CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
J1417

Project Title
Green Tea: An Effective Alternative in Reducing Heartbeat Rates as Compared to Prescription Medicine

Abstract

Objectives/Goals
My objective was to determine if Green Tea is as effective in reducing heartbeat rates on Daphnia as Altace, a prescription medicine.

Methods/Materials
We tallied the heartbeat rates of daphnia samples thirty times each in water, in green tea, and in Altace (a high blood pressure medicine). A daphnia was placed on a microscope with a drop of water and the number of daphnia#s heartbeats was counted in five seconds. The result was multiplied by twelve to determine the daphnia#s heartbeat rates in minute in water. Then, the number of daphnia#s heartbeats was counted in the green tea concentrate as well as the Altace drug. This process was repeated 30 times each to collect enough sample data.

Results
In our testing, the average reduction in heartbeats of daphnia exposed to green tea (40.2 beats per minute) was greater than in daphnia exposed to the Altace (33.0 bpm). Furthermore, the standard deviation (s.d.) of the green tea was much less (15.9 bpm) than Altace (25.3). This means that the green tea is not only more effective in lowering heartbeat rates, but it is also more stable since it has a smaller standard deviation. Also, Altace sometimes had a tendency to raise the heartbeat rate instead of lowering, which the green tea never did.

Conclusions/Discussion
My hypothesis was supported because the green tea showed better heartbeat rate reduction results than the Altace! The daphnia#s heartbeat rate was slower with the green tea than with the Altace. Other benefits of taking green tea include big cost savings ($508.44 saved per year) compared to Altace and no side effects (it#s a natural tea!). It is interesting to learn that the green tea is more effective, stable, reliable, and cheaper than Altace. (Cost savings calculations based on the assumption: 2 tea bags a day for a year and one 5 mg Altace pill a day for a year)

Summary Statement
This project is to demonstrate that a natural herbal tea (green tea) is as effective as a prescription medicine (Altace) in reducing heartbeat rate on Daphnias and perhaps humans.

Help Received
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