

Probiotic bacterium lessens severity of *Salmonella* infections by hoarding iron

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(Medical Xpress)—UC Irvine microbiologists have learned how a probiotic bacterium used to treat irritable bowel syndrome can soothe gut bacterial infections caused by *Salmonella*, paving the way for potential relief from foodborne illnesses that affect millions of people annually.

Manuela Raffatellu, assistant professor of [microbiology](#) & molecular genetics, and colleagues at UC Irvine and the University of Washington identified how a probiotic strain of *E. coli* reduces *Salmonella* colonization by competing with this pathogen for iron, an essential nutrient that *Salmonella* acquires in the gut in order to replicate at high levels.

In fact, the researchers discovered that the *E. coli* strain called Nissle 1917 acquires iron more efficiently than does *Salmonella*. As a result, *Salmonella* counts in the gut decrease when Nissle is administered during infection. Study results appear in today's issue of *Cell Host & Microbe*.

"Although we focused on *Salmonella*, our findings suggest that this approach can be effective against other gut bacterial pathogens that need iron to grow," said Raffatellu, who's also a member of UC Irvine's Institute for Immunology. "By understanding how these 'bad bugs' get nutrients, we can further study methods to eradicate them."

Most people infected with *Salmonella* develop diarrhea, fever and abdominal cramps 24 to 72 hours after infection. The illness usually lasts

four to seven days, and the majority of affected individuals recover without treatment. According to the Centers for Disease Control & Prevention, about 42,000 cases of salmonellosis are reported annually in the U.S. Because many milder cases are not diagnosed or reported, the actual number of infections is estimated to be between 1 million and 4 million per year.

For nearly a century, the *E. coli* Nissle 1917 strain has been administered to patients with a variety of bowel disorders, but little has been known about how this probiotic [bacterium](#) works. Nissle 1917 is a key ingredient in a German probiotic product currently unavailable in the U.S. market.

Provided by University of California, Irvine

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