CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Miles W. Beal-Ampah

Project Number
J1401

Project Title
Fruit Fly Fiesta: Effects of Radiation on the Reproduction of Drosophila melanogaster

Abstract

Objectives/Goals
I wanted to see how common forms of radiation would affect the reproduction of fruit flies.

Methods/Materials
150 fruit flies were viewed individually under a microscope to identify their sex and separate them to avoid mating before radiation. Fruit flies were exposed to 3 forms of radiation: x-ray (high and low level), microwave, ultraviolet light. 6 pairs of males and females from each group were placed in 2 jars each, plus one additional high level x-ray and 3 norm containers, totaling 10 vials for observation.

Results
Moderate powers of radiation did not affect the reproduction rate of the fruit flies. High powers of x-ray radiation delayed larvae production by 5 days. Ultraviolet light and moderate x-ray specimens were "jumpy" and small. Two norm groups failed to produce larvae; the third norm group produced larvae, but no offspring. These results demonstrated how radiation affected the reproduction of fruit flies.

Conclusions/Discussion
As I suspected, microwave and ultraviolet groups produced normal offspring amounts. This result supported my view that radiation flows outside microwave ovens because air that carries radiation rays is pushed out while it heats whatever is inside. Surprisingly, offspring from the ultraviolet and moderate x-ray groups were smaller and hyperactive, and high-level x-ray radiation larvae production was delayed. I predicted no x-ray group offspring because lead aprons are required to protect reproductive organs during x-rays. Normal reproduction from the non-tampered group was the most foreseeable hypothesis. However, the lack of larvae by two norm groups was possibly because many got trapped in the media, which was apparently too wet. The third norm group, which produced larvae but no offspring, was probably due to the plastic container top (others had foam). My project provided a greater understanding about the impact of radiation exposure. Without adequate protection, radiation exposure can potentially damage reproductive organs or result in small or hyperactive offspring.

Summary Statement
My project is about the effects of radiation (x-ray, UV light, microwave) on the reproduction of fruit flies.

Help Received
Mother helped type some documents and submit electronic application, Dr. Kent (Westside Cat Hospital) and Dr. Himes (Ladera Pet Clinic) provided x-ray facilities, and Julie Poulos assisted in preparing computer graphs

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Peter I. Bloomberg

Project Number
J1402

Project Title
More Running, Less Needles: How Exercise and Diet Affect the Blood Glucose Levels and Insulin Needs of a Type I Diabetic

Abstract

Objectives/Goals
The objective is to determine if daily exercise and a diet of eating 7 grams of protein for every 15 grams of carbohydrates eaten would reduce the blood glucose levels and insulin requirements of a Type I diabetic. My goal is to have my blood glucose levels fall within the range of non-diabetics and to reduce my insulin requirements.

Methods/Materials
I recorded two ten day trials. During trial one I exercised seven out of ten days and ate a balanced diet but did not stick perfectly to the 7 grams of protein/15 grams of carbohydrate diet. During trial two I exercised every day and tried hard to follow the 7 grams of protein/15 grams of carbohydrate diet. I kept a daily log during both trials. I recorded everything I ate, the grams of protein and carbohydrates I consumed, the ratio of protein to carbohydrate for each meal, the amount of exercise I got, my blood glucose levels , and my insulin intake. I used a One Touch Ultra blood testing kit, a Humalog insulin pen, Lantus insulin, a journal, nutrition facts listed on food products, "The Complete Book of Food Counts" by Corinne Netzer, and a Type I diabetic (myself).

Results
During trial two I was able to increase the number of times my blood glucose levels fell within the normal range of non-diabetics by 3%. I reduced the units of Humalog I used by 8 units and I used 2 units less of Lantus. During trial one I fell within the normal range of non-diabetics 72% of the time. I fell above 21% of the time and below 7%. I used 108 units of Humalog and 109 units of Lantus. During trial two I fell within the normal range of non-diabetics 75% of the time. I fell above 14% of the time and was slightly below 11% of the time. I used 100 units of Humalog and 107 units of Lantus

Conclusions/Discussion
My hypothesis was only partly correct. I thought the results would show more of a difference in insulin requirements and blood glucose levels. I am now doing trials three and four and am exercising more than ever. I will soon have new results to compare. I want to increase the number of times my blood glucose levels are normal because if I can, I have a better chance of staying free of diabetes complications. I think this project might benefit children and adults with Type I diabetes by providing them with a plan for staying healthy and complication free.

Summary Statement
My project looked at how exercise and diet affect the blood glucose levels and insulin requirements of a Type I diabetic.

Help Received
My mother helped me type my daily log.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Sydney Burlison; Sarah Johnson

Project Number
J1403

Project Title
Does Caffeine Affect the Running Speed of an Eighth Grader?

Abstract

Objectives/Goals
Does caffein affect an eighth grader's running speed? We are trying to find out whether caffein will affect the average eighth grader's running speed and how the placebo effect might affect the results.

