

Antibiotics Delete Gut Diversity

It can take six months to regain a normal microbiome after using antibiotics, and chances are good that not all of the microbes present before the antibiotics were administered will return. Researchers in Copenhagen conducted a small study (12 men) that examined gut diversity after a single course of antibiotics. They used 3 drugs considered antibiotics of last resort: meropenem, gentamicin, and vancomycin. While the gut microbes of the subjects recovered, 9 common species of gut bacteria could no longer be detected in their microbiome. Oluf Pedersen is the lead scientist of the study.

In this case, it is good that we can regenerate our gut microbiota which is important for our general health...The concern, however, relates to the potentially permanent loss of beneficial bacteria after multiple exposures to antibiotics during our lifetime."

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Only One

This is what happens after a single course of antibiotics. What happens in the U.S., where outpatient healthcare providers prescribed more than 266 million courses of antibiotics in 2014, a third of which the CDC says are unnecessary? The same year saw an average of 835 antibiotic prescriptions for every 1,000 people. People who suffer from recurrent urinary tract infections (UTI) or chronic respiratory infections are likely given multiple courses of antibiotics in a single year. If it takes six months to mostly recover from a single course of antibiotics, those who take multiple courses are losing their chance to have a

healthy, balanced microbiome.

It's common to see articles comparing the gut bacteria of indigenous tribes with that of your average American. The indigenous microbiome is always more diverse. M. Gloria Dominguez-Bello is a microbiologist at the New York University School of Medicine and one of the authors of a study of the Yanomami tribe, first visited by the modern world in 2009. While Dominguez-Bello mentions diet, she also notes the difference in antibiotic use. The 2009 visit to the Yanomami in the Amazon is the first time the tribe was exposed to antibiotics, which can have a serious effect on gut health. Domingues-Bello says,

Antibiotics kill bacteria in the gut, and sometimes species don't come back...This is especially true with children, whose microbiomes are in the process of getting assembled. Impacts on the microbiome at a young age can have long-lasting consequences."

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More and Different and Better

Is it possible to replenish your gut bacteria after a course of antibiotics? The answer is both yes and no. You can bring your microbes back, but they will no longer be the same. Each time the microbiome is mowed down and resurrected, diversity and the immune system's ability to adapt are reduced. Combine that news with the rise of antibiotic-resistant bacteria and you should want to be as far away from antibiotics as well. It pays to take a look at the other likely reason for indigenous peoples microbiome diversity: diet.

Sources:

- *Gut bacteria recover from antibiotics, but they may take*

six months – Ars Technica

- *Recovery of gut microbiota of healthy adults following antibiotic exposure – Nature Microbiology*
- *CDC: 1 in 3 antibiotic prescriptions unnecessary – CDC.gov*
- *How Modern Life Depletes Our Gut Microbes – NPR*