CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY

Name(s)

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Project Number

S1521

Project Title

Plants vs. Bacteria: Comparing the Antibacterial Properties of Different Plants

Abstract

Objectives/Goals

To test the antibacterial properties in plants. We are comparing herbaceous plants lower than 25 cm and woody plants to see which kind has a hire bacterial properties.

Methods/Materials

We will be collecting herbaceous plant samples such as ginkgo, oxalis and other woody plants, mashed up the plant to make a plant solution. Then mix the bacteria in with the solution and then spread it onto Petri dishes. We tested many different techniques. For example, we mixed the bacteria into the plant solution first, then spread it on the petri dishes. Another technique we use was to spread the plant solution first and then the bacteria. Our purpose is to see if it makes a difference in the result that we will obtain.
The materials that we need are plant samples, agar plates, inoculation loop, gloves, mortal and pestle, test tube, centrifuge tubes, ethanol, distill water, hot plate, beakers of various sizes, gloves.

Results

In the first trial, we did not boiled the plant when we make the plant solution. We dip the bacteria collected from our teeth into the plant solution then spread it on the petri dishes. According to the data we have collected, there was a 70% reduction of the bacteria growth with the oxalis plant solution. Other plant such as ginkgo also had a 50% decrease in bacterial growth. In the second set of trials, we boiled the plant this time before making the plant solution. The result were less effective than the plant that we did not boil, however the results still shows that there was a decrease in bacterial growth. The density of the bacteria colonies in the petri dishes with plant solution was less than in out control.

Conclusions/Discussion

From the 2 sets of trial that we have done, we can see that the plants we have collected does not kill any bacteria, however it does inhibits the growth of the bacteria. It seems to be more effective if we did not boil the plants. Additionally, when we did the second set of trials. It seem to be more effective when we mix the bacteria in the plant solution first before putting it on the petri dish versus spreading the bacteria first then spread the bacteria on. Our thought on that is because when we mixed in the bacteria with the plant solution, it allow the proteins in the plant to break into the cell wall while it was still dividing. However it does not work on already existing colonies of bacteria.

Summary Statement

To test the antibacterial properties in herbaceous plants versus woody plants.

Help Received

Our teacher provided some most of the materials that we did not have access to, except the plants that we have collected ourselves.