Methods/Materials
We separated 18 people into three groups. Over a period of three days, each group received 300 mL of diet Coke, diet-decafeinated Coke, or water. Each day, we had the three groups all wait ten minutes and then had each group run two laps around the All Saints' Day School field. Over the three days, each subject received each of the three liquids. Since the placebo effect might have been involved, we told the subjects that they were drinking "diet Pepsi" instead of diet-decaffeinated Coke. This could have made them believe they would run fast two out of the three days. After the three days, we were then able to analyze whether caffein did or did not affect an eighth grader's running speed.

Results
In our graph we show that the average running speed of fifteen eighth graders was 2 minutes and 59 seconds when they consumed diet Coke, 2 minutes and 59 seconds when they consumed water, and 3 minutes and 6 seconds when they consumed diet-decaffeinated Coke. We concluded that the amount of caffein in a regular soft drink does not affect an eighth grader's running speed and the placebo effect was, in this case, not a variable. These results indicate that our hypothesis was incorrect, because we believed that caffeine would affect running speed, and that there might be a placebo effect.

Conclusions/Discussion
Our experiment was important because it answers the question of whether a small amount of caffeine would or would not affect an eighth grader's running speed. In running a short race, it did not seem to matter much if caffeine is consumed or not. Our experiment could have a different outcome if we used marathon runners instead of eighth graders. We would then be able to determine whether marathon runners perform better during a longer race after consuning caffeine. Athletes could apply the results of this experiment to their sport.

Summary Statement
Our project was a study to determine whether or not the amount of caffeine in a regular soft drink would affect the athletic perforance of an average eighth grade student, and whether or not a placebo effect is a variable.

Help Received
None.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Caitlin M. Chrans

Project Number
J1404

Project Title
Spinning a Web

Abstract

Objectives/Goals
To see if alcohol, caffeine, and cold medicine have an effect on your body.

I am going to spray spiders with fluids and observe how they make their web and observe how the webs look after they are finished. I believe that the Sobe adrenaline rush will have the biggest effect because the spider will get energy spurts while making the web.

Methods/Materials
I sprayed alcohol, caffeine, and cold medicine on each spider and examined how they reacted to the substance. I used cardboard, scissors, a pencil, a ruler, a computer, spiders, and Fruit Flies. I also used dirt, shovels, branches, SOBE Adrenaline Rush, whiskey, Cold Medicine, cameras, a spray bottle, and crickets.

Results
Sprayed spiders with alcohol and water: The web showed no resemblance of the normal web. Yes, it had the very basics of the normal web, a center point and threads extending from it, but it had no circular action, therefore meaning a hard job to catch diner.

Sprayed the spider with cold medicine and water: This web was almost congruent to the normal web. It was the closest resembles we had. The only thing that made it different was it had gaping holes all around.

Sprayed the spider with Sobe adrenaline rush and water: Hardly a web at all. It looked hardly had any center point. You had to look hard to see it. This web had threads of silk exploding into every direction and looked beaten and weak.

Sprayed the spider with water: This spider made a normal web. For this was my constant. I sprayed it with water because all spiders need water. I knew it wouldn#t have any affect on the web and it didn#t.

Conclusions/Discussion
All in all the alcohol had the biggest effect. The adrenaline rush had a big effect too, but the alcohol made the web skimpier and not as sturdy as the Sobe. It goes to show that alcohol can control humans# bodies.

Summary Statement
In this project, I am testing alcohol, caffeine, and cold medicine to see if they affect our bodies by using spider#s webs as a visual.

Help Received
Dad helped with the alcohol

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Natasha M. Darras

Project Number
J1405

Project Title
Fear of Flying: Am I Allergic to That Flight?

Abstract

Objectives/Goals
My investigative question is "Fear of Flying: Am I Allergic to That Flight?" This is concerned with the presence of peanut snacks provided on airplanes and passengers who may have servere reactions to them.

Methods/Materials
Methods
A. Categorize and color- code sterile swabs B. prepare distilled water, phosphate buffered saline ph 7.4, distribute in two containers C. Swab Seat, tray table, and armrests. D. Label swabs, ice and send to XXXXX Laboratory.
Materials
1 America West "Airline A 319" Flight 820, 1 America West Airline "Airline A 319" Flight 805, 1 America West Airline "Airline A319" FLight 748, 1 XXXXX Peanut Allergy Kits , 20 Sterile Swabs, 1 1 Liter Distilled Water, 1 packet Phosphate Buffered Saline ph 7.4, 1 Singer Electric Sewing Scissors, 1 XXXXX Laboratory, 2 Fedex shipping boxes, 6 Blue Ice, 4 Air Sick Bags, 8 AIrline Tickets, 1 Spool of Yellow Yarn, 1 Spool of Light purple Yarn, 1 Spool of Olive Green Yarn, 1 Spool of Hot Pink Yarn, 4 Colored Coded Markers, 1 Black Pen, 1 rd Sharpie, 20 Sticky Noted, 1 4x4 Cardboard Cutout, 1 2x8 Cardboard Cutout, 1 roll of Scotch tape, 1 Ice Chest, 2 4 ounce containers.

