



**CALIFORNIA STATE SCIENCE FAIR  
2013 PROJECT SUMMARY**

<b>Name(s)</b> <b>Meha Shezad</b>	<b>Project Number</b> <b>J2122</b>
<b>Project Title</b> <b>Dissolution Rate of Painkillers</b>	
<b>Objectives/Goals</b> The purpose of this experiment is to find out which commonly used, over the counter painkiller dissolves the quickest in water which is at body temperature.	
<b>Abstract</b> <b>Methods/Materials</b> Measure 200 ml of tap water.Pour 200ml of water into a microwave safe container.Heat water in microwave to 37° Celsius/ 98.6° Fahrenheit (body temperature).Pour heated water into 300 ml glass beaker (Only up to the 200 mark).Put it onto magnetic stirrer#s base.Drop in magnetic stirring capsule. Turn on magnetic stirrer to high (Let the stirrer get going fast before you drop in the pill.Drop in one Tylenol caplet.Immediately start stopwatch. When the pill dissolves (disappears) stop the stopwatch then the stirrer Record the dissolution time of the pill in minutes and seconds. Repeat steps 1-11 for the other pills of this same brand 3 more times Repeat steps 1-12 using the next brand of pills.Repeat steps 1-13 with the remaining brands. Average the dissolution rate for each brand. Compare brands.	
<b>Results</b> 6 seconds after dropping in the Tylonal, it started to break up in little chunks. After 39 seconds the tablet was no longer visible. All you could see was a cloudy liquid with a white suspension. 45 seconds after dropping the orange Advil pill into the stirrer it turned white. The tablet did not break into pieces until 1 minute and 59 seconds. After ten minutes there was a white suspension, but still small chunks visible.The aspirintablet dissolved in 31 seconds. There was a white suspension in the beaker. A white powder had settled too the bottom after one minute of being removed from the magnetic stirrer.	
<b>Conclusions/Discussion</b> After trying all those painkillers, Advil, Tylenol, and Aspirin I found out that Aspirin was the best, which dissolved in an average of 31 seconds. My hypothesis was proven correct that aspirin would dissolve the fastest.	
<b>Summary Statement</b> This project explores which over the counter pain killer dissolves the fastest at body temperature, in an effort to discover what medication can offer pain relief the in the most efficient manner.	
<b>Help Received</b> My parents helped me purchase supplies and my arm was broken so my mom helped me paste my board together for me.	