

## **Day Ten: Stress and your Gut**

One the biggest threats to a healthy brain is stress.

We know it affects memory and emotions by reducing activity in the hippocampus or 'memory center' of the brain while increasing the 'fear center', called the amygdala. When this happens, stress hormones (like cortisol) halt the production of new brain cells, which leads to early onset of dementia.

Stress also reduces the production of serotonin and dopamine in the brain. Serotonin deficiency can lead to depression, anxiety, alcoholism, and ADHD while too little dopamine can lead to lethargy, decreased memory recall, anxiety, brain fog, lack of motivation, depression, and ADHD.

Chronic stress also shrinks your brain. The prefrontal cortex, which controls decision-making, working memory, and control of impulsive behavior, shrinks with long term stress. The hippocampus also shrinks with chronic stress which affects learning, memory, and emotional regulation.

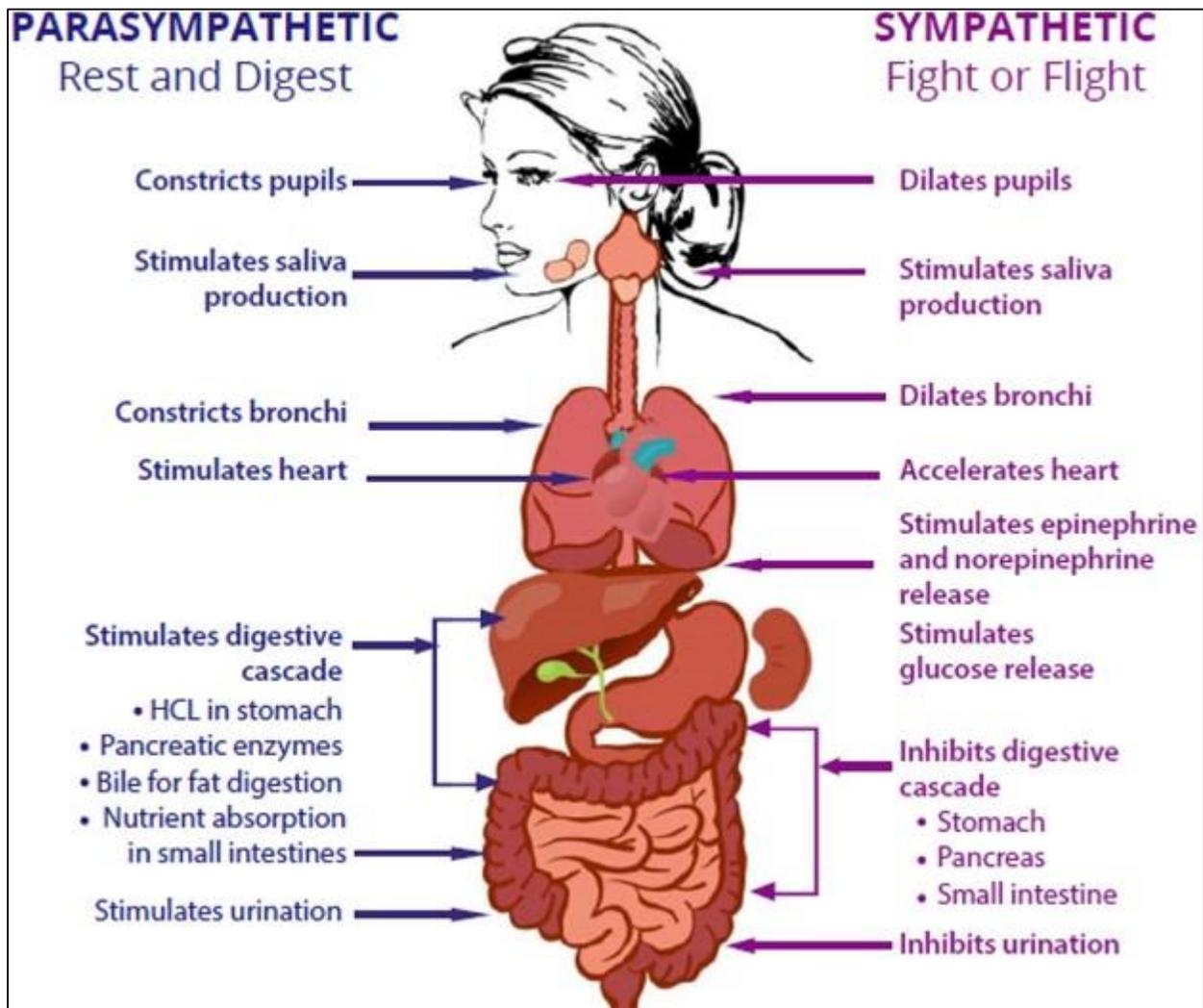
We've talked now about the ways different foods, lack of sleep and even lack of exercise can put negative pressure on the health of our gut. But stress and anxiety can create more problems than almost anything else for the gut. In fact, stress contributes to inflammation, leaky gut, and mental illnesses including anxiety and depression.