Results
Peanut Residue (2.5 parts per million) was found on sample number 012101 seat. Three out of four test seats 9 samples 012102, 012103, 012104 resulted in "Non-Detectable Amounts" of peanut residue. Although the residue was detectable, the amount is ot likely to cause a servere reaction in a passenger with a known peanut allergy. My hypothesis about peanut residue being present was correct but the corollary concern for an effecting amount was not proven.

Conclusions/Discussion
In conclusion, peanut residue was found on one airplane 9 sample 012101 seat. THree out of four test seats 9 samples 012102, 012103, and 012104, resulted in "Non Detectable Amounts" of peanut residue. Although the residue was detectable, the amount is not likely to cause a servere reaction in a passenger with a known peanut allergy. My hypothesis about peanut residue being present was correct but the corollary concern for an effecting amount was not proven.

Summary Statement
My investigative question asked if there was enough residue from peanut snacks distributed in a airlane to cause a reaction in a passenger with a severe peantu allergy.

Help Received
My mother helped type and edit my report and she flew with me on the flights.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Elyse M. DeWitt

Project Number
J1406

Project Title
Body Electric: The Effect of Electromagnetic Fields on Human Bone Piezo

Abstract

Objectives/Goals
The objective of this project is to demonstrate that human bone is a piezo material and determine the affect of electromagnetic fields on the piezoelectricity of human bone.

Methods/Materials
Electromagnetic field emitter and transmitters, such as various household appliances, electrical power lines, electrical substations and a digital cell phone will be tested for their affect on a human bone piezo. Various household appliances, while running, are exposed to a human bone piezo device mounted on a foil backed board to prevent contamination of signal. Leads of the human bone piezo device are attached to the 10:1 probe of an oscilloscope set a 5mV sensitivity. The appliance, or EMF source, is moved away incrementally with an oscilloscope reading taken each increment. Each experiment has five trials to ensure accuracy.

Results
The human bone piezo device responded to electromagnetic field exposure by creating an electric current in the range of 5mV.

Conclusions/Discussion
Results confirmed the hypothesis that exposure to an electromagnetic field will affect the mV output of human bone piezo. The conduction of electrons is proof that a non-thermal event(such as deformation) has taken place inside human bone. This work could help create a new standard for electromagnetic exposure, since the current standard, SAR(specific absorption rate), deals only with the thermal effect(massive EMF doses).

Summary Statement
The effect of electromagnetic fields on human bone piezo.

Help Received
Dad helped cut human bone, solder electronic parts; Mom imported graphs to Word; Dr. Andrew Marino gave instructions on how to cut wafers from human femur to maximize piezo effect.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Stephanie A. Doran

Project Number
J1407

Project Title
How Are Plants Affected by Gasoline Vapors?

Abstract

Objectives/Goals
The objective of this project was to determine if gasoline vapor exposure is harmful to living plants.

Methods/Materials
Six organically grown plants, identical in age and variety, were exposed to gasoline vapors in a controlled environment for varying lengths of time. The plants were carefully monitored for overall health, cell samples were taken for comparison, and vapor levels in the containers were tested for control purposes and also to assure that there were no leaks in the containers.

Results
The project brought immediate results in that the plants exposed to the gasoline began to show brown spots on leaves within 6 hours of exposure. All of the plants, except for our control died within one week. Plant cell breakdown was apparent throughout the process.

Conclusions/Discussion
Despite reports that gasoline vapors released into our environment have no known ill effects on our local plant life, I have found through my experiment that gasoline vapors most definitely do have a major impact on flora. All of the plants, whether exposed to a few hours of vapors or continuously, showed the effects of the vapors soon after the start of exposure.

Summary Statement
This experiment evaluated the effects of gasoline released into our environment on local flora.

Help Received
Father taught safe hadling of gasoline; Mother add/removed gasoline at specified times during school hours; Advisor told how to stain plant slides; All American Service Station Maintenance loaned equipment to measure vapor levels in containers.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Jared R. Eifert

Project Number
J1408

Project Title
The Effectiveness of Lemon Grass as a Natural Mosquito Repellent

Abstract

Objectives/Goals
The purpose of this experiment is to determine if Lemon Grass is an effective mosquito repellent compared to a Deet based bug spray. The hypothesis states: Lemon Grass is an effective alternative mosquito repellent for people sensitive to the Deet compound (Diethylmetatoluamide).

