



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Katie A. McAllister</b>	<b>Project Number</b>  31709
<b>Project Title</b> <b>Caffeine and the Heart: A Study Using Daphnia magna</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> To find out if caffeine elevates the heart rate of Daphnia magna.</p> <p><b>Methods/Materials</b></p> <ol style="list-style-type: none"><li>1. Erlenmeyer flask</li><li>2. Graduated Cylinder</li><li>3. NoDoz Caffeine Pills, 200mg</li><li>4. Fresh Spring Water</li><li>5. Daphnia magna</li><li>6. A medium plastic tank</li><li>7. Dried algae food for Daphnia magna</li><li>8. Dissecting Microscope</li><li>9. Small clear containers</li><li>10. Small plastic pipettes</li><li>11. Timer/Stop watch</li></ol> <p>Allow the Daphnia to absorb the desired dosage of caffeine and count the number of heart beats in 10 seconds, timing yourself using a stop watch.</p> <p><b>Results</b></p> <p>The average heart rate for my control, 0mg of caffeine to 1 liter of water, was 148.2. The average for 0.01mg/L was 157.3, 0.1mg/L was 156, .5mg/L was 163.35, 1mg/L was 180.9, 10mg/L was 305.25, 50mg/L was 365.82, and 100mg/L was 350. The average being the average number of heartbeats in a minute.</p> <p><b>Conclusions/Discussion</b></p> <p>Looking at my data and research on my experiment I have come to the conclusion that caffeine does in fact affect the heart rate. If you look at the data collected you can see very slight change in the heart beats until you get to about 10 mg/L to 50mg/L. There is an observable increase in the number of heartbeats. As you can observe the heartbeats seem to hit a peak at 50mg/L. At 100mg/L the heartbeats aren't as fast. I think that is because the Daphnia is starting to die at that point from the amount of caffeine. Any higher amount that was used killed the Daphnia within five minutes. One thing that could have been done differently is to have tested organisms more closely related to humans as well.</p>	
<b>Summary Statement</b> My project is about the affect of caffeine has on the heart rate.	
<b>Help Received</b> Uncle helped me understand the science behind the experiment; Parents bought my materials.	