



Vol. 179 January 31, 2018

Are there bacteria make us fat or slim?

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There are intestinal bacteria that make us fat!

"I have a family history of genetic obesity."

"When I eat too much, I will surely get fat."

You may often hear something similar to these kind of conversations about the cause of obesity.

A surprising paper was published in the famous science magazine Nature in 2006 concerning "the discovery of intestinal bacteria related to obesity". In short, this means that there is a possibility that obesity can be prevented by controlling intestinal bacteria.

Good bacteria, such as lactic acid bacteria and bifidobacteria live in our intestines, but there are also microorganisms that are classified as bad bacteria including Escherichia coli and Clostridium residing there as well. When the intestinal bacteria is well balanced, they take important roles such as immunity. Once the number of bad bacteria grow, they may cause various diseases.

In the experiment introduced in the Nature, intestinal bacteria were classified into two groups (Bacteroides and Firmicutes) and the test subjects were monozygotic twin mice (a small mouse) and human twins. The reason for using twins is because researchers can eliminate the influence from genetic dissimilarity which makes the study very meaningful.

The researchers chose twin mice and human twins, one of which is obese and the other is thin as the test subjects. Obese mice tended to have many Firmicutes and fewer

Bacteroides. The human subjects showed the same tendency in which obese subjects are less likely have Bacteroides. Once obese subjects took on a dieting program with a dietary guidance for a year, the number of Bacteroides increased and the bacterial balances in their intestines became closer to those of lean people.

The obese mice have intestinal bacteria with a strong digestive capacity and ingest more calories. Even if people eat the same foods, you may often see that one gets fat and the other keeps thin no matter how much they eat. This is as a result of the specific intestinal bacteria affecting to fatness. An experiment was conducted to transfer the intestinal bacteria from obese mice to germ-free mice which do not have bacteria in their intestines. As a result of this experiment, the body fat percentage of the germ-free mice increased by 47% once the intestinal bacteria of obese mice were transplanted into them. On the other hand, when the intestinal bacteria of lean mice were transplanted, their body fat percentage increased by 27%. The people who practiced a trendy dieting program lost weight, but it was either regained soon or they became prone to gain weight. In such cases, the balance of their intestinal bacteria might have been lost due to an improper dieting method.

However, whether this ratio of Bacteroidis / Firmicutes applies to Japanese or not is unclear at the present time since the original balance of the intestinal bacteria is different between Americans and Japanese (there are many opinions that the ratio does not apply to Japanese).

The bacteria commonly found in thin people has also been revealed!

Contrary to the discovery of intestinal bacteria causing obesity, scientists have revealed the presence of bacteria commonly found in thin people.

According to a research posted in the Cell magazine in 2015, people who have many strains from the family Christensenellaceae are prone to have a thin body. Scientists believe that this type of bacteria can properly control appetite by the synthesis of short-chain fatty acids. In reality, when the scientists transplanted the gut microbiota which contains a large amount of the family Christensenaceae to mice, they showed a predisposition towards a thin body.

Butyrate, acetate and propionic acid are famous as short-chain fatty acids. Hormones that suppress appetite can be secreted when these short-chain fatty acids are produced in the intestine by intestinal bacteria. Based on another study with mice published in 2014, short-chain fatty acids from dietary fiber directly affected the hypothalamus of the brain making it regulate the desire for food. Furthermore, these short-chain fatty acids are known to increase energy consumption by stimulating the sympathetic nerve to increase its activity.

If you want to increase the activity of the bacteria that makes us thin and eventually obtain a thin body, you should ingest more things that become the nutrient source for these bacteria. We recommend to add more dietary fiber to your daily meals for those bacteria to be healthy and functional.