Methods/Materials
Mosquitoes were harvested and placed in a bug chamber for a series of three sets of experiments: 1) Control: no repellents were used. Mosquitos were then exposed to human* contact. 2) 15% Off brand, commercial Deet based spray was applied to the arm* and then exposed to the mosquitoes in a bug chamber. 3) 25% Lemon Grass solution was applied to the arm* and then exposed to the mosquitoes in a bug chamber. *Informed consent was obtained from each of the human subjects.

Results
The tests scores illustrate that Deet repellent has an 81% repellent efficiency versus a 51% repellent efficiency for the Lemon Grass. Repellent efficiency was determined by taking the percentage of bites and subtracting it from 100% of the bited recorded in the control. The Deet compound was more than twice as effective as the Lemon Grass solution.

Conclusions/Discussion
The results of the experiment show that Lemon Grass may be used as a partial replacement for Deet based repellents. Lemon Grass was found not to be as effective an alternative compared to the 15% Deet compound, however, many people are too sensitive to the Deet chemical to use it as a repellent.

Summary Statement
This study tested the effectiveness of Lemon Grass as a natural mosquito repellent compared to the chemical Diethylmetatoluamide.

Help Received
Mr. Chris Conlan from the County of San Diego Department of Environmental Health provided information about locations to harvest mosquitoes and type of mosquito traps to use.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Aaron E. Feuer

Project Number
J1409

Project Title
The Effects of Human Vitamins and Dietary Supplements on the Growth of Parsley Plants

Abstract

Objectives/Goals
The objective was to determine what effects, if any, the human vitamins and dietary supplements calcium, iron, vitamin C, and vitamin D have on the growth of parsley plants (Petroselinum crispum).

Methods/Materials
15 parsley plants were watered once per day for 14 days (2 weeks). 3 plants were "calcium plants," 3 plants were "iron plants," 3 plants were "vitamin C plants," 3 plants were "vitamin D plants," and 3 plants were watered with only water (the control group). Every day, each plant was watered with 100 ml of water. In their water, each plant was given the respective vitamin/dietary supplement (if any). This vitamin/dietary supplement was dissolved to the greatest extent possible. For example, each vitamin C plant was given 100 ml of water with a vitamin C tablet dissolved in the water every day. The quantities of the vitamins/dietary supplements were as follows: 600 mg tablets of calcium, 65 mg tablets of iron, 1000 mg tablets of vitamin C, 400 I.U. tablets of vitamin
D.

Results
According to the plant height data, the calcium and vitamin D plants outperformed (grew more than) the control group (the water plants). The vitamin C and iron plants still grew, but they both grew less than the water plants. According to plant mass data, calcium, vitamin C, and vitamin D outperformed water while iron grew less than water. According to visual observations, the vitamin D plants performed the best with calcium in a close second. The water plants were still alive, but did not appear as strong, healthy, and bulky as the calcium and vitamin D plants. The iron and vitamin C plants were both dying.

Conclusions/Discussion
In conclusion, the vitamins and dietary supplements calcium, iron, vitamin C, and vitamin D all affect the growth of parsley plants. Calcium and vitamin D stimulate the growth of parsley plants, while iron and vitamin D negatively affect the growth of the plants in relation to water. This experiment shows that those growing plants for aesthetic purposes can and should add vitamin D and/or calcium to the water of their plants. While those growing plants for agricultural purpose (i.e. those growing plants as crops) would still benefit from this experiment, it would not be cost effective to add vitamin D and/or calcium to the plants' water as more crop could be produced for the same expenditure by purchasing additional plants.

Summary Statement
My science project explored the effects of the human vitamins and dietary supplements vitamin C, vitamin D, calcium, and iron on the growth of parsley plants (Petroselinum crispum).

Help Received
My parents and employees at the local nursery assisted in selecting both the species of plant and the individual plants to use in the experiment.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Ashley M. Garcia

Project Number
J1410

Project Title
What Is the Rate of Survival for a Cricket After Being Exposed to Household Chemicals/Products?

Abstract

Objectives/Goals
My project was to determine the rate of survial for a cricket after being exposed to household chemicals/products. I believe that bleanch would shorten down a/the cricket(s)life span.

Methods/Materials
I used six different chemicals/products (Bleach, Lysol, Rubbing Alcohol, Shout, Ammonia, Water{control}. One-hundred and twenty crickets' twenty crickets for each product. One hundread and twenty small 1in sponges. One hundred and twenty sm.empty water bottles. A single stowatch, with data sheet. Wire mesh, to stop crickets from escaping.

Results
Water kept the crickets alive for more than two days. Lysol kept the crickets alive for approx.fourty five min. along with rubbing alcohol. Shout was the second product that shorten the crickets life span with about fifteen mins.along with ammonia. Bleach was the fastest chemical/product to shorten the life span for a cricket with approx.twelve mins.

Conclusions/Discussion
My conclusion is that Bleach shorten down a crickets life span the quickest.

Summary Statement
To determine what chemical would shorten a crickets life span.

