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A Study of Bacterial Resistance in Agricultural Livestock and Soil

The purpose of this project was to determine the biochemical effects of ampicillin on animal intestinal bacteria, (*E. coli* BE and *E. coli* CR63) and soil bacteria (*Bacillus subtilis*, *Bacillus cereus*) to determine if it causes resistance. A control of antibiotic resistant strains of *E. coli* BE and *E. coli* CR63 were used to compare to. The researcher hypothesized that the antibiotics would cause more resistance in the soil bacteria than in the intestinal bacteria. The researcher started by using an antibiotic resistances transductant kit as the control. A bacteriophage was used to make strains of *Escherichia coli* BE and *Escherichia coli* CR63 resistant to ampicillin. For the test groups, the researcher used soil bacteria and treated it with ampicillin diluted with water at a 1^{-10} and 1^{-100} dilution. For the intestinal bacteria, the researcher treated it with ampicillin diluted with a buffer solution that had a pH of 1.0 at a 1^{-10} and 1^{-100} dilution. The researcher's data concluded that the zone of inhibition for the test group 1^{-10} for *Bacillus subtilis* was 5mm less than *E. coli* CR63 and 6.75 mm less than *E. coli* BE. The data also showed that the zone of inhibition for the test group 1^{-10} for *Bacillus cereus* was 7.25 mm less than *E. coli* CR63 and 9mm less than *E. coli* BE. The researcher concluded that the soil bacteria types were more prone to antibiotic resistance than the intestinal bacteria strains.