CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)

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Project Number

34800

Project Title

Cell Phone Radiation and Its Effects on Bacteria

Abstract

Objectives/Goals

The project is intended to assess the effects of cell phone radiation on bacteria found in the ear, specifically Staphylococcus Epidermidis using Escherichia Coli DH5 alpha as a comparison to see if cell phone radiation would also affect a stable bacteria. In future testing, we would increase the dilution from a 1:10 to 1:50 dilution to prevent the colonies from sticking together providing a more accurate count of bacteria. We would also like to test possible ways of reducing the radiation that seems to be leaking from the cell phone.

Methods/Materials

We isolated the two groups of bacteria, the control and the test, from one another, using a lead shield, ensuring that our results are accurate. We then called the bacteria 22 times a day, for a minute and 30 seconds each, for four days. We kept the bacteria at 37 degrees celsius, using an incubator, to mimic the warm environment of the human body.

Staphylococcus epidermidis bacteria, Escherichia coli bacteria, ruler, pencil, petri dish, smartphone, gloves, ethyl alcohol, alcohol wipes, notebook, poster board, paper, pens, agar, inoculating loop, plastic tabs, water, measuring cup,syringe, measuring spoon, lighter, pipet, pipet caps, incubator, lead shield, and test tubes.

Results

Staphylococcus Epidermidis control: over 300 colonies counted

Staphylococcus Epidermidis test 1: over 500 visible individual colonies many more unverifiable due to massing

Staphylococcus Epidermidis test 2: over 600 colonies counted

Escherichia Coli (control and test): colonies to vast to count, but after observation, the test group seemed more dense

Conclusions/Discussion

From our research and personal first hand tests, we have concluded that when Staphylococcus Epidermidis bacteria is treated with cell phone radiation, growth is affected. Also, we have found that the Escherichia Coli had marginal difference between the test and control groups, with the test showing more dense colonies. The effect of the cell phone radiation was that the bacteria grew at a faster rate than that of the control group, specifically in the Staphylococcus Epidermidis bacterial group. From this we have determined that the excessive use of cell phone may cause a more rapid growth of Staphylococcus Epidermidis bacteria on your skin and in your ear, and may cause an ear infection.

Summary Statement

The project is intended to assess the effects of cell phone radiation on bacteria found in the ear, specifically staphylococcus epidermidis.

Help Received

Used lab equipment at University of California Riverside under the supervision of Dr. A.L.N. Rao and Dr. Venkatesh Sivanandam; Received materials and consultation from Dr.Aman Mann; Deepta Dhillon helped with the display; Dr. Bita Bagheri provided consultation

Preliminary