### **How Stress Impacts the Gut**

The GI system houses the enteric nervous system (ENS), which is a collection of neurons and glial cells that's sometimes called the "small brain" of the gut. It consists of nerve networks that run from your esophagus to your anus and connect directly into the entire digestive system.

We talked about the vagus nerve in an earlier lesson, so you know it also runs from the brain to the gut, but while the vagus nerve carries neuronal messages, the enteric nervous system regulates the secretion of hormones. The ENS operates independently of the vagus nerve, but like the vagus nerve, the messages between the gut and brain carried along the ENS are also bidirectional.

Irritation in the gastrointestinal system sends signals to the brain via the central nervous system (CNS) that triggers mood changes, while mood changes send signals from the brain to the gut. When you're stressed, this gut-brain axis carries high-alert stress signals from the brain to the gut. Your nervous system is in the sympathetic state.



Your brain releases stress hormones for which the GI tract has loads of receptors and in return, the gut produces its own set of hormones. That means stress can alter the balance in all of these hormones, leading to digestive issues as well as brain fog and mood disorders.

The microbiome also plays a role in the stress-gut connection. Some research suggests that stress alters the bacteria in the gut microbiome, and that's what some people believe give us that sensation of "butterflies" in the stomach.

## We Respond Differently

We all respond to stress differently, and we all have different GI symptoms. The severity and symptoms are linked to many factors: hormones, receptors, genetics, metabolism, and your microbiome. Even your anatomy—and whether you've had abdominal surgery like C- sections or gallbladder surgery—can affect the GI symptoms you experience.

How the gut microbiome reacts to stress is also unique for everyone. As we discussed before, your personal microbiome has to do with many complex factors, including where you were raised and your diet or even if you've taken a lot of antibiotics. The bacterial species and content and the types of different bacteria when they are involved in digestion and fermentation of foods can produce different symptoms of stress.

Chronic stress is also connected to SIBO (small intestine bacterial overgrowth) and leaky gut, which manifests in brain fog, anxiety, depression, skin issues and much more.

## What are the long-term impacts of a stressed gut?

The effects on your mental and brain health are astronomical. A stressed gut can lead to leaky gut which leads to leaky brain. But that's just a part of it. These changes in the gut can also change the neurotransmitters in your brain, leading to memory issues, brain fog, inability to concentrate, anxiety, depression, and many other serious issues.

So, you can see how incredibly important it is to get stress under control.

### How to Manage Stress for a Healthier Gut

Much of our stress has to do with our thoughts. We're not really in physical danger much anymore; most of the stress we have is a result of negative thoughts that we create in response to situations, past, present, or future. To help you get those negative thoughts under control, I'll share a special technique in the video for today.



Mindfulness techniques are also useful in helping to manage stress. Having an attitude of acceptance, being solution-oriented and adaptable helps reduce the impact of stress on the gut by helping you to regulate your emotions and control your reactions.

Learn and use diaphragmatic breathing techniques as well. Slow, deep breathing activates the parasympathetic nervous system, which reduces your cortisol levels and puts your gut into rest and digest mode.

[HERE](#) is a link to a tense and relax meditation that I created to help you focus on the breath and on your body so that you can become more mindful of how it reacts to tension and how much better it feels when you relax.

Practice gratitude on a daily basis. We addressed this quite a bit in Day 5, and it is one of the best things you can do to improve your gut and brain health. If every day you focus on even the smallest thing that gives you delight, you will see over time that your attitude toward many things stressful will change.

### **Diet**

We've already talked about the importance of adjusting your diet for a healthier microbiome, and that will go a long way toward helping you improve how you handle stress. Probiotics, fermented foods, less sugar and refined carbohydrates are all important steps toward improving mood and the ability to handle stress.

Also, listen to your body after you eat. If you notice your mood changes to the negative after eating something, cut out that food.

### **Exercise**

Literally hundreds of studies have shown that regular exercise is one of the most powerful ways to reduce stress. A brisk walk, a good swim, dancing – all of these help your body produce endorphins and serotonin and are proven as effective as most antidepressants in many cases. Get moving!

### **Your Journal**

Making note of your reactions to all of these stress-reduction techniques is highly beneficial for creating a system that works for you. This is one of the many reasons for keeping a journal!

### **Don't Avoid Dealing with Stress**

If stress or anxiety is really getting to you, talking to a pro can help both your mental and gut health as can meditation, yoga, and cognitive behavioral therapy (CBT).

### **Do not let stress go on unchecked. It is a killer.**

Be especially mindful if you are having red flag GI symptoms that could signal a more serious disorder like Crohn's or ulcerative colitis. Those include rectal bleeding, a sudden dramatic consistent change in bowel habits, unintentional weight loss, and sudden dramatic abdominal pain. If you're experiencing these symptoms, be sure to check in with your doctor ASAP.