- Digestion

Soluble fiber reduces antibiotic resistance in digestive tract

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Healthy adults who eat a balanced diet rich in soluble fiber have lower levels of antibiotic-resistant bacteria in their digestive tracts, a study published Tuesday found.

Diets that include up to 10 grams, or just under half an ounce, per day of soluble fiber, which is found in foods such as beans, brussels sprouts and avocados, can reduce amounts of antibiotic-resistant bacteria in the stomach and intestines, data published Tuesday by mBio showed.

Bacteria resistant to commonly used antibiotics such as tetracycline and aminoglycoside can cause to untreatable infections, which can progress to serious illness and even death, the researchers said.

"The results lead directly to the idea that modifying the diet has the potential to be a new weapon in the fight against antimicrobial resistance," Danielle Lemay, study co-author, said in a press release.

"And we're not talking about eating some exotic diet, either, but a diverse diet, adequate in fiber, that some Americans already eat," said Lemay, a research molecular biologist with the Agriculture Research Service's Western Human Nutrition Research Center in Davis, Calif.

In the United States, 2.8 million antibiotic-resistant infections are reported each year, and 35,000 people die as a result, according to the Centers for Disease Control and Prevention.

In people, the development of antibiotic resistance most often occurs in the gut microbiome, the collection of bacteria in the digestive tract that helps the body process food, Lemay and her colleagues said.

Soluble fiber, as its name suggests, dissolves in water and is the main type of fiber found in grains, such as barley and oats, beans, seeds and nuts; and some fruits and vegetables, such as carrots, berries, artichokes, broccoli and winter squash, they said.

In this study with 290 adult participants, regularly eating a diet with higher levels of fiber and lower levels of protein, especially from beef and pork, resulted in lower levels of antibiotic resistance genes in gut microbes, the data showed.

Those with the lowest levels of antibiotic resistance genes in their gut microbiomes also had more bacteria that do not thrive when oxygen is present and are a hallmark of a healthy gut with low inflammation, the researchers said.

However, participants who had the highest levels of antibiotic resistance genes in their gut microbiomes had less diverse gut microbiomes, according to the researchers.

"Our diets provide food for gut microbes and this study suggests that what we eat might be a solution to reduce antimicrobial resistance by modifying the gut microbiome," Lemay said.

"We may want to eat from diverse sources of foods that tend to be higher in soluble fiber for maximum benefit," she said.