

“You Are What Your Microbiota Eats”

We've always heard the phrase, "You are what you eat." And it usually follows a conversation about needing to lose weight. In retrospect, it makes sense. You eat healthy foods then you're healthy and if you eat unhealthy foods, you suffer the consequences and are considered to be unhealthy. Well, I've recently decided I wanted to change who I am, in the sense of this phrase, by changing what I eat. I invested in a book called, "*The Lose Your Belly Diet: Change Your Gut, Change Your Life*" written by Travis Stork, M.D. I admit I bought this after seeing an ad about it and because I recognized the Dr. from the show, *The Doctors*. Regardless, when I actually sat down to read the book I was very impressed with the amount of detail about the microbiome, and it makes you really wonder that maybe instead of being what you eat, "You are what your microbiota eats".

We have up to about 100 trillion microbes in our gut, and we wouldn't be able to survive without them. Many scientists refer to them as a " 'forgotten human organ' that is as important as our heart, lungs, or liver." (Stork pg.17). We don't know everything about them, but what we do know is, "like every other community of living things, gut microbes do their jobs most effectively when they are residing in an environment that supports and protects them." (Stork Pg.11). We have many species of microbes in our guts, but the most prevalent one is bacteria in which we have "up to 1,000 different species...Most of these microbes live in your large intestine, but they're also found throughout your digestive system." (Stork pg.12). Our community of gut bacteria is unique from one person to another. They vary from family to family, and by geography as well, but members of one family have gut communities that are more similar than

those of their neighbors. “Many factors contribute to this, including genetics, hygiene, diet, and more.” (Stork pg.12). Determining if our microbiome is healthy has two main considerations, the *total* number of bacteria and the number of *different species*. Scientists have noticed that unhealthy people have fewer species of microbes vs. healthier people. “Based on what we know so far, the microbes in your gut benefit from a healthy diet, exposure to people, animals, and plants...and being fed with breastmilk...There’s even evidence that exercise helps our Little Buddies [microbiome], too.” (Stork, Pg.14).

This next excerpt from the book really seems to support the theory that we are what our microbiota eats. After all, our human cell to microbe ratio is 1:10. That means for every human cell there are 10 microbes; that’s a lot. “ Eating a healthy diet is one of the best ways that we can support our gut bacteria. That means choosing more of the foods that help our Little Buddies thrive- especially the dietary fiber found in fruits, vegetables, whole grains, nuts, seeds, and legumes- choosing fewer refined foods, sugars, processed meats, and other foods that we know are not very good for our health and that seem to be detrimental to our gut microbes, too. In particular, when we don't feed our gut bacteria the high-fiber food they need, they can starve, die off, or be overtaken by less beneficial bacteria. Or they may feed on the mucous membranes that line our intestines... which can lead to inflammation and other health problems.” (Stork Pg.14) As we know, the way we eat in this “Western lifestyle” is very harmful. Not just to our bodies, but to our microbiota as well. “ Our microbiome has changed significantly over the past century, and especially over the past 50 years...We’re losing microbes

with each generation; they are going extinct. These changes have consequences... dramatically increasing rates of allergic diseases...and other health problems that are much more common today than in past decades. (Stork Pg.15).

Our gut microbes play part in multiple functions. Digestion is one. We know that they release certain enzymes, so it makes sense that they assist in this. In some cases, such as when we eat “heavy-duty dietary fiber”, our gut bacteria digest it for us. (Stork pg.18) When our gut bacteria isn’t optimal, it affects our digestion such as absorption. It also increases our risk for diseases especially since this gives bad bacteria an opportunity to invade. Next, they play a role in making vitamins! “Most of the vitamins we need come to us through food. But, several vitamins that we know of-...B12, thiamine, riboflavin, and...K...-are manufactured by bacteria...The belief is that bacteria need these vitamins, so they make certain types on their own using raw materials in our bodies” (Stork Pg.19).

Researchers are now discovering “that gut bacteria also seem to play a role in the complex process of weight loss and weight gain.” This research “has shown enough promise that it’s definitely worthwhile ...to get serious about protecting, supporting, and increasing beneficial gut bacteria...Researchers have found a bunch of different connections...As I mentioned earlier, healthy adults tend to have a greater diversity of beneficial bacteria species in their guts than less-healthy adults. It also seems that lean people have more gut diversity than obese people. Think of the guts a box of crayons: in lean people, you see every color of the rainbow, and in obese people, you might see just a small number of reds, blues, and greens. This doesn't mean that having a lack of

diversity in gut bacteria *causes* obesity. It's also possible that gaining excess weight puts extra strain on our gut bacteria, or that the kind of diet associated with obesity doesn't adequately nourish them... researchers comparing the microbes in the guts of more than 1,000 volunteers found that having an abundance of a type of gut bacteria known as *Christensenellaceae* is linked with being lean, and having less is associated with obesity...it does suggest the possibility that having (or not having) certain bacterial strains or species could contribute to obesity. And it also suggests that certain bacteria may offer protection from obesity" (Stork Pg 24-25). The phrase "You are what you eat" is always associated with whether or not you eat/are healthy. This excerpt from the book supports the statement that not only are we what we eat, we're also what our microbiota eat. I will elaborate, but first I must mention one last thing.

Our food has a direct link to determining the composition of our microbiota. With that in mind, wouldn't that mean if we change what we eat we also change the composition of our microbiota? That's exactly what it means. "To figure out exactly how fast diet changes could impact The bacteria profile in people's guts, Duke University researcher Lawrence A. David and his colleagues conducted a fascinating study. The researchers knew that previous research in mice had shown that the animal's personal microbiome could be altered quickly. For these laboratory mice, switching from a high-fat, high-sugar 'Western diet' (like the diet eaten by so many Americans) to a lower-fat, higher-fiber diet resulted in changes to the animals' gut microbes within just one day. One single day! But would the same be true for humans?" (Stork Pg.38). They conducted a study on humans and the "analysis showed both of the diets- the really

high-fiber diet and the fiber-free diet- each began having an impact on the volunteer's gut bacteria within three or four days. Not only did the scientists see changes in the abundance of bacteria in the high-fiber group, but they also saw changes in genetic activity in some of the bacteria in the volunteer's guts. And they found that volunteers who ate the fiber-free diet had higher levels of a type of bacteria that is associated with the development of inflammatory bowel disease. These results demonstrate that the gut microbiome can rapidly respond to altered diet." (Stork Pgs. 38-39)

In conclusion, our microbiota needs to eat in order to survive. If we starve it, and ourselves for that matter, both it and us will get sick and either illness will strike or we will die. When our microbiota starts to die off, it's no longer there to fight off bad bacteria which is also disease-causing bacteria. Therefore, again, we get ill and in some cases...die. But, if we give our microbiota what it needs it will thrive, survive, and keep us alive. It will even throw us a couple of freebies such as vitamin production and digesting fiber for us. We have a symbiotic relationship with bacteria, we both help each other out. Because of that, we are not whole without each other. Our microbiota is a part of us just like our organs are and we will die if they are removed. Therefore, we are what we eat which is what our microbiota eats because what we eat will determine what our microbiota is. Therefore, it is best to eat a high-fiber low-fat diet to give our bodies and microbiota the best chance of survival and optimal health.

Reference:

Stork, Travis. *The Lose Your Belly Diet: Change Your Gut, Change Your Life*. Ghost Mountain Books, Inc., 2016.