Recombinant DNA: Dual Antibiotic-Resistant Genes, Phase II

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The purpose of my project was to investigate if a longer incubation period is necessary to show antibiotic resistance. During the twenty- four hour incubation time, there was a very high growth rate of MM 294 on Petri plates without Kanamycin and Ampicillin. Antibiotic resistance was determined by the amount of MM 294 Escherichia coli growth on each growth plate with the given antibiotic. A much higher antibiotic resistance was determined on the plates with Ampicillin compared to plates with Kanamycin. This means Ampicillin may not be the most effective treatment for Escherichia coli. Incubating the Petri plates after streaking the bacteria MM 294 with Calcium Chloride, which acted as a catalyst to increase the ability of the cell to incorporate plasmid DNA allowing it to be genetically transformed, was crucial for the E. coli to grow. The Kanamycin provided a lesser antibiotic resistance to MM 294 than the Ampicillin, not allowing as much of the bacteria to grow when subjected to the antibiotic. The plates with both antibiotics had a higher antibiotic resistance showing a minimal growth rate as the bacteria could not become immune against both of the antibiotics. The two antibiotics used independently on their respective Petri plates had a lesser antibiotic resistance and more bacterial growth. The plates without any antibiotic, the control, had the most growth of MM 294. In conclusion, the most effective treatment of MM 294 E. coli would be utilizing a combination of Ampicillin with Kanamycin. The future of this project includes continued research on the amounts of Kanamycin and Ampicillin combined, to find the best combination ratio in treating MM 294 E. coli.

Awards Won: