



CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Form with sections: Name(s) Christopher K. Khavarian, Project Number 22247, Project Title Are Penicillin Resistant Bacteria Resistant to Ultraviolet Light?, Objectives/Goals, Abstract, Methods/Materials, Results, Conclusions/Discussion, Summary Statement, Help Received.

22247

Project Title

Are Penicillin Resistant Bacteria Resistant to Ultraviolet Light?

Objectives/Goals

The experiment that was conducted was #Are Penicillin Resistant Bacteria Also Resistant to Ultraviolet Light?# My hypothesis was that penicillin resistant bacteria will be more resistant to Ultraviolet light than non-penicillin resistant bacteria and when the exposure time is increased then fewer bacteria will survive.

Methods/Materials

The experiment was conducted in two of the four Preuss School labs, where my long and tedious science fair experiment began. Through this process the main materials that were used are penicillin chads, E-coli bacteria strand k, and an ultraviolet light lamp. The process in which the experiment was conducted was the bacteria was put on agar and then medicated with penicillin. Later the bacteria that survived the penicillin were extracted and grew. The last and final steps where the penicillin resistant bacteria was put on agar and exposed to ultraviolet light for zero, one, two, three, four and five minutes and after 2 days they were checked for the results. Basically the same process was followed for the ordinary bacteria but just it was put straight on the plate and not grown and then grown again.

Results

The data varied for instance in the five minute range 49% of penicillin resistant bacteria survived compared to 9.1% survival. The only case where the ordinary bacteria had more survival was in zero minutes of exposure when the average was 99.6% and for penicillin resistant the rate was 99%. The comparison between the two types of bacteria was very different and less survived on the ordinary bacteria and more survived on the penicillin resistant bacteria.

The few mishaps that might have occurred are where when the sterile loop was overheated and it could have killed the bacteria. The other thing was that on some of the dishes some mold had begun to grow, which only covered 1% to 5% of the dish.

Conclusions/Discussion

My hypothesis was supported because the experiment supported that penicillin resistant bacteria will be more resistant to Ultraviolet light than ordinary bacteria. From this experiment one can see that penicillin resistant bacteria are more resistant to ultraviolet light than regular bacteria. Therefore if you have an organism that is resistant to penicillin that does not mean that it will be resistant to ultraviolet light. The reason that this could have occurred is due to the genes of the bacteria being able to withstand penicillin but not ultraviolet light.

Summary Statement

The project compares whether penicillin resistant bacteria is more or less resistant to ultraviolet light than ordinary bacteria.

Help Received

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