

Study suggests altering gut bacteria might mitigate lupus

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Lactobacillus species, commonly seen in yogurt cultures, correlate, in the guts of mouse models, with mitigation of lupus symptoms, while *Lachnospiraceae*, a type of *Clostridia*, correlate with worsening, according to research published ahead of print in *Applied and Environmental Microbiology*. "Our results suggest that the same investigation should be performed in human subjects with lupus," says principal investigator Xin Luo of Virginia Tech, Blacksburg, VA.

In the study, the investigators first showed that mouse models of lupus had higher levels of *Lachnospiraceae* (a type of *Clostridia*), and lower *Lactobacillus* than control mice. They also compared male and female mice, and found that the differences were present only in females. These results suggest that the gut bacteria may contribute to lupus, a disease which is nine times as prevalent in women as in men, says first author Husen Zhang.

They also monitored the [gut microbiota](#) over time in both lupus and [control mice](#), and found that in the former, *Clostridia* increased in both early and late stages of the disease.

In further experiments, the investigators treated the symptoms in the lupus mice with either [retinoic acid](#) alone or vitamin A plus retinoic acid. The latter worsened the symptoms—surprisingly, Luo says, because it had been expected to reduce them—and in those mice, *Clostridia* increased, while *Lactobacillus* declined. Retinoic acid alone improved the symptoms, with opposite population changes in the [gut bacteria](#).

The research suggests, but does not prove that altering the gut microbiota could mitigate lupus. Nonetheless, Luo suggests that people with lupus should eat *Lactobacillus*-containing probiotics, such as live culture yogurts, to reduce lupus flares. More generally, "The use of probiotics, prebiotics, and antibiotics has the potential to alter microbiota

dysbiosis, which in turn could improve [lupus symptoms](#)," says co-principal investigator Husen Zhang. Ultimately, says Luo, fecal transplant might prove valuable as a treatment for lupus.

"We were inspired in part to perform this research by a study on type 1 diabetes, which found that that disease is dependent on gut microbiota," says Zhang. "Like type 1 diabetes, [lupus](#) is an autoimmune disease that is even more prevalent [than type 1 diabetes] in women."

Provided by American Society for Microbiology

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