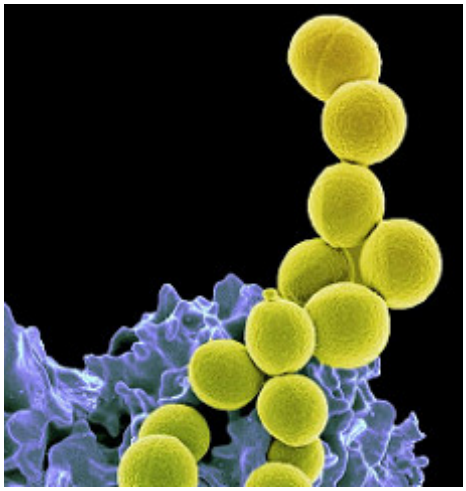
Can You Lose Weight and End Obesity by Managing Your Gut Microbiome?

Your gut microbiome consists of billions of organisms from many thousands of species. Your gut biome consists of about three pounds of tiny single-celled microbes living in your gut which have a profound effect on your health.

These gut microbes can be grouped by phylum into firmicutes, bacteroidetes, actinobacteria and proteobacteria, fusobacteria and verrucomicrobia. The population ratios of these organisms are determined by our exposure to the environment. And, the diversity of bacterial species and the ratios of these organisms can determine your health are associated with various negative bodily conditions, including obesity.

Your body is covered with microbes from the outside on your skin into your mouth and all along your gastrointestinal tract. About 700 bacterial species may live in your oral cavity alone. Some of the factors that determine the makeup of your body's microbiome are:



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- Gestational age
- Vaginal or caesarian delivery
- Breast or formula fed
- Age when you first ate solid food
- Infant hospitalizations
- Malnutrition
- Antibiotic treatments
- Foods you consume
- Hormonal cycles
- Travel & exposure to "foreign" microbes
- Therapies
- Illness

- Lifestyle changes
- Nutrients you consume
- Susceptibility to infections and inflammatory diseases
- Drugs you take

It’s All in Your Gut

Perhaps it was Hippocrates (460–370 B.C.) who first told his students that “All diseases begin in the gut.” But, today, numerous studies have been done to show a relationship between differences in gut microbiota (as either a cause or consequence) and various conditions such as obesity, irritable bowel syndrome, inflammatory bowel disease, Crohn’s disease, ulcerative colitis, colon cancer, diabetes, cardiovascular disease, stress and anxiety, food allergies, asthma, autism, hepatic encephalopathy, chronic fatigue, and eczema.

Stress, for example, is a concern for many of us living in a fast-paced society. A study of two probiotics, Lactobacillus helveticus and Bifidobacterium longum, showed that when these probiotics were introduced into the gut there was a reduction of anxiety in mice and a reduction in blood cortisol (the stress hormone) in humans.

Results obtained in both rodents and humans suggest that obesity is associated with an altered composition of microbiota. One key to obesity seen in some studies seems to be the ratio of firmicutes to bacteroidetes in the gut. A higher firmicutes/bacteroidetes ratio is associated with obesity while a lower ratio is associated with lean people.

How can you tell if a women is overweight? A study of 313 overweight women and 232 healthy individuals showed that the bacteria in saliva was a good indicator of being overweight. A single species of bacteria (*selenomonas noxia* in the phylum firmicutes), if its presence was greater than 1.05% of the total bacteria population, was an excellent predictor of being overweight. High levels of this bacteria were able to pick out 98.4% of the overweight women.

How do you get fat mice? In another study, human twins (one overweight and one normal weight) were used. Researchers used the gut bacteria from these twins and added them to mice. All the mice were fed an identical diet and at the same amount of food. But, the mice that received gut bacteria from the overweight twins got fat while the mice that received the gut bacteria from the normal weight twins did not.

How do you get fat cows? This is an important question if you raise cows for sale. The answer is you adjust the bacteria in cows using antibiotics. Antibiotics reduces the diversity of bacteria in the cow and leads to weight gain.

The problem for us humans is that when we eat the meat of animals that have been given antibiotics, some of those antibiotics are still in the meat. So, we too reduce the diversity of our gut biome and start gaining weight.

Rob Knight: How our microbes make us who we are

Rob Knight is a pioneer in studying human microbes, the community of tiny single-cell organisms living inside our bodies that have a huge — and largely unexplored — role in our health. “The three pounds of microbes that you carry around with you might be more important than every single gene you carry around in your genome,” he says. Find out why.

Read more about the Human Microbiome Project: American Gut mentioned in this video.

Manipulating Your Gut Biome

So, how do you manipulate your gut biome to stop looking like a fat person who gains weight and start looking like a slim person and lose weight?

Several methods of manipulating the gut biome are being investigated as a means of treating various conditions. Among these techniques are:

- Using prebiotic and probiotic agents
- Using antibiotics to induce dysbiosis (reducing gut biodiversity)

Of course, there are many probiotic products available today. The most important features of a probiotic supplement are the number of colony forming units (CFU) and the number of individual species. A good combination would be around 50 billion CFU and 15 species of live probiotic strains.

In addition to supplements, you can get good bacteria from fermented products like yogurt and kefir. Aged cheeses also contain live cultures. Also consider pickled veggies, kimchi, kombucha, sauerkraut, miso and tempeh.

Good bacteria thrive in your gut by digesting fiber. Prebiotics is simply a name for the nondigestible fiber that good bacteria love. Some specific fibers associated with prebiotics include inulin, oligofructose, galacto-oligosaccharides, and fructooligosaccharides.

These are pretty hard to remember. So, simply think of fruits and vegetables and whole grains. Start to love bananas, onions, garlic, leeks as well as asparagus, artichokes and soybeans. And, make sure wheat products you consume are made from whole wheat rather than refined flour.

Firmicutes thrive on fats and the fermentation of carbohydrates. So, reduce your fat and carbohydrate intake, including sugars, sweets, soda pop, breads, and pasta.

Keep your good gut bacteria healthy by avoiding antibiotics. This means keeping medical use of antibiotics to a minimum and avoiding meats in animals raised with antibiotics.

References

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