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## **The Brain Inside our Gut**

*“Ninety percent of what we lug around with us is not human. It's microbial, and it's vital to our health, our moods, even the decisions we make.” - Psychology Today*

It was a little over a year ago that I remember my body changing significantly, shortly after my grandpa had died whom I was extremely close with. I began experiencing terrible bloating on a daily basis, weight gain, mood swings, extreme gassiness, and sugar cravings so intense it made me feel like an addict. Although all these symptoms had never been a stranger to me before, especially around that special time of the month, they seemed to have been magnified times 100. It began interfering with my ability to function on a daily basis, and I soon become depressed, angry and irritable, which only worsened the symptoms and spiked my cravings for sugar and carbs even more.

My weight had always fluctuated five to ten pounds here and there, but I was not doing anything much differently than I had before. If anything, I was eating more healthily than I ever had, and found it ironic that I began experiencing these symptoms shortly after or around the same time as when I became an exclusive Whole Foods shopper. I am still uncertain as to how and why it started, but one of my best theories is that the antibiotics I had been prescribed months ago for an infected mosquito bite (multiple times in one summer) might have caused this by eliminating too many beneficial bacteria.

The causes of *Candida albicans*, a yeast-like fungus that grows in the intestines, and other gastrointestinal issues can be for various reasons and severity of symptoms can vary depending on the individual. One of the main culprits that leads to an unhealthy imbalance of beneficial bacteria is sugar in its many forms that permeate the standard American diet such as: processed foods, white breads, candy, cookies, and other refined carbs. This may happen if one frequently uses antibiotics or overeats sugar or other simple carbs, as this can facilitate yeast overgrowth.

The other culprit that causes Candida overgrowth is the use of antibiotics, as they not only kill the bad bacteria but the beneficial flora as well; the “good” bugs are killed by the antibiotics while the “bad” bugs are fueled by extra sugar and refined carbohydrates. This can cause our delicate ecosystem to be thrown off and the bad bugs to take over the intestinal tract, which can result in many chronic illnesses and symptoms including allergies, chronic inflammation, joint problems, mood and brain disorders, digestive symptoms and other physiological ailments. Some general symptoms indicative of yeast overgrowth are chronic fatigue, loss of energy, poor concentration, decreased libido, irritability, and apathy. Gastrointestinal symptoms may include bloating, gas, anal itching, constipation or diarrhea; while urinary symptoms show up as yeast infections, frequent bladder infections, and irritable bladder. Other symptoms may present in the form of menstrual irregularities such as painful cramps and excessive bleeding, depression, thyroid dysfunction, toenail fungus, food sensitivities, and weakened immune function (getting sick often). Other factors that can interfere with healthy gut bacterial balance are environmental factors such as pollution, agricultural chemicals, antibacterial soap, and chlorinated water.

Today, the vast majority of Americans suffer from some form of food intolerance or food allergy, yet they are seldom diagnosed in the United States today. According to researchers at Harvard University, obesity is a factor in 19% of all cases of heart disease and annual health costs estimated at \$30 billion; it's also a factor in 57% of diabetes cases, with health costs over \$9 billion per year. Food allergies are one of the main reasons why so many Americans are overweight yet fail to lose weight through fad diets, counting calories, and diet pills. Ironically, one oftentimes craves the foods they are most allergic to-- a result of the weakened immune system no longer being able to distinguish between harmful or harmless substances. Food allergies can lead to weight gain by slowing the metabolism, cause the body to overproduce insulin, and is the root cause of food addiction-- and the correlated problems of bingeing, bloating, and cravings that follow.

