CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)

Aisha K. Randhawa

Project Number

38384

Project Title

Cell Phone Radiation: Does a Radiofrequency Shield Boost the Lifespan of the Fruit Fly?

Abstract

Objectives/Goals

There are known negative risks of cell phone radiation to health. Last year, my science fair experiment found that exposure to cell phone radiation decreases the lifespan of larvae and adult fruit flies. The current project investigates whether using a radiofrequency shield reduces the exposure of cell phone microwave radiation and preserves the normal lifespan of the fruit fly. My hypothesis is that the fruit flies exposed to cell phone radiation without a radiofrequency shield will have a shorter lifespan compared to the shielded ones.

Methods/Materials

I tested the RadioClear film (purchased from LessEMF.com) with a RF (radio frequency) meter to establish shielding effectiveness. I then exposed a newly hatched fruit fly to a shielded iPhone 6 with airtime on for 15 minutes daily. Ten fruit flies were exposed in each group. The second group was exposed to an unshielded iPhone 6 with airtime on and the control group was exposed to an iPhone 6 with airtime off. Each fruit fly was fed a slice of apple and a spoon of mashed potato mix and housed separately inside a plastic container with a breathable lid. During the 15 minute exposure, the cell phone was placed next to the container. Recordings were made daily to determine if the fruit flies were alive or had died.

Results

The RF meter showed a 900 fold decrease in the radiation emitted by the RadioClear shielded iPhone. The average lifespan was 13.1 days for the control group, 12.7 days for the shielded group and 8.3 days for the unshielded group. The difference in lifespan between the unshielded fruit flies and the control or shielded fruit flies was statistically significant.

Conclusions/Discussion

Using an RF meter, I demonstrated that the RadioClear shield significantly decreased the emitted cell phone radiation. The fruit flies exposed to the iPhone shielded with RadioClear lived nearly as long as the controls. Without the shield, the fruit fly lifespan decreased by 37 percent compared to the controls. The data shows the RadioClear shield mitigates potentially harmful cell phone radiation while preserving lifespan of the fruitfly. Shielding may have beneficial health effects for society given the extensive use of cell phones today.

Summary Statement

This project shows that a radiofrequency shielding film mitigates the emitted electromagnetic radiation from a cell phone and prevents a decrease in the lifespan of Drosophila fruit flies.

Help Received

I completed the project myself. I purchased the RF meter and RadioClear Film using the award money I received from last year's California Science Fair. My science teacher and father helped me with guidance, putting the board together and performing statistical analysis using http://www.socscistatistics.com/.

Preliminary