Name(s)

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Project Number

22570

Project Title

What Is the Survival Rate of Fetal Rat Brain Cells After Treatment with Nicotine, Alcohol, and Tobacco?

Abstract

Objectives/Goals

The objective is to determine which substance, nicotine, alcohol, or tobacco has the greatest impact on the survival of fetal rat brain cells.

Methods/Materials

Fetal rat brain cells were available from a laboratory at USC where I conducted my experiments. I placed brain cells on 30 gridded cover slips coated with 10 micrograms per ml of poly-d-lysine. I randomly selected 5 grids on each cover slip and counted the number of brain cells before treatment. I then prepared 5 solutions, one was a nicotine solution, one was a ground up cigarette and water solution, a ground cigarette and ethanol solution, an ethanol control, and a media control. I treated the cells for 24 hours an€ then counted the exact same grids and recorded the results

Results

After 24 hours the average survival rate of brain cells treated with nicotine was 89%. The brain cells treated with tobacco and ethanol was 86%. The survival rate treated with tobacco and water was 83%. In all 94% of the brain cells that were trated with ethanol survived. All (100%) of the brain cells that were not treated survived after 24 hours.

Conclusions/Discussion

In conclusion, I found that the tobacco and water extract had the lowest brain cell survival. The tobacco and ethanol extract and nicotine also had low survival. This experiment shows the harmful affect of these substances on brain cells. This provides important information to people about tobacco and alcohol and its harm to our brain cells.

Summary Statement

This project shows the affect of nicotine, alcohol, and tobacco on fetal rat brain cells.

Help Received

My mother helped type project and poster, and drove me to USC. Angela Dietreich, USC research assistant, supervised and helped with calculations and experimental setup in the laboratory. Kathleen O#Neal, USC researcher, taught me methods used in the laboratory and helped photograph the cells. Dr.