CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J2115

Project Title
Cloudy with a Chance of Bacteria

Abstract

Objectives/Goals
I was trying to determine which mouthwash protected your mouth from cavities the best. I tested four agents:Crest,Scope,Listerine & Hydrogen Peroxide.

Methods/Materials
First, I let my agar plates reach room temperature
Then, I used a swab to transfer the streptococcus mutans in the culture tube into the tube with Muellers broth. I made sure the broth looked cloudy which ensures there is enough bacteria in the broth.
I used a sterile calibration loop to streak 0.001 ml of the broth onto each plate. A separate loop was used for each agar plate
Then, I added an amount of each mouthwash to each agar plate-Trial 1: 5cc, trial 2: 0.5cc, trial 3: 0.5cc (I put the agar plates into a pre-made incubator)
I counted and recorded the number of colonies of bacteria (S. Mutans) after 24 hours and 48 hours

Materials:
Agar plates,Streptococcus Mutans,Styrofoam box,lamp,thermometer,Mouthwashes(Crest,Scope,Listerine),Hydrogen peroxide, Inoculation loops, Muellers broth,Sterile gloves&swabs,Camera

Results
I observed that wherever I applied the oral cleansing agent, barely any bacteria grew; but wherever I did not put any, a lot of colonies formed. This shows that all the agents were strong enough to inhibit the growth of many colonies. If the proper amount of any of these was put in your mouth everyday you would have a bacteria free mouth. It is just that Crest is the most concentrated.

Conclusions/Discussion
My hypothesis was correct in both experiments. In experiment one, Crest had more colonies but they grew outside the zone of inhibition. By zone of inhibition I mean the area where the mouthwash was applied. In Crest#s zone of inhibition, there was not a single colony, unlike all the other mouthwashes. In hydrogen peroxide, there was one colony but it was in the zone of inhibition. In experiment two, Crest killed 1% more than the second place agent which was hydrogen peroxide. This made Crest the best at killing already living bacteria. So in this experiment it shows that the best agent to use on your mouth is Crest mouthwash. If I were to do this experiment again I would have more trials. Also I would spread the mouthwash evenly over the whole agar plate to ensure consistency and accuracy.

Summary Statement
I am trying to find out which oral cleansing agent will inhibit/kill bacterial growth and stop the formation of cavities.

Help Received
Mother helped get materials; Father supervised experiment and helped design the board