CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Anirudh G. Madabhushi

Project Number
J1321

Project Title
Do Spices Affect the Growth of Bacteria?

Abstract

Objectives/Goals
To determine whether the growth of Staphylococcus epidermidis is affected by different spices. I believe that ajwain, asafoetida, black pepper, cardamom, cumin, garlic, mustard seeds, and turmeric will have the highest inhibitory effect

Methods/Materials
The spices used in this experiment were ajwain, asafoetida, bay leaves (laurel), black pepper, black mustard seeds, cardamom, chile pepper, coriander seeds, cinnamon, cloves, cumin, curry leaves, fenugreek seeds, garlic, ginger root, sesame seeds, tamarind, and turmeric. 1.5 grams each of these spices were put into a test tube along with 7 mL of distilled water. These solutions were then boiled at 100 degrees Celcius for 5 minutes. They were then put into a centrifuge for 10 minutes. Each of these solutions were soaked into filter paper disks and they were placed onto sheep blood agar plates inoculated with Staphylococcus epidermidis. These were placed inside an incubator for 24 hours, after which I measured the zone of inhibition from each filter disk. I performed 4 trials.

Results
None of the filter paper disks had any zone of inhibition around it. This happened on all four trials.

Conclusions/Discussion
After this experiment, I conclude that my hypothesis was incorrect because none of the spices had any inhibitory effect against the bacteria. This could have happened for several reasons. First of all, enough of the spice extract may not have gotten into the solution. This could be solved if the spice was allowed to boil in the solution for a longer time. Another explanation could be that the intense heat during boiling may have destroyed the essential active ingredients in each spice that inhibit the bacteria. This could be solved if the spice was allowed to boil at a lower temperature. In conclusion, these spices do not any inhibitory effect against Staphylococcus epidermidis if tested with this method and if I were to improve this experiment, I would allow the spices to boil at a lower temperature for a longer period of time.

Summary Statement
My project is about different spices and their effect on the growth of Staphylococcus epidermidis.

Help Received
Mom took me to lab, provided spices, and helped me prepare journal. Grandfather helped boil spices. Used lab equipment of Monte Vista Medical Lab under supervision of Mr. Jeff Cordill.