CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
S0414

Project Title
pTT Influence on Genetic Change of Human Fibroblasts and Prokaryotes Exposed to UV Light

Abstract

Objectives/Goals
This project will attempt to establish cultures of human fibroblasts and example Gram negative Escherichia coli and Gram positive Staphylococcus epidermitis, subculture the above cells to maintain growth, incubate cells both in the presence and absence of pTT, expose both to varying amounts of ultraviolet B radiation, and examine cultures for subsequent chromosomal or nuclear damage and viability.

Methods/Materials
- Add 6 to 8 ml of complete growth medium to culture flasks and aspirate cells by gentle pipetting.
- Add appropriate aliquots of the cell suspension to new culture vessels.
- Introduce pTT into half of the cell cultures.
- Pour plates of tryptic soy agar.
- Put pTT in half of the agar.
- Inoculate 8 plates of each agar with Escherichia coli and 8 with Staphylococcus epidermitis.
- Incubate plates and culture flasks at 37oC and irradiate with UVB for various lengths of time
- Observe cells under an inverted microscope to observe any mutations.
- Create smears of prokaryotes to determine damage done to DNA.

Results
Cultures of both human fibroblast and representative bacteria were established. The subculturing of human fibroblast cells as well as Escherichia coli and Staphylococcus epidermitis were successful. Fibroblast cells in the control flasks both with and without pTT differentiated and divided. The flasks with pTT that had been subjected to UVB for 2 and 4 days showed some possible signs of differentiation while those flasks without pTT showed no differentiation at all. Those cells subjected to UVB for 6 days both with and without pTT showed no signs of differentiation. It is suspected that the concentration of pTT in the culture flasks was not high enough and therefore prevented those cells with pTT from completely differentiating. pTT was placed in half of the agar before being streaked with bacteria. They were then exposed to UVB for 2, 4, and 6 days time. Results indicate some damage to growing bacteria in quantity of growth rather than morphology of cells.

Conclusions/Discussion
Results suggest some damage of UVB to human fibroblast cells and prokaryotic cells in quantity of growth rather than morphology of cells. It is suspected that the concentration of the pTT was to low to allow for differentiation of human fibroblasts with pTT exposed to UVB.

Summary Statement
The purpose of this experiment is to compare the effects of pTT on the genetic changes in human fibroblasts and example prokaryotes as induced by UVB.

Help Received
Ms. Eline Preston supervised all procedures