



Boonshoft School of Medicine researchers study how changes in diet affect intestine

By Heather Maurer
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Researchers from the [Department of Biochemistry and Molecular Biology](#) at the Wright State University Boonshoft School of Medicine and the Department of Nutrition and Food Science at the University of Granada School of Pharmacy in Granada, Spain, have shown how changes in diet can negatively affect human health.

Their research, "Dietary Fatty Acids Sustain the Growth of the Human Gut Microbiota," was published online in *Applied and Environmental Microbiology*, a journal of the American Society for Microbiology.

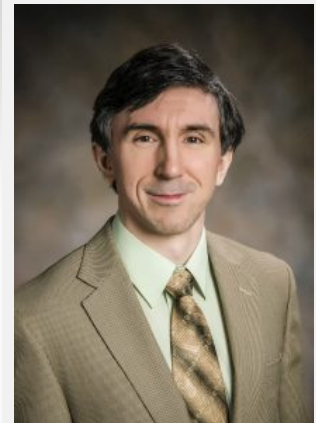
Oleg Paliy, Ph.D., associate professor of biochemistry and molecular biology at the Boonshoft School of Medicine, is the corresponding author of the study.

"Our intestine is not only an organ to digest foods we consume, but it also contains a large number of microbial cells. In fact, these gut microbes outnumber all cells in our bodies by at least a factor of 10," Paliy said. "Intestinal microbes bring about many dietary effects on human health. This happens because a significant proportion of dietary carbohydrates, proteins and fats escapes digestion in the small intestine, and reaches the colon, a section of the gut housing a dense population of microbes. There, most of these compounds are fermented by gut bacteria."

Through an experimental apparatus they created, called a human gut simulator, the researchers showed that human gut microbes can quickly adapt from a well-balanced diet to one composed of dietary fats. The human gut simulator was designed to mimic the environment of the human colon and allows researchers to study the effects of different diets on gut microbiota without stressing human subjects with extreme diets.

"The relative beneficial and harmful effects of the high-carb and high-fat diets are a subject of many studies and debates. For example, when gut microbes ferment complex carbohydrates, short chain fatty acids are produced," Paliy said. "These have many positive effects, including lowering the risk of colorectal cancer, regulating appetite and reducing inflammation in the body."

Their research showed that when carbohydrates and proteins were removed from the diet but fats remained, the production of short chain fatty acids dropped, along with anti-oxidants, which are also healthy. "This can have potentially negative health consequences on the human body," Paliy said.



Oleg Paliy, associate professor of biochemistry and molecular biology at the Boonshoft School of Medicine.

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