CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
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Project Number
J1512

Project Title
Daphia on Drugs

Abstract

Objectives/Goals
The object is to learn and determine how various substances, such as; epinephrine, caffeine, aspirin, and ibuprofen affect the heart rate of the crustacean-like animals, daphnia.

Methods/Materials
About 80-85 daphnia total were selected for testing and all of the daphnia were kept in the same controls and conditions. About 5 daphnia were tested per drug without being exposed to any of the substances, then one daphnia was exposed to a substance and the heart rate was counted three times to increase the accuracy of the outcome. Another daphnia was selected and the process was repeated, about 20 daphnia were tested per substance and no daphnia was used more than once.

Results
The averaged unaffected heart rate was 300 beats per minute. The only substance that increased the heart rate of the daphnia was caffeine, which increased the unexposed heart rate by about 41-44 beats per minute. The substance with the greatest change was aspirin, which decreased the daphnias# heart rates by 73-75 beats per minute averaged. Epinephrine decreased the heart rates by 7-9 beats per minute averaged, and Ibuprofen-Elixsure decreased the heart rates by about 65-70 beats per minute averaged.

Conclusions/Discussion
While the objective was attained the hypothesis was only slightly supported. Only caffeine increased the heart rates and Ibuprofen and aspirin decreased the heart rates much more than predicted. With this knowledge it is possible to understand the ways certain substances affect the heart.

Summary Statement
To test how four different substances will affect the heart rate of daphnia.

Help Received
Mother took my pictures and stopped and started stopwatch.