Devolution of Ampicillin Resistance in E. coli

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Escherichia coli is a rod shaped, gram negative bacterium, certain species of which inhabit mammalian intestines. Some strains of E. coli are pathogenic, warranting investigation into its antibiotic resistance. This experiment attempts to determine whether a strain of E. coli carrying a gene for ampicillin resistance can lose its resistance to ampicillin using basic isolation and continued subculturing. 0.1 ml of ampicillin resistant E. coli was added to both a control solution of 0.9 ml of LB medium and an experimental solution of 0.9 ml LB medium and 100 micrograms of ampicillin per milliliter. After 2-3 days growth, a spectrophotometer reading of each culture was taken and if any sample measured over 0.6 absorbance on 600 wavelength, the sample would be subcultured with 0.1 ml of the strains into a new, corresponding test tube. After four transfer and growth cycles, a ten to the fifth serial dilution was performed on each strain and incubated on LB petri plates for a day, then replicated using a velvet block to ampicillin petri plates. The results showed that the E. coli strain grown in only LB medium grew faster than the strain grown in ampicillin, as the spectrophotometer reading was consistently higher for the one grown in only LB. Also, the experimental and control bacteria had a different physical appearance when grown on plates. Finally, when replicated there was evidence of little, but clear, loss of growth once the strain grown in LB medium and plated on LB was replicated to the ampicillin plate. Because experimental bacteria was grown in an environment without ampicillin, the bacteria began to lose its resistance to ampicillin, even if slightly. Further research could investigate if more extended periods of time would cause further loss of resistance.

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