CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)
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Project Number
J1432

Project Title
Coca Cola Raises Blood Pressure

Abstract

Objectives/Goals
The objective is to determine if Coca Cola with caffeine will change the heart rate and blood pressure of people within thirty minutes after being consumed.

Methods/Materials
Informed consent was obtained from 10 individuals who were then randomly assigned to either 355ml. of Coca Cola with caffeine or 355ml. of Coca Cola without caffeine (control) the identity of which was blinded to the subject and the researcher (double-blinded). Before drinking the Coca Cola each subject relaxed for 10 minutes in a quiet controlled environment, while watching the black and white documentary video "Kon Tiki" and then had baseline blood pressure (BP) and heart rate (HR) measurements three times using an automatic sphygmomanometer. 30 minutes after cola was consumed BP and HR were measured again three times. Data was analyzed comparing changes in BP and HR between study and control group. Statistical analysis using simple t-test was obtained.

Results
Every subject who drank caffeinated cola had a rise in systolic blood pressure (SBP) at an average rise of 7mmHg. The SBP rose in some subjects and fell in others of the subjects who drank decaffeinated cola in the control group. The control group had an average rise of 1mmHg SBP. There was no significant change in heart rate. The simple t-test statistical analysis revealed that there were enough subjects in each group and enough of a difference in SBP to be statistically significant (P = .05).

Conclusions/Discussion
This experiment proved the hypothesis that Coca Cola with caffeine will raise the blood pressure of a person within thirty minutes (p-value = 0.05), but did not prove that it would raise the heart rate (p-value = 0.65).

Summary Statement
This project proves that Coca Cola with caffeine raises blood pressure within thirty minutes.

Help Received
1. Father offered advice and helped edit papers. 2. D. Gjertson, Ph.D. (Statistician UCLA Immunogenetics Center) provided statistical analysis of results.