Help Received
Twila Young;helped provide all required paper work, Mother;helped buy items needed, Father; helped cut board/wire mesh/bottles, Jennifer Bryan'helped type out report.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Francesca O. Holland

Project Number
J1411

Project Title
Plants and Magnets

Abstract

Objectives/Goals
I was testing to see if marigolds grew faster with north side up magnets (repels the north of a compass), south side up magnets, or no magnets in their cups. My hypothesis was that the more intense magnetic field would affect their growth.

Methods/Materials
I planted three sets of marigolds in all, six north-up, six south-up, and six control in each set. Each plant was in a separate cup, and all were kept by the same window. Each plant was plantd 1/2 inch deep and given the same amount of water as the rest. The plants were measured and rotated daily. A stack of three magnets was placed in the bottom of each test cup. All were planted in plastic cups.

Results
The plants grown with the north-up magnets seemed to germinate faster, but the rater of growth seemed to be the same for all plants. The south-up seemed to germinate later than the other plants.

Conclusions/Discussion
The presence of a magnetic field stronger than the Earth seemed to have an effect on the germination period of plants, but a much larger scale project would be needed to verify the results.

Summary Statement
Testing the growth of plants grown with a magnetic field locally stronger than Earth's.

Help Received
Father helped draw the graphs, mother helped decorate the board.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)

Ivan Jimenez; Josh Woods

Project Number

J1412

Project Title

The Alleopathic Effects of Extracts from Umbellularia californica and Aesculus californica on the Grass Lolium perenne

Abstract

Objectives/Goals

To create an herbicide that will kill rye grass made from seeds and leaves of plants with known allopathic effects. To find an organic method of weed control to replace the use of the herbicide Round-Up at our school.

Methods/Materials

Bay leaves (Umbellularia californica) and buckeye fruits (Aesculus californica) were made into separate extracts using a blender and ring-stand filtration system. Two different concentrations, 100% and 50% of each herbicide were made and applied evenly with a spray bottle to established plots of rye grass. A second treatment was done using the herbicides as a soil treatment prior to planting the rye grass seeds. A control group using water in place of the sprayed herbicide was used in each treatment and trial. Data was collected using growth, color of grass and turgor of the plants as indicators of the health of each plot.

Results

The full strength herbicides were successful in killing 100% of the rye grass, when sprayed directly on the plants. The control plots of rye grass continued to flourish during each treatment and trial. The soil treatments had less effect on the rye grass in the four trials, only slowing the germination by one day and the growth of the plants by about 20% in comparison to the control group.

Conclusions/Discussion

California bay and California buckeye are species that have known allopathic effects on other organisms. Plant growth is sparse under bay trees and buckeye seeds have been known to stupefy fish and retard the growth of competing plants. These two plants were chosen to make the herbicides in an attempt to formulate an organic herbicide to replace Roundup that is being sprayed at our school.

The data on the leaf spray treatments showed the established plants changing in color from a healthy green to a definitive dead (crispy) brown one week after treatment with the 100% buckeye extract and the same results with the 100% bay extract 9 days after the initial treatment.

The 50% extracts had similar effects on the established grass but with an increased time span to kill the grass.

The soil treatments, had some effect in the four trials in that it took one day longer for the seeds to germinate in the treated soil and the grass at about a 20% slower growth rate.

We want to continue to work with these extracts in a more uncontrolled environment in the coming year.

Summary Statement

Making and testing organic herbicides on rye grass in a controlled environment.

Help Received

Josh's dad drove us to get buckeyes and bay leaves. Our English teacher helped us with editing our writing.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Jeffrey A. Joh

Project Number
J1413

Project Title
Counteracting Pesticides

Abstract

Objectives/Goals
Counteracting Pesticides is an effort to find a commonly-available substance that can neutralize the effects of insecticides.

Methods/Materials
Seven different commonly-available materials (Water, lemon juice, 3% vinegar, baking soda, milk of magnesium, diluted bleach, and activated carbon powder) were tested for their ability to detoxify Malathion insecticide. The materials were mixed with Malathion in a 1:1 ratio to create different seven mixtures. The mixtures were injected into small Petri dishes, which contained crickets, to observe the rate of death. Each of the seven materials were also tested individually to confirm the fact that those substances alone would not cause death in crickets.

Results
Activated carbon completely eliminated the deaths caused by Malathion. Water showed almost a three-fold improvement in survival times compared to just Malathion alone. All the other diluters showed approximately a two-fold or smaller improvement in survival times.

Conclusions/Discussion
This experiment clearly showed that activated carbon, which is also commonly used in the emergency room, can eliminate the deaths caused to crickets by Malathion. Perhaps, the public can be taught to keep some activated carbon pills in their medicine cabinets. However, this project also reinforces common first aid tip: Drink water if you ingest poison. Water does help lengthen survival times. For a human, that can give extra time for help to arrive.

Summary Statement
Counteracting Pesticides is an effort to find a commonly-available substance that can neutralize the harmful effects of insecticide.

