CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)
Colin M. Gavin

Project Number
J1512

Project Title
The Effects of Nanoscale Particles on Mammalian Cell Viability

Abstract

Objectives/Goals
There is not much is know about the interaction between Carbon Nanoparticles and living organisms. These types of particles have many uses such as drug delivery, catalysts, and cosmetics. The purpose of this project was to test how molecules made of sixty and seventy carbon atoms effect Chinese Hamster Ovary Cells.

Methods/Materials
Plates of cells were treated with eight different dilutions of each type of nanoparticle. Measurements of the percentage of live and dead cells were taken using a fluorescence microplate reader. Measurements were also taken of a control plate that used digitonin to kill some cells.

Results
It was found that the nanoparticles had no significant effect on the cells. Other the range of dilutions the percent of dead cells only varied by 5 percent. These results seem to be valid based on the control assay that we preformed.

Conclusions/Discussion
There are some considerations however. The types of particles we used were limited. The particles could have caused damage to the cells that this test did not measure. Finally, it would have been best to use a lung cell type because the most common vector for exposure to these particles would be inhalation. We can infer that in the scope of this work carbon nanoparticles do not cause significant cell death in Chinese Hamster Cells.

Summary Statement
We used a fluorescence microplate reader to determine the effects of very small carbon particles on Chinese Hamster cells.

Help Received
I used the Cell Culture lab at Molecular Devices Corp. under the supervision of Ms. Carole Crittenden