Probiotics are living microorganisms that help regulate the gastrointestinal tract. The objective of this project was to investigate the benefits of probiotics and their inhibitory effect on Listeria monocytogenes EGD. The well diffusion assay was conducted to screen the probiotics for inhibition of L. monocytogenes EGD. A diet was created out of a soy protein bar supplemented with the probiotics to be used in our in vivo test using a mouse model.

Three groups of mice were fed for two weeks with three different diets, one diet each, Control diet with no probiotic, ADH diet with Lactobacillus acidofilus ADH, and B6 diet with Bifidobacterium animalis B6. Each group was subdivided into two different groups, one of them would be challenged with L. monocytogenes EGD and the other group would not (control group). After 14 days of feeding, the mice were challenged orally with ~10⁸ CFU/ml L. monocytogenes EGD. At day 3 post-infection, the mice were euthanized. Of the samples collected, the colon and cecum were tested for probiotic concentration. The spleen and liver were tested for the presence of L. monocytogenes. In the first replication, a half a log reduction of L. monocytogenes EGD in the liver was observed in the Bifidobacterium group as compared with the control group, but no significant reduction in the pathogen was seen in the Lactobacillus group for any of the samples collected. For the second trial, a one log reduction of L. monocytogenes EGD in the liver was achieved in the Bifidobacterium group, but at the same time, a one log reduction of the pathogen in the spleen was also observed in the Lactobacillus group. We also collected evidence showing that the probiotics colonized the colon and the cecum with concentrations of ~10⁷ CFU.

According to our results we believe that the probiotic supplemented soy protein bar holds promise to prevent listeriosis.