Help Received
My dad borrowed some materials from his workplace, Chiron Corporation. He also helped collect crickets in the Petri dish.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Kevin P. Kennedy

Project Number
J1414

Project Title
Glutathione Lowers Blood Pressure

Abstract

Objectives/Goals
Glutathione is a small peptide that is found throughout the body. One of its main functions is as an antioxidant which prevents damage to tissue due to chemical reactions in the body that produce free radicals. Previous studies have shown that drugs which block glutathione synthesis can raise blood pressure, but why and how this occurs is unclear. The purpose of my study was to determine if I could lower blood pressure in mice by giving them glutathione. I also investigated the means by which glutathione might lower blood pressure.

Methods/Materials
I measured blood pressure and heart rate in groups of anesthetized mice using an automated tail cuff blood pressure monitor. I injected the anesthetized mice under the skin with glutathione at concentrations ranging from 40 to 160 mg/kg body weight. In separate experiments I also determined the blood pressure and heart rate response to the blood pressure raising hormone norepinephrine both in control mice and in mice pretreated with glutathione.

Results
Glutathione significantly reduced both systolic and diastolic blood pressure at doses of 80 mg/kg body weight, and this effect was even larger at 160 mg/kg. Heart rate was not significantly changed by these doses of glutathione. Norepinephrine raised systolic and diastolic blood pressure by about 100 mm Hg when given to control mice, but the rise in diastolic was significantly less in glutathione pretreated mice. Glutathione pretreatment did not alter the heart rate response to norepinephrine

Conclusions/Discussion
I conclude that glutathione can lower blood pressure in a dose related manner in mice, without directly altering heart rate. Glutathione can also reduce the blood pressure raising action of an important natural blood pressure raising hormone, norepinephrine. My results suggest that glutathione may lower blood pressure at least partially by reducing the ability of blood vessels to contract.

Summary Statement
My project determined the effects of glutathione on blood pressure and heart rate in mice.

Help Received
The mice were a gift from the Dept. of Medicine, UCSD. I also used an automated tail cuff from UCSD under the supervision of Dr. Brian Kennedy

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Amy A. Kroll

Project Number
J1415

Project Title
Is Lactuca sativa, Used as a Bioassay Medium, Affected by Different Levels of NaCl? A Two-Year Study

Abstract

Objectives/Goals
The goal of this project was to see how Lactuca sativa is affected by differnt levels of NaCl. Two different subspecies were tested and compared to one another.

Methods/Materials
This project used two different subspecies of Lactuca sativa (Lactuca sativa var. capitata and Lactuca sativa var. longifolia). They were grown in six different salt concentrations. After five days the root lengths were measured.

Results
After five days of growth, the radicle of each seed in each subspecies was measured, and average lengths were determined. The standard deviations were also calculated. It was found that the average root length of the lettuce seed decreased as the concentration increased.
The averages and the standard diviations were graphed and a line of best fit was calculated according to the least squares method.
The results indicate a correlation between the salt water concentration and the growth of Latuca seeds. As the concentration of salt increased, the seed growth as well as the germination rate decreased. The buttercruch lettuce seed line has a greater slope than the romaine lettuce seed line and the buttercrunch is therefore more affected. However, the concentration at which the seeds will no longer grow is higher for the buttercrunch lettuce seeds.

Conclusions/Discussion
As expected, when the concentration of salt increased lettuce seed growth decreased. The salt concentrations had a greater affect on the buttercrunch lettuce seeds than on the romaine lettuce seeds. However, the concentration at which the seeds will no longer grow is higher for the buttercrunch lettuce seeds.
This shows that in a saline environment romaine lettuce would be able to stand higher concentrations than the buttercrunch.

Summary Statement
This project is designed to determine the effects of NaCl on two different subspecies.

Help Received

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Shayna A. Kuba

Project Number
J1416

Project Title
Shrimp (Don, Don, Don)

Abstract

Objectives/Goals
The objective of this project was to find the affects of vitamin C and calcuim on Brine Shrimp.

Methods/Materials
First I placed the brine shrimp eggs in a controlled environment of salt water, which is their natural environment. In one jar I added 1 gram of vitamin C in a powder form to 1.5 grams of brine shrimp eggs. In the next jar I added 1 gram of calcium in a powder form to 1.5 grams of brine shrimp eggs.I left 1.5 grams of brine shrimp eggs without any new substance for my control. Then I observed them for four days.

Results
The jar with vitamin C in it had little movement or no movement at all by the fourth day. The jar with calcium in it was very active and showed more movement than the control or vitamin C by the fourth day.

Conclusions/Discussion
I found that vitamin C harms the process of hatching brine shrimp eggs and calcuim speeds up the process.

Summary Statement
The affects of calcium and vitamin C on hatching brine shrimp eggs.

