CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
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Project Number
J1309

Project Title
Will the Growth of the Microorganisms Bacteria and Mold Be Inhibited by Various Sources of Illumination?

Abstract

Objectives/Goals
The purpose of this experiment is to find out if the microorganisms bacteria and mold would be inhibited when they are exposed to different illuminations sources that included different types, colors, and strengths of light. I thought that the bacteria samples that would be exposed to the illumination of the 25 watt ultraviolet light would inhibit the bacterial colonies growth. Also, the mold samples growth would be inhibited by the 25 watt blue illumination.

Methods/Materials
I will make nutrient agar to grow bacteria on by taking 4 Knox gelatin packages, 4 bouillon cubes, and 2 cups of distilled water and bringing it to a boil. I will pour this mixture into 20 sterile petri dishes, swipe the inside of my cats mouth to retrieve 20 saliva samples with sterile Q-tips and then inoculate the prepared agar dishes. For the next phase of this experiment, mold will be grown by collecting household dust and and placing it on prepared lemon wedge rinds. These will be placed into baggies with 20 drops of water and sealed. There will be an #A# and a #B# sample for each experiment to double check results, plus two controls. All of the samples will be placed into 10 separate prepared enclosures with the various light illuminations: 15 watt each of red, clear, green and fluorescent bulbs, 25 watt blue, ultraviolet and yellow lights and 40 and 60 watt incandescent bulbs. Data war recorded every 24 hours for 7 days. Photos were taken.

Results
The illumination that inhibited the bacterial colony growth the best was the 25 watt green light, with (2,1). The 25 watt U.V. light was the second best, but had excessive mold infiltration. Bacterial overgrowth was caused by the 60 watt incandescent. The blue 25 watt light was the best illumination to inhibit mold growth. The lights that caused mold overgrowth were the 15 watt red and the 25 watt yellow.

Conclusions/Discussion
What I discovered overall was that the microbes are sensitive to the effects of light or light wavelengths. Some light illuminations might cause a more perfect temperature or environment for microbes to reproduce or even overgrow. Some other light sources micht have just the right amount of energy to separate organic molecular bonds. This breakage could cause genetic or cellular damage to the microorganisms, killing them or limiting their growth.

Summary Statement
My experiment is about finding out if the growth of microorganisms bacteria and mold would be inhibited by exposure to various sources of illuminations.

Help Received
My mother took the photographs of me while I did my experiment, I took all of the other photos.