

Study finds tomato juice's antimicrobial properties can kill Salmonella

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Tomato juice can kill Salmonella Typhi and other bacteria that can harm people's digestive and urinary tract health, according to [research published](#) in *Microbiology Spectrum*. S. Typhi is a deadly human-specific

pathogen that causes typhoid fever.

"Our main goal in this study was to find out if tomato and [tomato juice](#) can kill enteric pathogens, including S. Typhi, and if so, what qualities they have that make them work," said principal study investigator Jeongmin Song, Ph.D., Associate Professor, Department of Microbiology & Immunology, Cornell University.

First, the researchers, in laboratory experiments, checked to see if tomato juice really does kill Salmonella Typhi. Once they ascertained it did, the team looked at the tomato's genome to find the [antimicrobial peptides](#) that were involved. Antimicrobial peptides are very small proteins that impair the bacterial membrane.

The researchers chose four possible antimicrobial peptides and tested how well they worked against S. Typhi. This helped them find two antimicrobial peptides effective against S. Typhi.

The research team conducted more tests on S. Typhi variants that appear in places where the disease is common. They also did a computer study to learn more about how the antibacterial peptides kill S. Typhi and other enteric pathogens. Lastly, they looked at how well tomato juice worked against other enteric pathogens that can hurt people's digestive and urinary tract health.

The most significant discovery is that tomato juice is effective in eliminating S. Typhi, its hypervirulent variants, and other bacteria that can harm people's digestive and urinary tract health. In particular, two antimicrobial peptides can eliminate these pathogens by impairing the bacterial membrane, a [protective layer](#) that surrounds the pathogen.

"Our research shows that tomato and tomato juice can get rid of enteric bacteria like Salmonella," Song said.

The researchers said they hope that when the general public, particularly children and teenagers, learns about the outcome of the study, they will want to eat and drink more tomatoes as well as other fruits and vegetables, because they provide natural antibacterial benefits to consumers.

More information: Ryan S. Kwon et al, Antimicrobial properties of tomato juice and peptides against typhoidal Salmonella, *Microbiology Spectrum* (2024). [DOI: 10.1128/spectrum.03102-23](https://doi.org/10.1128/spectrum.03102-23)

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