Help Received
Teacher spell checked text.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Michaela W. Levy

Project Number
J1417

Project Title
The Effects of Liquid Antacids on Stomach Acid

Abstract

Objectives/Goals
The objective was to determine if extra strength antacids neutralize stomach acid faster than regular strength antacids. I think that the extra strength products will work better than the regular strength products.

Methods/Materials
Seven antacids were purchased from the store. Muriatic acid was purchased and titrated in water to obtain a pH of 2. Seven glass beakers were filled with 20ml of the acid solution. Using an eye-dropper, I placed five drops of one antacid in each separate beaker. I continued to add antacid one drop at a time until the pH reached 5. I recorded the number of drops required for each of the separate antacids. I repeated the experiment three times for each antiacid.

Results
The extra strength products did work better than the regular strength products. The extra strength products required an average of 11 drops to bring the pH to 5. The regular strength products - which contain the same ingredients in smaller doses - required an average of 20 drops to bring the pH to 5. Some of the products - Alka Seltzer - worked well, requiring only 15 drops to reach the desired pH but they also contain asprin which is not always necessary.

Conclusions/Discussion
Overall, less of the extra strength products were needed to bring the stomach pH to 5. Eleven drops verses 20 drops. The active ingredients in the products are usually the same, they are just present in higher amounts in the extra strength products. The extra strength products are also more expensive but you use less. Overall, the extra strengh products did require less medicine, but they all did the job.

Summary Statement
My project was to determine if there is a difference in regular strength antacid and extra strength antacids in controlling sopmach pH.

Help Received
My mother helped me typed my project. She also helped me to handle the acid safely.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Juliana C. McLaughlin

Project Number
J1418

Project Title
How Effective is Beta-Carotene in Fighting Cancer in Plants?

Abstract

Objectives/Goals
To test the effectiveness of Beta-Carotene in fighting cancer in plants.

Methods/Materials
6 pots,potting soil,sunflower seeds,tap water,1 TBSP,measuring Cup,matches,inoculating needle,Agrobacterium Tumefaciens,Beta-Carotene,disinfectant,pencil,computer,1 gallon water pitcher,metal tray. Procedure:Collect materials and fill 6 pots with potting soil labeling 2 pots each Group A, Group B and Group C.Divide sunflower seeds into 6 groups with 10 sunflower seeds in each group.Plant 1 group of sunflower seeds in each pot and water.When watering plants from Group A, add 2 drops of liquid Beta-Carotene.Repeat steps 3 & 4 each time watered. When plants reach 7"-10" tall and have 2 sets of leaves, inoculate.Wash hands,disinfect area with and sterilize inoculating needle.Remove cap from plant cancer and run the top of the tube over a flame. Insert inoculating needle into plant cancer tube.Insert inoculating needle inside the internodes- the stem between the leaves of the plant.Repeat for every plant in Groups A & B. Do not inoculate Group C.Wait 7#10 days. Observe and record data.

Results
The week before inoculating,Test Group I, they withered and died. This could have been from lack of watering, not enough sun, or possibly too much watering.When inoculating Groups A and B, there were few plants that were alive. Only 1 Group A plant survived, which did not grow tumors.In Group B, all the plants grew tumors.At the time they died, 5 tumors were counted.I charted these plants for 22 days. I decided to plants a second batch of plants, Test Group II. The Group A plants had a total of 4 tumors. The Group B plants had a total of 7 tumors. The Group B plants died and after 14 days 5 visible tumors were noted. I charted Test Group II for 14 days. No tumors ever grew on the Group C plants.

Conclusions/Discussion
With Test Group I, I discovered that plants which had been nourished with Beta-Carotene did not develop cancer, which was proven false by Test Group II.I realized after Test Group II that Beta-Carotene did not stop cancer from growing in plants.The Beta-Carotene helped to lessen the severity of cancer.Possibly with a higher or more frequent dosage of this supplement the plant could have fought the cancer off completely.From the results of my experiment, Beta-Carotene supplements could be used in human patients to prevent or reduce the affects of cancer.I would test this with higher dosages of the supplement.

Summary Statement
I tested the effectiveness of Beta-Carotene in fighting cancer in plants.

Help Received
Mother applied for the USDA permit and obtained the Beta-Carotene.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Dalton R. Miller

Project Number
J1419

Project Title
Does Medical Ionized Radiation Affect the Cell Growth of Living Plant Cells?

Abstract

Objectives/Goals
Radiation will effect the cell growth because radiation is a high powered light that can sometimes permanently damage the cell. I think the unexposed will do better because the seed#s cells have not been damaged.

Methods/Materials
Day one I put ten seeds in the irradiation room in front of the beam. I sat ten seeds in the room while the others were being irradiated.For three days seeds were in three pie pans germinating. The pie pans labeled Unexposed, Irradiated, and Exposed. Fourth day I planted the seeds in three egg cartons with one half a cup of soil. I labeled the cartons Unexposed, Irradiated, and Exposed. All ten seeds in every carton were watered and given 16 hours of light everyday. I measured the height of the plants everyday by centimeters.

