CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
J1340

Project Title
Bandages and Bacteria

Abstract

Objectives/Goals
The objective of this experiment was to learn what components on an anti-bacterial bandage's pad are most effective in removing bacteria from the human hand.

Methods/Materials
To complete this experiment numerous scientific devices were required. Although the two most notable tools were the Petri Films and a Bacterial Incubator. . With these tools bacteria could be placed somewhere and grown at an optimum temperature. To complete the objective of this experiment the percentage of bacterial culture removal was calculated. This was done by taking the amount of bacterial cultures on a two square are on the film before the bandages were appplied. Then the bandages were applied onto the films and the remaining cultures were counted. The percentage of reduction from before to after the films were applied was the quantitative measurement needed to answer the experimental question.

Results
The percentage of bacterial culture reduction in the Johnson and Johnson bandage, which utilized a combination of Polymyxin B Sulfate and Bacitracin Zinc, was approximately 97.78% with a best value of 3.89%. For the Curad bandage, which contained silver as an active ingredient, the percentage of bacterial culture removal wdas 78.23% with a best value of 10.00%. And finally the Coralite bandage, whose pad contains Benzethonium Chloride, removed 12.12% of all bacteria and had a best value of 12.12%. These results are the product of numerous trials and therefore are reliable. The best values indicate how much the given values can deviate from the "true" value, which itself is unatainable.

Conclusions/Discussion
The experiment's results agreed with the hypothesis. The hypothesis was that the Johnson and Johnson bandage would be most effective in killing bacterial cultures. The experiment's results could be reworded to say that the Polymyxin B Sulfate and Bacitracin Zinc are more effective than either Benzethonium Chloride of Silver in removing bacteria from the human hand. The main reason that explains why these results were as they were is ingredients. Johson and Johnson's bandage pad contained Bacitracin Zinc, which is effective in destroying gram positive bacteria. The other ingredient on the pad, Polymyxin B Sulfate, is able to destroy gram negative bacteria. And because all bacteria in the world is either gram negative or positive very few bacteriums will be able to survive the pad of the Johnson and Johnson bandage.

Summary Statement
The focus of this project is to learn what ingredients on an anti-bacterial bandage pad are most effective in removing bacteria from the the human hand.

Help Received
A biology teacher at The Preuss School UCSD named Ms. Mussey provided materials for the experiment. Mother also provided assistance with science board layout suggestions.