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MECHANISM BY WHICH COMMENSAL BACTERIA LIMIT INFLAMMATION IF
TITLE RAN TO SECOND LINE THIS IS HOW IT LOOKS

Trillions of bacteria live within the gastrointestinal tract and are critical for maintaining intestinal homeostasis; however, the mechanisms utilized by specific bacterial molecules to contribute to homeostasis are not well understood. We utilize a mouse model in which a single oral dose of the probiotic, *Bacillus subtilis*, protects mice from acute colitis induced by the enteric pathogen *Citrobacter rodentium*. Our goal is to elucidate the mechanism by which *B. subtilis* prevents inflammation.

We identified exopolysaccharides (EPS) to be the active molecule of *B. subtilis*, and a single dose of EPS protects mice from disease. EPS binds F4/80⁺CD11b⁺ peritoneal macrophages, and adoptive transfer of macrophage- rich peritoneal cells from EPS-treated mice confers protection from disease to recipient mice. Following EPS treatment, macrophages increase expression of CD206, arginase-1, M-1, FIZZ-1, and IL-4R α , markers indicative of anti- inflammatory M2 macrophages. EPS does not protect TLR4-deficient mice from *C. rodentium*-induced disease, and as expected, M2 macrophages do not develop in TLR4^{-/-} mice following EPS treatment.

Maximum number of words dissertation is 350.

Maximum number of words thesis is 150.

Verify title is correct!