CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
S1408

Project Title
Does Lysozyme in Human Tears Kill Bacteria?

Abstract

Objectives/Goals
The purpose of my science project is to observe the effects of human tears on the growth of bacteria. Tears contain an enzyme called lysozyme that reportedly has bactericidal properties. I want to see if and how efficiently lysozyme actually kills bacteria. If tears do have antimicrobial powers,will lysozyme kill just any of the bacteria the eye comes into contact with or just specific bacteria? I also wish to see if the efficiency of lysozyme in tears varies from person to person. Is all lysozyme in tears the same or does its bactericidal strength vary in different people?

Methods/Materials
I used onions to collect tears from various people. I made lawns of four different bacteria on an agar plate and inoculated filter paper discs saturated with tears on each lawn. After 24 hours, I observed the plate and looked for a zone of inhibition which means that the lysozyme is having an effect on the organism and inhibiting its growth.

Results
My results show that Micrococcus lysodeiktius is susceptible to the lysozyme, but the other three bacteria are resistant and there is no inhibition in their growth.

Conclusions/Discussion
In conclusion, I believe that human tears indeed have microbial powers, which has some effect on Micrococcus lysodeiktius, but they are not effective nor strong enough to protect our eyes from all bacteria that comes into contact with them.

Summary Statement
My project is about the effects of lysozyme in human tears on bacteria.

Help Received
Mother, a former lab technologist, supervised my handling of bacteria