

The Effect of Fibroin Proteins in Spider Silk on *Escherichia coli*

Voulgaropoulos, Alexis

The purpose of this experiment was to test whether the fibroin protein from spider silk inhibits the growth of *Escherichia coli*. It was hypothesized that fibroin would inhibit the growth of *E.coli*. To test the hypothesis, the fibroin protein was extracted from pure spider silk with lithium bromide through a dialysis process. The extracted protein solution and *E.coli* were added to petri dishes along with appropriate controls to assess growth. After eight days, the *E.coli* plates grown with pure fibroin averaged 64.8% fewer colonies than the control. The *E.coli* plates grown with cobweb fibroin averaged 76.0% fewer colonies than the control. The control plate grown with LiBr showed enhanced growth with 144% more colonies than the *E.coli* control, showing that LiBr did not contribute to growth inhibition. It was concluded that both the pure and the cobweb fibroin successfully inhibited the growth of *E.coli*. Further experimentation is needed to determine if fibroin has sufficient antibiotic activity to treat disease.