



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

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| Name(s) Genna T. Abele | Project Number 31912 |
| Project Title Dissolve the Pain: How Does the Speed of Dissolution Vary among Name Brand Pain Relievers and the Generic Counterparts? | |
| <p style="text-align: center;">Abstract</p> <p>Objectives/Goals I conducted this experiment to determine which type of pain reliever in name brand and generic brand form (Advil - ibuprofen, CVS Ibuprofen, Aleve - naproxen sodium, CVS Naproxen Sodium, Bayer - aspirin, CVS Aspirin, Tylenol - acetaminophen, and CVS Acetaminophen) dissolves the most quickly in simulated stomach fluid. I wanted to determine which pain reliever would offer the fastest relief.</p> <p>Methods/Materials To make the simulated stomach fluid, I poured 150 milliliters of water and 75 milliliters of hydrochloric acid into a beaker. I measured the pH of the fluid to confirm that it was in the proper range. I then split one standard dose tablet in half and placed a half tablet in the fluid. With a stopwatch, I measured how long each half tablet took to dissolve. I repeated this process for each brand of pain reliever. I conducted five trials.</p> <p>Results The pain reliever half tablets dissolved, on average, in the following order from fastest to slowest: CVS Aspirin (49 seconds), Bayer - aspirin (54 seconds), Tylenol - acetaminophen (1 minute and 22 seconds), CVS Ibuprofen (1 minute and 53 seconds), CVS Acetaminophen (4 minutes and 6 seconds), Advil - ibuprofen (4 minutes and 23 seconds), CVS Naproxen Sodium (27 minutes and 56 seconds), and Aleve - naproxen sodium (48 minutes and 58 seconds).</p> <p>Conclusions/Discussion CVS Aspirin dissolved the fastest. The results and data supported the part of my hypothesis that aspirin would dissolve the fastest, but rejected the part of my hypothesis that Bayer would dissolve faster than CVS Aspirin.</p> | |
| Summary Statement Of the name brand and generic brand forms of the pain relievers ibuprofen, naproxen sodium, aspirin, and acetaminophen, CVS aspirin dissolved the fastest in simulated stomach fluid and therefore offers the fastest pain relief. | |
| Help Received I received guidance from my teacher throughout the process. Also, I received help from my parents in obtaining hydrochloric acid and preparing the simulated stomach fluid. | |