



CALIFORNIA STATE SCIENCE FAIR 2012 PROJECT SUMMARY

Name(s) Ileana Vasquez	Project Number J2135
Project Title The Effect of Pill Coatings, Heat, and Antacids on Pill Solubility	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals I conducted this experiment to see the effects of pill coatings, heat, and antacids on pill solubility rate. For the different pill coatings, I wanted to see which type of coating would dissolve the fastest in simulated stomach acid. I wanted to test body temperature simulated stomach acid on different pills that were coated in different ingredients (enteric, film, gelatin, and non coated). For the antacid portion, my goal was to see if antacids had an effect on room temperature simulated stomach acid.</p> <p>Methods/Materials For the entire project, I used Ibuprofen, Allegra-D, Benadryl, Tums, magnetic stir bars, magnetic stirrer plate, beakers, simulated stomach acid (HCl, distilled water, potassium chloride, and table salt), incubator, and a timer. First, I poured 100 mL of simulated stomach acid into a beaker. I put in the magnetic stir bar, started the magnetic stirrer plate, dropped in the pill, and began the timer. Second, I poured 100 mL of simulated stomach acid in a beaker, placed it in an incubator set at thirty-seven degrees celcius, started the timer, and left the beakers in there until the pills were dissolved completely. Third, I poured 100 mL of simulated stomach acid into a beaker and placed antacids</p> <p>Results This information can be very useful in the pharmaceutical industry. If companies want their pill to dissolve as fast as possible, they may want to make pills coated with film. But, if companies want their pill to give long lasting relief or dissolve in the small intestines, they can use gelatin coated pills. Other useful information can come from this to the consumer. If the consumer is looking for painkillers with fast relief, they can look for pills that are coated with enteric. Knowing this information may bring them faster pain relief and make their money worth spending.</p> <p>Conclusions/Discussion I found that Allegra (film coated) dissolved the fastest as the independent variable, Ibuprofen (enteric coated) dissolved the second fastest, and Benadryl KapGels (gelatin coated) dissolved the slowest. Ibuprofen took an average of 8 minutes, Benadryl took an average of 3 hours, Allegra took an average of 2 minutes, and Aspirin took an average of 40 seconds.</p>	
Summary Statement I tested pill coatings, heat, and antacids in simulated stomach acid to see their effect on pill solubility rate.	
Help Received Teacher helped create simulated stomach acid by diluting HCl.	