

# How eating natto might increase stress tolerance and longevity

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*Bacillus subtilis* var. natto (Miyagino strain) extends the life span of *Caenorhabditis elegans* through biological pathways related to innate immunity and longevity, and partially improves stress tolerance. Credit: Osaka Metropolitan University

Health is wealth as the saying goes and new research now shows that it is possible to have a healthy, less stressed society through familiar and inexpensive foods. One such food might be the Japanese natto which is made from softened soybeans that have been boiled or steamed and fermented with a bacteria called *Bacillus subtilis* var. natto. *Bacillus subtilis* var. natto is found in soil, plants, animals, and the human stomach and intestines. Most of the natto consumed in Japan is made from the Miyagino strain.

A research group led by Professor Eriko Kage-Nakadai at the Graduate School of Human Life and Ecology, Osaka Metropolitan University, examined the effects of *Bacillus subtilis* var. natto consumption on the lifespan of the host using *Caenorhabditis elegans* worms. The paper is published in the *Journal of Applied Microbiology*.

The researchers found that *Caenorhabditis elegans* fed *Bacillus subtilis* var. natto had a significantly longer lifespan than those fed the standard diet, and further elucidated that the p38 MAPK pathway and insulin/IGF-1-like signaling pathway, which are known to be involved in innate immunity and lifespan, were involved in the lifespan-enhancing effects of *Bacillus subtilis* var. natto. They also examined [stress tolerance](#), which has been shown to have a correlation with longevity, and found that resistance to UV light and [oxidative stress](#) is enhanced.

Professor Nakadai concluded, "For the first time, we were able to demonstrate the possibility of lifespan-extending effects of *Caenorhabditis elegans* through the ingestion of *Bacillus subtilis* var. natto. We hope that future experiments on mammals and [epidemiological studies](#) will help to realize a healthy and longer-living society if we can apply this research to humans."

**More information:** Nao Teramoto et al, Impacts of *Bacillus subtilis* var. natto on the lifespan and stress resistance of *Caenorhabditis elegans*,

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Provided by Osaka Metropolitan University

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