



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2019 PROJECT SUMMARY**

Name(s) Simra Mirza	Project Number J1913
Project Title Diffusing Rates of Nonsteroidal Anti-Inflammatory Drugs Containing Naproxen Sodium in a Stomach Acid Mimicking Solution	
<p style="text-align: center;">Abstract</p> <p>Objectives More than 30 million people use NSAIDs every day, and they account for 60% of the US over-the-counter analgesic market, the majority for conditions such as arthritis or bursitis. The goal of this project was to investigate which type of NSAID (nonsteroidal anti-inflammatory drug) Aleve pill would dissolve the fastest in an acidic solution (to mimic stomach acids) in order to relieve pain the fastest by reaching the bloodstream.</p> <p>Methods Aleve Gel Caps, Aleve Caplets, Aleve Liquid Gels, and Aleve Tablets were the types of pills used to compare each of their dissolving rates in a concentrated acidic solution simulating stomach acids. The acidity of pH between two and three was acquired by using lemon juice and adding it into boiling water. The pills were dissolved in 100ml each. The amount of time required for each pill to completely dissolve in the solution was recorded. Five trials were conducted per pill.</p> <p>Results The pills with the fastest dissolving rate were the Liquid Gel pills, dissolving at an average of 661 seconds and the pills with the slowest dissolving rate were the Gel Caps with an average of about 2395 seconds. The results were concluded significant by performing a statistical analysis.</p> <p>Conclusions The results didn't support my hypothesis that stated the Aleve Tablets would be the fastest dissolving pills. Instead, the Liquid Gels were the fastest dissolving pills. It could be inferred from this information that the Liquid Gels would reach the bloodstream the fastest to relieve pain.</p>	
Summary Statement This project compared the different solvating rates of Aleve naproxen sodium pills, which are nonsteroidal anti-inflammatory drugs, in a solution created to mimic stomach acids to infer which type would reach the bloodstream the fastest.	
Help Received None. I researched, designed, and performed the experiment on an individual basis.	