



Gut bacteria, yeast may interact to provide health benefits

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A study published in *Nature* shows that common gut bacteria may aid in the development of prebiotic medicines that help people fight off yeast infections and autoimmune diseases such as Crohn's disease. The study shows how microbes in the digestive tract have learned to unravel the difficult to break down complex carbohydrates that make up the yeast cell wall.

Evolving over the 7,000 years that humans have been eating fermented food and drink, the ability of a common gut bacterium called *Bacteroides thetaiotaomicron* to degrade yeasts is almost exclusively found in the human gut. Involving an international team of scientists, the research has unraveled the mechanism by which *B. thetaiotaomicron* has learned to feast upon difficult to break down complex carbohydrates called yeast mannans. Mannans, derived from the yeast cell wall, are a component in the human diet from fermented foods including bread, beer, wine, and soy sauce, as well as yeasts that call the microbiome home and are in some cases thought to be harmful.

“One of the big surprises in this study was that *B. thetaiotaomicron* is so specifically tuned to recognize the complex carbohydrates present in yeasts, such as those present in beer, wine, and bread,” said Eric Martens, Assistant Professor in the University of Michigan’s Dept. of Microbiology and Immunology.

Researchers believed this mechanism emanated from the ability of common gut bacteria to recycle chemically similar carbohydrates present on intestinal cells, which are constantly being shed and renewed to keep the intestinal lining healthy. “However, these bacteria turned out to be smarter than we thought: they recognize and degrade both groups of carbohydrates, but have entirely separate strategies to do so despite the substantial chemical similarity between the host and yeast carbohydrates,” said Martens. “Even the relatively small amounts of yeast that we commonly consume in foods are enough to impact the physiology of our friendly gut bacteria.”

Abstract

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