuts those up. And so, now you'll get this unfolding of the protein that happens in the stomach, and your stomach does this action that we call stomaching, which is this

movement and jiggling around. And then of course, if you walk afterwards or you have movement afterwards, it's a good mixing around of the stomach acid and the digestive juices with the protein, it starts to break those bonds up, so then the protein becomes one long strand.

Now, to go from a strand to individual amino acids, you need enzymes, and the enzymes are all acid based, so they're acid hydrolyzing enzymes, meaning they like a low pH, and then the acids can activate the enzymes. Some of those enzymes are actually secreted into the system, into the intestines, or the stomach in an inactive form, and they get activated by the presence of stomach acid, and then they also are utilized water. This is another reason important to be well hydrated, because they use water as a mechanism for activating the enzyme and starting to cut down the protein. So stomach acid, if it's inadequate, you really can't digest your food very well, especially proteins which are really hard to break down to begin with. So, you can easily end up being malnourished even though you're eating adequate amounts, because you're not breaking down and assimilating those nutrients properly.

Now, the release of stomach acid is also one of the early sequences in a series of events that we had talked about in previous modules that will then stimulate the pancreas and the gallbladder to start releasing things like bile and enzymes, so that the intestines are now ready to receive food that's coming from the stomach. So remember, as you start to eat food or even smell food, there's a sequence of events that has to occur. This is why we talked about just the smell and the look and the taste of food starts causing salivation. The salivation and the chewing action starts to activate hydrochloric acid, that hydrochloric acid starts to activate pancreatic enzymes and bile, and then all of that starts to activate the peristalsis movement. So, there's a sequence of events. If stomach acid is inadequate, it compromises further digestion down the road. Of course, if you don't have adequate stomach acid, you've got an inadequate or dysfunctional pH in the stomach, which is a big problem, because you want the stomach to have a very low pH for a couple reasons.

Number one, it is called the gastric barrier, because as a barrier, it is supposed to kill

the vast majority of microbes that are coming in through food. It's a line of defense, and it's important because not only does it kill the microbes, so that the microbes don't potentially cause a problem in your GI tract, it's also really important to break up those microbes. This is the process by which stomach acid kills them. It basically chops up the microbes' structures, so the microbes get chopped up into debris, and that microbial debris is what's going through your intestines. What's important about that is that debris shows the immune system what are some of the key structural elements of the microbes in the environment. So, your immune system can start to recognize those microbes by those structural elements. So, the microbial debris that comes through as a result of acid chopping up the microbes in the stomach is a very important way of inoculating and training and prepping the immune system to be prepared for what's in the environment.

This is part of how you adapt to the environment that you're in, right? This is why if you go to Mexico tomorrow and you don't live in Mexico, you've never lived in Mexico, and you drink the drinking water, you eat some street food, why you would get absolutely sick and get Montezuma's revenge and feel like you're going to die, and yet a local person can eat or drink the same thing and not get sick is because they have continuous exposure to those microbes. Their stomach acid chops it up, and then those components of those microbes are shown continuously to their immune system, so their immune system is continuously prepared to look for an overgrowing or overrepresentation of those microbes in the system.

So, even if they get a big dose of those contaminating microbes from eating something or drinking something, their immune system's already prepared for it, versus your system has not seen those, your immune system is not prepared for it, it doesn't have the right antibodies, it doesn't have the right mechanisms in place. So those microbes, the ones that make it through, and it only takes a small percentage of them to make it through the stomach acid can actually get in and start infecting you without your immune system being able to adjust to it. Was there something, Mike?

No? Okay, and then of course you've got all kinds of impaired nutrient absorption as a

result of low stomach acid and a potential overgrowth of microbes or bacteria in the system as well. What are the root causes of stomach acid low HCl? Stress. Stress is one of the most common root causes. So, remember people used to always say stress causes ulcers, and it does, but it's not typically for the reason that people think, right? So, the thinking was that stress somehow causes ulcers, because the stress itself is going to create some sort of erosion of the lining of the stomach. That's not... The reason why stress can create ulcers is because stress reduces HCl production, reduced HCl production makes your stomach more susceptible to H. pylori infection, H. pylori infection thereby causes stomach ulcers. So, that's the process by which that can happen.

So, you really want to manage stress. This is why stress is one of the key components of the five pillars, right? Stress can cause all kinds of problems. We talked about how impactful stress is in the leaky gut module, but stress can also disrupt your digestion from one of the very first steps of digestion itself, and then poor meal hygiene, so not preparing your system properly, like we talked about earlier, not sitting down, not being calm, not giving adequate amount of time for realization and kind of absorbing the idea of eating, letting your system kind of start to prepare or eating on the go, eating on the move, being stressed while you're eating, watching something stressful while you're eating, not chewing your food enough. All of those things have an impact on HCl production. With age, HCl production does naturally go down, like with everything else in the body.

As you age, your body doesn't do it as well as it used to. That includes the production of HCl. So as you age, if you find that your system is getting more bloated, more uncomfortable, the stools are worsening, you're nutrient deficient by testing, even though you seem to be eating adequate amounts, you may want to look at what your HCl levels are. H. pylori infection, as I mentioned that, and then chronic antacid and PPI use. PPIs, which are proton pump inhibitors, so these are like your Prilosecs and things like that, those are now over the counter. People can just buy it without a prescription and PPIs inhibit stomach acid production, and that's a huge issue. This is

why there's a lot of recognized risks for PPIs or the use of PPIs, including things like heart disease, or PPI induced SIBO, small intestinal bacterial overgrowth. I'll talk about why SIBO is so affected by stomach acid later on. We'll end the session today with SIBO, but PPI use is a huge issue.

