



# CALIFORNIA STATE SCIENCE FAIR 2015 PROJECT SUMMARY

<b>Name(s)</b> <b>Sarah Porter; Zach Wright</b>	<b>Project Number</b> <b>S0616</b>
<b>Project Title</b> <b>Measuring the Effect of Coating on Ibuprofen with Dissolving Rate in Stomach Acid</b>	
<div><b>Objectives/Goals</b><p>The objective of our project is to determine what coating on Ibuprofen will dissolve the fastest, to release the Ibuprofen inside the pill first.</p></div> <div><b>Methods/Materials</b><p>We used .1 molar HCL to simulate the acid in the stomach. We had 3 different forms of Ibuprofen that we tested. The first was the regular tablets, the second Gel Capsules, and the third regular Caplets. We ran 5 different trials for each pill. In five 50 ml beakers we filled 15 ml of the HCL in each. We dropped an individual pill into each and timed how long it took for the coating to dissolve and movement to stop. We repeated this for the last two types of ibuprofen.</p></div> <div><b>Results</b><p>Our results supported that the Caplets took the least amount of time to dissolve the coating and release the Ibuprofen. It took an average of 20 min/gram. The Gel Capsules took on average 126 min/gram and the tablets took 26 min/gram. Our results supported that it took the most amount of time to dissolve the Gel Capsules.</p></div> <div><b>Conclusions/Discussion</b><p>The purpose of the experiment was to investigate the effect of coatings on the release of ibuprofen in stomach acid. This was tested by having 3 types of ibuprofen pills: Gel Capsules, Caplets, and Tablets. We would have had a control of a non coated pill, however none are available except for in prescriptions. We used 15 ml of .1 molar HCL acid and dropped each pill in to investigate the time it would take to dissolve the coating, making the ibuprofen available. The differences we found are stunning. We were told that the ibuprofen in the Gel Capsules would be available first, however our data proves otherwise. The Gel Capsules took on average 126 min/g to become available. The tablets took 26 min/g on average for the ibuprofen inside to become available. The average of the Caplets was 20 min/g. Our data shows that the Caplets worked the fastest, and the Gel Capsules worked the slowest. We found out later on that the Tablets and the Caplets are coated with the same coating. Our data for the tablets only support that the caplet shape worked faster than the tablet shape. This does not support our experiment on what coating dissolves the fastest. Our hypothesis was that the ibuprofen in the Gel Capsules would become available faster than the sugar coated Caplets and Tablets. Our hypothesis was not supported by our data. We used .1 molar HCL acid because we wanted to simulate the acid in our stomachs.</p></div>	
<b>Summary Statement</b> <p>To investigate the time it takes for coating on Ibuprofen to dissolve</p>	
<b>Help Received</b> <p>We used the schools equipment.</p>	