



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Rina M. Goldman	Project Number J2005
Project Title Caffeine: Help or Hindrance?	
Objectives/Goals To find out whether caffeine has any affect on plant growth.	
Abstract	
Methods/Materials Materials: 12 peace lilies, box of regular coffee, measuring glass, hot water, an area with direct sunlight, and measuring utensils. Procedure: 1. Place the plants on a table where they can receive the same amount of sunlight. 2. Make a pitcher of coffee according to the instructions on the back of the instant coffee mix. Make enough that it will last one week and then let it sit for 30 minutes. Fill up a pitcher with water. 4. Prepare the solution for each group of plants and place them in different containers, there will be 4 solutions: The first solution is 100% water. The second solution is 25% coffee and 75% water. The third solution is 50% coffee and 50% water. The fourth solution is 75% coffee and 25% water. 5. Divide the plants into 4 groups of 3 and label them according to what they are being fed. 6. Measure the height of the plant on day 0 and count the number of leaves on the plant as well. Give each plant 1/4 a cup of the appropriate liquid each day. Do not water on Saturdays and Sundays. Every day, measure the height of the plants and count the leaves. Record this data. Repeat for 28 days.	
Results According to the data, the plants that were given the mixture of 25% coffee grew the most and the plants that were given 75% coffee grew the least.	
Conclusions/Discussion The experiment showed that some coffee was beneficial and too much was harmful, however, it is unclear if the results are due to caffeine or some other property of the coffee. Further experimentation to isolate the effect of caffeine might include feeding them regular and decaffeinated coffee. If they respond to regular and decaffeinated coffee in the same way, then there is another property in the coffee that is affecting the plant growth. People responded to this experiment by suggesting that the coffee affects the pH of the soil (making it more acidic) and that the plants (Peace Lilies) respond well to a slightly more acidic environment. In order to control for this in the above experiment, one would have to measure the pH of both the regular and decaffeinated coffee mixtures to ensure they were the same. Another way to determine if caffeine is responsible would be to find another way to feed it to the plant. In the end, the experiment has partially answered one question and raised several others which can be the subject of future experiments.	
Summary Statement This project is about the effect that caffeine has on plant growth.	
Help Received Parents helped create graphs and proofread and the nursery sold me the plants.	