CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Suchita Nety

Project Number
J1522

Project Title
Impact of Nanoparticles on Human Analogs

Abstract

Objectives/Goals
For my project, I studied the mechanical and toxic effects of commonly occurring nano particles on ciliated organisms and bacteria-used as human analogs. I predicted that the nano particles would be able to slow the movement of the cilia, meaning that it would be able to enter the human body. I also thought that there would be signs of inhibition on the plates of bacteria when exposed to the nano particles, indicating a harmful chemical effect.

Methods/Materials
I chose to use the smallest possible sizes of these materials to understand the impact of the effects of nano-sizes. Experiments were carried out with Titanium Dioxide, Carbon, and Chromium on Spirostomum ambiguum, Blepharisma americanium, and E. coli.

Results
It was found that dilutions of even 30% can cause significant reduction in the motion of these ciliated organisms. The bacterium did not show any adverse toxicity effects of the nanoparticles # a good thing because the materials that I tested are all around us.

Conclusions/Discussion
In conclusion, part of my hypothesis was correct; the nano particles slowed the movement of the ciliated protists. The other part was not supported by my data; the E. coli plates showed no signs of inhibition of growth. For the future, it will be interesting to extend these studies to deep nano sizes and other human analogs.

Summary Statement
The goal of my project was to use human analogs, ciliated protists and bacteria, to understand if common nano particles could be harmful to human health.

Help Received
Used lab equipment at Schmahl Science Workshop under supervision of Mrs. Sarah Thaler