Having a significant gut bacterial imbalance can cause so much damage to one's entire physiological makeup; 80% of the immune system and 90% of serotonin is located in the digestive tract. Probiotics are the number one defense against all diseases, as they also play a vital role in assisting numerous bodily functions, such as proper development and functioning of immune system, digesting and absorption of nutrients, producing vitamins, absorbing minerals, eliminating toxins, and preventing allergies. A weakened immune system eventually leads to Leaky Gut Syndrome, an intestinal illness associated with inflammatory bowel diseases like Crohn's and Ulcerative Colitis, as well as Celiac disease. Leaky Gut causes the intestinal lining to break down, and creates tiny fissures that allow partially digested food particles to seep out of the intestines and into the bloodstream, which later cause food allergies. The immune system then reacts to the

partially digested food particles as if they were toxic substances leaking out into the bloodstream, thus creating trauma and increased inflammatory response within the body. Ironically, the “adaption” process in which the body begins to crave what it cannot digest, and usually, in spite of oneself, consumed in larger amounts so the body can avoid the withdrawal effects. If the food allergy, which most likely turns into an addiction, is not treated properly, it can lead to more serious illnesses. In addition, food allergies can also be the result of a monotonous and repetitive diet, which is why there are many health claims to eat a wide variety of foods.

The key to healing and sealing the leaky gut is to first eliminate possible allergen foods, particularly grains, processed foods and carbohydrates. It is also recommended to eliminate the most susceptible allergen foods, such: wheat, corn, eggs, chocolate, sugar, yeast, soybeans, shellfish, tomatoes, nuts, and coffee for at least two weeks. Slowly, one should reintroduce one food at a time to note any changes or return of symptoms. If one experiences any symptoms such as headaches, fatigue, irritability, or intense food cravings in this process, there is usually an allergy underlying it. As increasing number of people become aware of the toxicity of foods, many are trying elimination diets (such as Paleolithic Diet), and using probiotics to heal not just their body, but also their mind. Fermented foods such as kefir, certain yogurts, Kamboucha (a fermented tea), kimche, sauerkraut, and apple cider vinegar contain beneficial bacteria and “live active cultures” that decrease bacterial inflammation and help seal a leaky gut.

Today, 20% of all Americans are taking some type of psychotropic medication, which totals more than 34 billion dollars per year. However, the new and improved antidepressant that has recently gained much popularity are referred to as *Psychobiotics*--

live organisms that, if taken in adequate amounts, produce physiological health benefits from patients suffering from various psychiatric disorders. Recent research strongly indicates that probiotics and intestinal health are just as important, additionally, to one's overall psychological health. The brain in our gut is often referred to as our second brain, as it contains over 100 million neurons embedded in the intestinal wall. Our "second brain" also has a higher concentration of serotonin than the one in our skull, hence why eating (or avoiding) certain foods are often more successful in treating depression than prescription drugs such as Prozac.

One probiotic in particular, *Lactobacillus rhamnosus*, is known to significantly lower cortisol production and promote feelings of peace and well-being. Recent findings have found that manipulating the balance between good and bad intestinal bacteria in an animal's gut can alter its neurochemistry and cause behavioral changes such as boldness or anxiety, and holds true for humans as well. Psychobiotics work by stimulating cells in the gut that carry the ability to signal the vagus nerve, and the vagus nerve then relays the message to the brain that good chemicals were there. Psychobiotics seem to be the simple answer to many, if not most, of the convoluted and complicated health issues that the vast majority of Americans battle on a daily basis.

I know first-hand about the benefits of Probiotics, as I have dutifully made them a part of my daily routine for the past year now. In addition, I also avoid foods that I am intolerant to, such as wheat, soy, and dairy. My overall physiological symptoms have improved, but I still struggle with a sugar addiction. However, probiotics help me manage my food allergies and addictions better, as I have less cravings and am not so bloated and gassy all the time. In addition to healing my leaky gut after three months of taking

probiotics and consuming at least one fermented food daily, I also found myself to be calmer and not fall victim to depression as easily. I hope to one day inspire and help others who have been in my situation to do the same thing, as we truly are we do and do not eat!

#### REFERENCES:

<http://www.apa.org/monitor/2012/09/gut-feeling.aspx>

<http://articles.mercola.com/sites/articles/archive/2010/07/06/probiotics-bacteria-gut-digestive-health-immune-system.aspx>

<http://articles.mercola.com/sites/articles/archive/2013/07/25/probiotics-new-prozac.aspx>

<https://www.psychologytoday.com/articles/201404/natures-bounty-the-psychobiotic-revolution>

<http://commonhealth.wbur.org/2013/11/psychobiotics-stomach-bacteria-change-your-brain>