

Natto: A bacteria-fighting, all-natural probiotic

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It's sticky. It's stinky. It's good for you. Natto has been a Japanese staple for generations. But why has this dish made of fermented soybeans been gracing the tables in Japan for so long? While the answer may vary

depending on who you ask, researchers have discovered their own compelling reason—natto may help in combatting certain bacterial infections, increasing overall longevity of those who eat it.

A research group led by Professor Eriko Kage-Nakadai from Osaka City University fed the larva of *Caenorhabditis elegans*, a small worm, a diet that included the [bacteria](#) used to make natto—*Bacillus subtilis* var. natto. When the worms reached adulthood, they were infected with two kinds of gram-positive bacteria, *Staphylococcus aureus* and *Enterococcus faecalis*, and in both cases the *B. subtilis* (natto)-fed worms survived longer than the control group. Their results were published in the *Journal of Applied Microbiology*.

"The probiotic *B. subtilis* has been shown to successfully eradicate the pathogen *S. aureus* in humans," states Rina Katayama, lead author of the study, "so we were curious if the variation of *B. subtilis* found in natto also had a similar effect with *S. aureus* as well as other gram-positive bacteria." The team also tested the worms with other strains of *B. subtilis* and, "we found that while they also increased host survival, the natto variation conferred the longest survival time," states Prof. Nakadai.

While this is great news for cultures with a history of consuming natto and for those interesting in joining in, there are some things to note. The team fed a batch of [worms](#) with the natto probiotic after they had reached adulthood and found no effect on preventing or alleviating bacterial infections, suggesting there are critical stages in development that are particularly beneficial to consume *B. subtilis* (natto).

Also, the team tested the probiotic against the gram-negative bacteria *Salmonella enterica* and did not find any positive effect on host survival, suggesting *B. subtilis* (natto) is not a panacea for all bacterial infection, but selects against specific ones.

"While there is still much to explore and understand regarding the effect the bacteria has on humans," states Katayama, "to the best of our knowledge, this is the first study to show that *B. subtilis* (natto) confers specific resistance against [gram-positive bacteria](#)."

More information: R. Katayama et al, *Bacillus subtilis* var. natto increases the resistance of *Caenorhabditis elegans* to gram-positive bacteria, *Journal of Applied Microbiology* (2021). [DOI: 10.1111/jam.15156](#)

Provided by Osaka City University

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