



CALIFORNIA STATE SCIENCE FAIR

2015 PROJECT SUMMARY

Name(s) Aisha N. Patel	Project Number J1918
Project Title Soap Power	
<div><div>Objectives/Goals<p>The purpose of my project was to observe the impact of various active pharmaceutical ingredients, glycerol(GC), benzalkonium chloride(BZK), & triclosan(TC), used in hands soaps as means of maintaining clean hands. I wanted to observe the efficacy of GC, BZK & TC as antimicrobials & in inhibiting bacteria that contaminates human hands. I hypothesized that soaps with TC or BZK would be more effective than soaps with GC. I further hypothesized that soaps with TC would be most effective because it inhibits fatty synthase & interferes with cell membrane formation of the bacteria.</p></div><div>Abstract</div><div>Methods/Materials<p>I used live bacterial cells which contaminates human hands. Tryptic soy agar plates were streaked with diluted bacterial cells using a calibrated loop. I built an incubator at home using a Styrofoam box & a heat lamp. Constant variables in all trials were the amount of bacteria streaked to each plate, incubation time & temperature, & the amount of active pharmaceutical ingredient used. Manipulated variables in all trials were the active pharmaceutical ingredients in hand soaps. I prepared 2 diluted live cultures. The first 40 plates were labeled & inoculated with live culture #1. The next 40 were labeled & inoculated with live culture #2. The soaps tested were carefully selected so that the only difference in active ingredients would only be GC, BZK, or TC. Blank sterile disks were soaked in water, GC, BZK, or TC. Then the disks were placed on the respective plates. Two control agar plates (C0 & CW) were also created for each live culture. The plates were incubated for 48 hours. Then the zone of inhibition was measured in mm for all plates. The most effective is indicated by the larger inhibition zone. The experiment was repeated for 3 trials.</p></div><div>Results<p>After incubation, the zone of inhibition was measured & the impact of the pharmaceutical agents as antimicrobials were observed compared to the plates which did not have any pharmaceutical agents. I observed that the plates with disks soaked in GC were observed to have similar zone of inhibition as of TC.</p></div><div>Conclusions/Discussion<p>My results proved my hypothesis partially correct. All of the pharmaceutical agents had a great impact as an antimicrobial agent in hand soaps. GC & TC had the greatest impact. Furthermore, research into TC's health & environmental impacts shows that TC does more harm than good, despite its wide-spread use as antimicrobial agent in hand soaps.</p></div></div>	
Summary Statement <p>To observe the effects of various active pharmaceutical ingredients used in hand soaps</p>	
Help Received <p>My parents helped and supervised.</p>	