

# Comparative Inhibition of E. coli Growth by Commercial and Homemade Hand Sanitizers

Douglass, Jessica (School: Emmett High School)

My purpose was to see how effective homemade hand sanitizers are compared to commercial hand sanitizers approved by the CDC. The CDC recommends that hand sanitizer contains 60% alcohol. Hypothesis: there will be no statistically significant differences in the number of bacterial colonies grown on media treated with commercial or homemade hand sanitizers.

Procedure: I tested 5 groups, with 10 Petri dishes in each group, treated with E coli and ran the tests twice. 4 groups were treated with different kinds of sanitizer and the 5th was my control. I measured the amount of bacterial growth after treatment and 24 hours incubation. Results: None of the petri dishes treated with commercial sanitizer showed any bacterial growth, so I did not run a statistical analysis, but instead created a bar graph to compare the means of all my data points. I found the homemade sanitizer lacked effectiveness in killing bacteria when compared to the commercial sanitizers but was more effective than doing nothing. Parents should understand that the best way to keep bacteria off of their hands is by washing them, but if they hold concerns about exposing their child to harsh chemicals of commercial sanitizers, the homemade sanitizers might be right for them. My next steps will focus on what alcohol level is considered too low for a sanitizer, how much bacteria would be able to grow in correlation to that, and whether there are other homemade recipes that will work better than the recipe I tested.