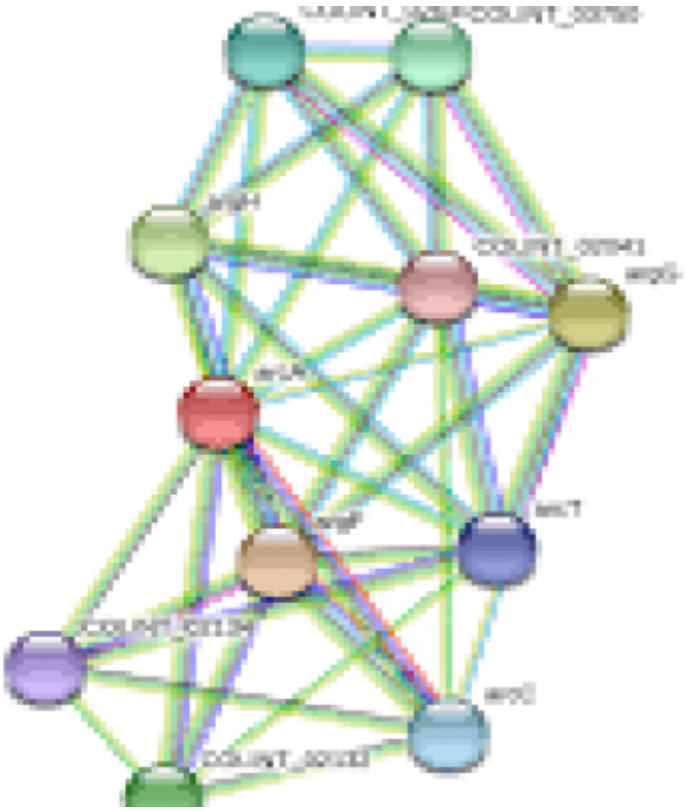
New study concludes that human gut microbes could make processed foods healthier



Researchers at Washington University School of Medicine in St. Louis have identified a specific human gut bacterial strain that breaks down the chemical fructoselysine, and turns it into harmless byproducts.

The study was conducted in mice that were raised under sterile conditions, given known collections of human gut microbes and fed diets containing processed food ingredients.

In the study, published on Wednesday in the journal Cell Host & Microbe, the researchers showed that a specific bacterium called Collinsella intestinalis breaks down the chemical fructoselysine into components that are harmless.

When fed a diet containing high amounts of fructoselysine, mice harboring Collinsella intestinalis in their gut microbial communities showed an increase in the abundance of this bacteria as well as an increase in the gut microbial communities' ability to break down fructoselysine into harmless byproducts.

"This specific bacterial strain thrives in these circumstances," said Jeffrey I. Gordon, a professor and director of the Edison Family Center for Genome Sciences & Systems Biology. "And as it increases in

abundance, fructoselysine is metabolized more efficiently."

"The new tools and knowledge gained from this initial study could be used to develop healthier, more nutritious foods as well as design potential strategies to identify and harness certain types of gut bacteria shown to process potentially harmful chemicals into innocuous ones," Gordon added. "A corollary is that they may help us distinguish between consumers whose gut microbial communities are either vulnerable or resistant to the effects of certain products introduced during food processing."

Emphasizing the complexity of this task, the researchers also showed that close cousins of Collinsella intestinalis did not respond to fructoselysine in the same way. These bacterial cousins, whose genomes vary somewhat, do not thrive in a fructoselysine-rich environment.

The researchers said future studies are required before they will be able to identify and harness the specific capacities of individual microbes to clean up the array of potentially deleterious chemicals produced during some types of modern food manufacturing.

Fructoselysine is in a class of chemicals called Maillard Reaction Products, which are formed during food processing. Some of these chemicals have been linked to harmful health effects.

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