



# CALIFORNIA STATE SCIENCE FAIR 2016 PROJECT SUMMARY

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<b>Project Title</b> Beating of My Heart	
<b>Objectives/Goals</b> How does the amount of energy drink given to daphnia affect the heart rate of the daphnia? Energy drinks are made to boost up energy but it can affect the heart rate. Many people are sent to the hospital because of an overdose or a side effect of the energy drink and sometimes it can be fatal. This experiment was chosen to find out if the heart rate is affected by the different concentrations of energy drinks. <b>Abstract</b> <b>Methods/Materials</b> In this experiment, the concentration of the energy drink diluted in spring water was changed in order to test the heart rate of the daphnia. In addition, five popular energy drinks (Monster, Red Bull, Rockstar, Starbucks Doubleshot Energy Coffee, and 5-Hour-Energy) were used to test if different energy drinks will affect the changes in heart rate differently with concentration variation. The daphnia's heart beats will be counted for 15 seconds to find the heart rate in a minute. <b>Results</b> Although it seems as though the heart rate would increase as the concentration of the energy drink increased, the heart rate started to decrease at a different concentration levels for each energy drink. In addition, the daphnia started to die off at higher concentration levels for some energy drinks. 5-Hour-Energy had the highest increase in heart rate and the daphnia died off much earlier which also meant that it was the most dangerous. <b>Conclusions/Discussion</b> As shown from the results, the hypothesis was not entirely correct. It was thought that if the higher the concentration is, the heart rate would have the highest increase due to the higher concentration of caffeine in energy drinks. However, once it reached a certain threshold concentration, the heart rate began to decrease or stopped in some cases. The heart rate decrease and sudden stop could be an indication of failing heart due to too much stress. The results from the experiment helped support that energy drinks increase heart rate and consuming too much energy drinks may be dangerous to the heart. Although this information is helpful, the conclusion from this study cannot confirm the degree of danger of energy drinks to the human body because a daphnia's body structure and its response might be different from that of the human.	
<b>Summary Statement</b> The heart rate of daphnia was affected by concentration variations of popular energy drinks but not at a constant rate.	
<b>Help Received</b> My science teacher, Mrs. Hoffman helped me understand the general concept of science fair and my parents helped me gather all my materials.	