

Researchers show how probiotics benefit vaginal health

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Researchers have shown that three genes from a probiotic *Lactobacillus* species, used in some commercial probiotic vaginal capsules, are almost certainly involved in mediating adhesion to the vaginal epithelium. This is likely critical to how this species benefits vaginal health.

"These results could help us screen for better probiotic candidates in the future," said principal investigator Harold Marcotte, Ph.D. The research is published this week in *Applied and Environmental Microbiology*, a journal of the American Society for Microbiology.

"An imbalance of the normal microbiota, and particularly a loss of lactobacilli, predisposes women to urogenital infections such as [bacterial vaginosis](#)," said Dr. Marcotte, who is Associate Professor, Division of Clinical Immunology and Transfusion Medicine, Department of Laboratory Medicine, Karolinska Institute, Stockholm, Sweden. In such cases, "administration of selected probiotic lactobacilli that adhere more strongly to the vaginal walls might help to restore a healthy microbiota." That, he explained, could prevent pathogens from infecting those tissues.

Despite a wealth of clinical data showing [health benefits](#) from probiotic capsules containing these bacteria, "there is still a lack of understanding of the molecular mechanisms underlying their probiotic activities," said Dr. Marcotte. "Recently, we developed a new tool that allows us to edit the genome of lactobacilli, enabling us to inactivate genes." Inactivating genes can reveal their function.

Inactivating the three genes from the probiotic strain *Lactobacillus gasseri* resulted in a 30-40 percent reduction in the strength of the mutant *L. gasseri*'s adherence to vaginal epithelial cells as compared to the wild-type strain. That is powerful evidence that the proteins these genes encode, which include a novel adhesion factor, are all

involved in adhesion to vaginal epithelial cells," said Dr. Marcotte.

"We chose *Lactobacillus gasseri* DSM 14869 as a [model organism](#) since this strain, contained in the commercial probiotic vaginal capsules, called EcoVag, was initially selected as a probiotic due to its high adherence capacity and was subsequently shown to colonize the vagina following capsule administration," said Dr. Marcotte.

"We are planning to functionally analyze other *Lactobacillus* [genes](#) that are potentially involved in [probiotic](#) activity such as those involved in the synthesis of antimicrobial compounds," said Dr. Marcotte.

Provided by American Society for Microbiology

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