



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) David E. Kranker	Project Number J1713
Project Title Energy Drinks: Heart Safe or Heart Stopping?	
Objectives/Goals Testing the effect of energy drinks such as 5 Hour Energy, Monster Energy, Hansen's Energy Pro, Xing Tea's Green Tea with Ginseng and SoBe Energize on the heart rates of Daphnia to find if any of them are heart safe.	
Abstract Methods/Materials I used the following materials: 300 Daphnia, 4 test tubes, a digital stopwatch, a digital microscope, a laptop computer, Distilled Water, 5 Hour Energy, Monster Energy, Hansen's Energy Pro, Xing Tea Green Tea with Ginseng and SoBe Energize. For each of the energy drinks, I mixed 4 solutions: 0% solution (distilled water); 10% solution; 50% solution; and, 100% solution(pure energy drink). I placed 5 daphnia in each solution and waited for 5 minutes. Using a digital microscope and a lap top computer, I counted the daphnia's heart rates. I recorded the results of each reading.	
Results In 5 Hour Energy, Monster Energy and Hansen Energy Pro, the heart rates of the Daphnia initially increased in the 0.1 solutions and then decreased as the Daphnia died in the more concentrated solutions. In the Xing Tea's Green Tea with Ginseng, the heart rates of the Daphnia were slightly elevated in the 0.1 Solution. In the 0.5 Solution, the heart rates of the Daphnia were significantly elevated to an average of 795 beats per minute. In the 1.0 Solution, the heart rates of the Daphnia were greatly elevated with an average of more than 1500 beats per minute. In SoBe Energize, the heart rates of the Daphnia were almost doubled to an average of 418 in the 0.1 Solution. In the 0.5 Solution, the heart rates of the Daphnia remained about the same as in the 0.1 Solution with an average heart rate of 402 beats per minute. In the 1.0 Solution, the heart rates of the Daphnia were again elevated to an average of 506 beats per minute.	
Conclusions/Discussion When the Daphnia were placed in the 5 Hour Energy, Monster Energy and Hansen Energy Pro they died as the concentration increased. When the Daphnia were placed in the Xing Tea's Green Tea with Ginseng and the SoBe their heart rate increased 7-fold and 2-fold, respectively.	
Summary Statement I tested the effects of different energy drinks on the heart rates of Daphnia.	
Help Received Father helped keep time when observing the Daphnia's heart rates and helped type the report. Mother helped with the display board.	