CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
22547

Project Title
The Effect of UV Light on DNA

Abstract

Objectives/Goals
My problem statement is: How long does it take for UV light to damage DNA (bacteria)? What types of materials protect DNA from UV light?

My objective was to find out how long it takes for Ultraviolet Light to kill DNA(bacteria), and what types of materials protect DNA(bacteria) from Ultraviolet Radiation.

Methods/Materials
1 spectrophotometer, 1 piece of black and white (felt, cloth, and paper), 50 pipettes, 100 petri dishes, 200 ml bacteria (Escherichia Coli), 200 ml bacteria-medium (Luria-Bertani medium), 20 50 ml test tubes, 1 piece of red and blue paper, 1 incubator set at 37 degrees Celsius,1 UV tube light, 1 roll of saran wrap

Procedure 1 (for first part of the problem statement)
A.Take 4 petri dishes and put 1 ml each of the bacteria and bacteria medium. Swish to mix.
B.Expose 1 petri dish for 30 mins., 1 for 15 mins, 1 for 5 mins., and leave the last one with no exposure.
C.Incubate all 4 petri dishes at 37 degrees Celsius for 24 hours.
D.Take samples from each petri dish, and use a spectrophotometer to record results.

Procedure 2 (for second part of the problem statement)
A.Take 7 petri dishes and put 1 ml each of the bacteria and bacteria medium. Swish to mix.
B.Expose all petri dishes for 30 minutes with the protection material on top of the petri dish.
C.Incubate all 4 petri dishes at 37 degrees Celsius for 6 hours.
D.Take samples from each petri dish, and use a spectrophotometer to record results.

Results
The bacteria which was exposed for 30 minutes was the most affected. These are the materials from the best to worst protection; paper, felt, exposed with the petri dish cover on, cloth, saran wrap, and no protection.

Conclusions/Discussion
It took the UV light 30 minutes to actually start affecting the DNA (bacteria). The color of the material does not matter, but the type of material does.

Summary Statement
My project is about the affect of Ultraviolet Radiation on DNA (how long it takes to kill the DNA and what types of materials protect the DNA).

Help Received
Used lab equipment at University of California, Irvine under the supervision of Dr. Sastry Gollapudi, Mother transported me to the University when needed, Dad helped format the document and display board