How effective are your everyday household cleaners? Are the active ingredients strong enough to kill the bacteria that you encounter on a daily basis? We chose to investigate the effectiveness of daily household cleaners and determine which the best at doing was.

For our preliminary experiment we used vinegar, shampoo, hand sanitizer, Clorox gel bleach, pin sol, hand soap, Clorox wipes, Lysol, and dish detergent on Pseudomonas Florescens. This experiment was used to decide which disinfectants would need to be diluted more in order to determine its effectiveness. We used a Bioscreen C instrument to measure optical density in order to generate growth curves.

After the preliminary experiment at a 1:20 dilution, we concluded that the shampoo, hand sanitizer, pine sol, hand soap, and Clorox all had to be diluted more to determine at which they begin killing.

We noticed that the shampoo had a particularly interesting curve. The Pseudomonas was able to grow in the shampoo at this specific dilution. All the other disinfectants did an extremely well job at killing the bacteria; there were no curves at all to observe because we forgot to add nutrient broth. This means that we know that shampoo is no longer effective at a dilution of (1:20) because the color of the shampoo overwhelmed the disinfectant and made it inactive. This data also tells us that the other disinfectants had to be diluted even more for possible growth of the culture.

After shampoo was eliminated at a 1:20 dilution we diluted the hand sanitizer, pine sol, hand soap, and Clorox a few more times at dilutions of 1:30, 1:50, 1:100, 1:1,000, and 1:10,000. All of which proved to be too small of a dilution because in each no growth was yielded. From the previous experiment of 1:10,000 dilution it showed that Clorox gel and pine sol were the only two disinfectants used that prevented bacteria growth.

From these results we went ahead and performed a 1:100,000 dilutions of our two disinfectants. The graph below displays the growth curves of our culture with the two disinfectants added. As shown in the graph, the disinfectants were no longer effective which led to distinctive growth curves of our Pseudomonas.

Household disinfectants are used on a daily basis to kill many types of bacteria including our bacteria, Pseudomonas fluorescens. The problem on hand was which of the nine disinfectants was the most effective on killing the bacteria. The effectiveness of these disinfectants was determined by series of different dilutions. From all the trials of this experiment it can be concluded that the top two disinfectants that worked the best at hindering bacteria growth were pine sol and Clorox gel bleach. As shown in the graphs previously provided, at 1:100,000 dilution our culture started to grow and both disinfectants were no longer capable of killing our bacteria.

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References: