



**CALIFORNIA STATE SCIENCE FAIR  
2005 PROJECT SUMMARY**

<b>Name(s)</b> <b>Delaine A. Downie</b>	<b>Project Number</b> <b>J1107</b>
<b>Project Title</b> <b>Gel Capsule Solubility</b>	
<b>Objectives/Goals</b> My objective was to find the average breakage rates of five different brands of common over-the-counter cold and cough liquid gelatin capsules. My hypothesis stated that I expected the brand Sudafed to have the fastest breakage rates. This project will benefit consumers because now they can get faster relief from their colds without relying on advertising claims.	
<b>Abstract</b> <b>Methods/Materials</b> My project contained 500 gel capsules, 100 per brand. I conducted 20 tests, each with 5 capsules from each of the 5 brands. To simulate gastric juice I diluted Muratic acid 60 part water to one part acid. This formula makes the diluted acid roughly the pH of gastric juice. I used five glass baby food jars, each containing the same amount of diluted Muratic acid and one gel capsule, and I set a heater before the experiment to raise the temperature to about 72-75 degrees Fahrenheit because it was about 50 degrees Fahrenheit outside when I conducted my experiment. Finally, the data was recorded by waiting until the first and second capsule had burst. If it was a long time between the first and second capsule's breakage, then the first capsule most likely had a faulty casing. After all tests were completed, the data was averaged and made into graphs.	
<b>Results</b> The results disproved the experimenter's hypothesis. It was not Sudafed that had the fastest rate, but Sav-on, which changed its name to Equaline during the experiment. Sudafed actually had the second fastest rate. The brand that took the longest on average was Wal-Phed.	
<b>Conclusions/Discussion</b> I believe that the results turned out the way they did because of the varying thickness and hardness of the gelatin casing on the different brands of capsules. I found that the Equaline brand had a much softer casing than the Wal-phed brand.	
<b>Summary Statement</b> This Experiment is about testing and comparing the average solubility rates of the gelatin casing of five brands of over- the-counter cold and cough liquid gel capsule medication.	
<b>Help Received</b> Mother helped find resources for Review of Literature; Father poured and diluted Muratic acid and provided some of the materials for project.	