One of the independent risks for PPI use now is heart disease. It dramatically increases the risk of heart disease. Why is that? Because it disrupts digestion, allows overgrowth, causes leakiness in the gut, malnutrition, inflammation because of low tolerance, all kinds of things, all kinds of cascading effects just by inhibiting stomach acid. And then nutrient deficiencies, things like zinc, magnesium, those are important in forming HCl. Low sodium, sodium is also really important. This is hydrochloric acid. So, our chloride comes from sodium chloride, so we don't have enough sodium, we may have an issue with the availability of chloride. Low protein diet, so protein is one of those things that stimulates even more gastric secretions and HCl. So, if you go on a very low protein diet, your body's not secreting enough HCl, and it may get stuck in this mode of not secreting enough HCl, and then dehydration.

Everything in the body is an aqueous system for the most part, and so you need water as a foundation for all of these acids and so on. So, those are some of the big drivers of it. And then here's some solutions to support it, and keep in mind, these are, again, not treatments. I don't want you to think about this as a way of us providing you medical advice or treatments, but these are the things that you can do to support the system in order for your HCl and other things and your stomach to function better. So number one, with lifestyle, good meal hygiene, right? Do not overlook that. I know it just sounds like one of those things you just say, but it's not something that is unimportant at all. It's equally important to other things you would do, because remember, humans had a big process during the course of evolution before eating, right?

Food was not readily available. There was always some prep, some work that went into it. In fact, hunger was the motivation to go out and eat. Humans didn't generally eat after they were still full or they didn't have the impetus to go out and put in the work

and the risk of getting food when they were not hungry, but hunger is that evolutionary signal to motivate you to go out and find food. So, now you're thinking about food, you're looking for food, you find some. Let's say it's an animal that you capture or you're starting to gather fruits and seeds and nuts and all that, the humans wouldn't necessarily eat them right there where they gather them. They would bring them back to a safer spot, because all animals, all mammals, and animals in general are very vulnerable when they're eating. So, humans are smart enough to bring them back to the safety of caves, huts, wherever they were living, and then sit down and actually eat food together with other community members.

So, that process has this time built into it from an evolutionary standpoint to prep your system for digestion. Digestion requires a lot of energy from your system, so your system has to get prepped. If you're just doing lots of work and you're busy and you're hungry and your system's been telling you to eat for a while and you just have ignored it, because you're really busy, and then you're like, "Ah, I'm just going to go and grab a bar quick and start eating that while I'm working," that has no meal hygiene prep around it at all, and your system probably won't handle that food the same way that it should with adequate meal prep, right? So keep that in mind, that's a really, really important thing. We'll be emphasizing that again and again and again, and at the risk of sounding redundant, I want to make sure that these things are not ignored, because they are all a very important part of a comprehensive approach to improving your health.

Diet-wise, you want to of course, avoid highly processed foods. You want to eat adequate protein for your body type, your body size. That can be anywhere from 0.5 grams per kilogram of body weight, all the way to 1.5 grams per kilogram of body weight. It really depends on how old you are, how active you are, how much weightlifting you're doing, what the conditions and stresses you're putting your body under, but I would say look at least at 0.5 grams per kilogram of body weight. So if you're 100 pounds, you're probably somewhere around 50 kilograms, give or take. It's 2.2 pounds per kilogram, so you want to get at least 25 grams of protein in there. I

would say that that's the base for the typical person. Most people probably need to be a little bit higher.

Excuse me. And so adequate protein, nutrient dense whole foods, that's a challenge the body needs in order to process it. So, getting good nutrient dense food in the system is what the system is designed to handle, and that's a stimulus, an important stimulus to the system itself. Fermented beverages can be very beneficial for low HCl. There was a question there in the chat I saw while everyone was coming in, "What can I do to increase my HCl?" So the good meal hygiene is one, reduce stress, make sure that you are not stressed when you're eating, and you're in a more relaxed state when you start eating. You want to increase protein intake, but increase it slowly, so your system adapts to it, and then you want to look at things like fermented beverages. So, at the risk of recommending something that may not be beneficial to people overall, but one of the benefits of actually drinking wine with your dinner is that wine is a fermented beverage.

Beer has data on this as well that can actually increase HCl production, not encouraging anyone to drink, or say you should, but that's one of the reasons why you can have an aperitif-like drink. Those upregulate HCl production. Now, you could probably get the same from drinking like a true fermented kombucha or a kefir or something else that's fermented, but fermented beverages tend to increase HCl production. Buckwheat flour does as well, and then polyphenols, so foods that are very rich in polyphenols. It may seem odd to start your meal with an array of berries and things like that, but you could. If you have low HCl, you could absolutely do that as a way of stimulating more hydrochloric acid. Then, there's a supplement perspective, **HCL Guard** is a product that works well that has all the right ingredients in it, including hydrochloric acid, which is a supplemental form of it that really helps, and then digestive bitters.

Bitters are really important, so bitters, you can get it from food, of course, you can eat food that are bitters, like bitter melon, and a number of other things. If you just Google foods that are high in digestive bitters, you'll find a number of foods. You can eat those

as your aperitif as well before you start your meal, but there are some companies that make bitters as a supplement. There are a number of bitters that are in a liquid drop. That can help, because if you do a liquid drop of bitters into your mouth, you'll bind a lot of the bitter receptors in the mouth and in the upper part of the stomach. When the bitters bind those bitter receptors, they actually cause the release of more digestive juices, enzymes, and HCl as well. So, that's something to keep in mind that you can do as well.