CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
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Project Number
J1314

Project Title
pH Tolerance of Microbes

Abstract

Objectives/Goals
I wanted to find out if pH level would effect the growth of microorganisms.How tolerant are microbes of an acid, neutral or base environment? I also wanted to know if the microbes i tested were equally tolerant of different enviroments.

Methods/Materials
Inoculating Agar Plates
1.Remove one of the applicator sticks from the package (don#t let the tip touch any surface).
2. Lift the top of the culture dish and remove some of the culture (about the size of a peppercorn) with the applicator stick.
3. Transfer the culture onto the surface of the pH 3 gar with a streak from top to bottom of the dish.
4. Repeat steps 2 and 3 with the other dishes of agars each with a different pH (use a fresh applicator stick).
5. Label dishes according to pH and microbe introduced to it.
6. Incubate B. brevis, B. coagulans, and S. cerevisiae at 37°C, and the other cultures at room temperature for 72hrs.

Results
With all my testing, I was able to prove and learn many things. First of all, before doing this project I was ignorant about many factors that cause the growth of many microbes. I proved that not all microbes are vulnerable to acidic or alkaline conditions. For example, certain microorganisms might grow best in an acidic environment others in an alkaline enviroments. Some of them might not have a certain pH at which they do best.

Conclusions/Discussion
My hypothesis was incorrect since not all microbes did bad in an acidic condition. Every microorganism has a pH value, which is a certain environment they can no longer grow in. Bacillus brevis grew best under the pH of seven, nine and 11. Bacillus coagulans grew best under the pH level of three, five, and seven. Micrococcus luteus grew best under the pH of seven, nine and eleven. Penicillium chrysogenum grew in every type of environment. Pseudomonas fluorescens grew best in every condition on the first and second test except the pH level of three. Saccharomyces cerevisiae grew in every ph level I tested. Bacteria are more sensitive to an environment change than a fungi is.

Summary Statement
I used different pH levels to test the growth of many microorganisms.

Help Received
My teacher, Brent Susman ordered some of the materials in order for me to complete my project such as the cultures.