Results
Day 4 eight irradiated seeds sprouted. Exposed had four sprout.Unexposed had eight sprout. Day 6 they were planted in 1/2 cup of potting soil. Day 8 three of the irradiated came through the soil. None of the exposed and one of the unexposed. Day 9 four of the irradiated had broken through the soil and none of the exposed. A total of two had come through for the unexposed. Day 10 seven of the irradiated had come through the soil. Exposed had two come through and unexposed had seven. Day 11 irradiated measured 8 cm and nine came through. Exposed had five come through the tallest being 5 cm. Unexposed measured 6.5 cm and nine sprouted. Day 12 all the irradiated had came through the soil. Exposed had eight come through and unexposed had ten.

At the end the irradiated had 3 poor growing plants. Six were 11.0 cm tall and all ten sprouted. The exposed had 4 plants that weren#t over 9.0cm tall, 8 of the 9 sprouted. The reason why there was only 9 plants was one didn#t germinate. Unexposed had 2 poor growing, 6 were taller and all ten sprouted

Conclusions/Discussion
My conclusion would be, is worse to be on the outside of the radiation beam than to have direct exposure. My unexposed seeds though slower growing were taller and healthier by the end. I conclude that radiation does effect cell growth.

Summary Statement
Medical ionized radiation can effect cell growth in living plant cells.

Help Received
Don Hess helped irradiate the seeds, Mother typed application, Father helped with wood cutting.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Kristin N. Miller

Project Number
J1420

Project Title
The Hidden Dangers of Ozone Depletion: Is Our Food Supply at Risk?

Abstract

Objectives/Goals
The effects of ozone depletion and resulting increased amounts of ionizing radiation in our environment are under investigation. I wanted to find out what effects these increased doses of radiation might have on our food supply.

Methods/Materials
Four groups of snapdragon plants were exposed to ultra low, moderately low, and low doses of radiation respectively, twice weekly. The radiation was given using a linear accelerator. Group five was the control and received no radiation. They were measured in centimeters once weekly to determine any difference in growth.

Results
Groups one, three, and four all had similar growth rates that were nearly 50% decreased from the growth rate of the control group. Group two was less affected by the radiation, but still had a growth rate reduction of 14%.

Conclusions/Discussion
Overall, the ionizing radiation seemed to have a detrimental effect on the health of the plants as measured by their growth rate. If all plants in our environment share this sensitivity, the impact on our food supply could lead to significant food shortages.

Summary Statement
My project is about the effects of ionizing radiation on plants.

Help Received
Used linear accelerator at Los Robles Hospital with the help of Jesse Lee and Ken Adger.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Salvador A. Pacach

Project Number
J1421

Project Title
The Effect of Capsaicin on Orally-Measured Body Temperature

Abstract

Objectives/Goals
The objective of this project was to find out if capsaicin, the chemical responsible for the "burn" in spicy food, has any effect on orally measured body temperature. My hypothesis was that people who ate spicy food containing capsaicin would not experience a change in their orally-measured body temperature.

Methods/Materials
I asked 29 volunteers, both girls and boys in the age range of 11 to 14 years old, to eat 3 types of spicy foood that contained capsaicin. I measured their body temperatures before and after they ate the spicy food, as well as for the control, which was plain yogurt.

Results
Out of 29 people who ate jalapeños, 8 people (28%) experienced a body temperature decrease, 17 poeple (58%) experienced a body temperature increase, and 4 people (14%) experinced no change in body temperature. Of the 28 people who ate a chile lollipop called vero rebanaditas, 1 person (4%) experienced a body temperature decrease and 27 people (96%) experienced a body temperature increase. Of the 28 people who ate Flamin' Hot Chester's Fries, 27 people (96%) experienced a body temperature increase and 1 person (4%) experienced no change in body temperature. For the control, plain yogurt, out of 29 people, 7 people (24%) experienced a body temperature decrease, 21 people (73%) experienced a body temperature increase, and only 1 person (3%) experienced no change in body temperature. This means that over 50% of my volunteers experienced an increase in body temperature as a result of eating foods that contain capsaicin.

Conclusions/Discussion
Overall, a majority of the volunteers in each food category experienced an increase in their body temperature, including the control group. The temperature increase in the control group might have happened because of the movement of the jaws while eating, and body movement, such as walking and moving around during the experiment. I would like to do this experiment again, but this time controlling the body movements of the volunteers so no extra heat is generated when doing the experiment.

Summary Statement
The purpose of the project is to find out if capsaicin has an effect on orally-measured body temperature.

Help Received
My teacher, Mr. Simonsen, helped me a lot by editing my project.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Mariko K. Powers

Project Number
J1422

Project Title
The Effect of pH on Seed Germination

Abstract

Objectives/Goals
The objective of my project was to determine how different pH levels effect lettuce and poppy seed germination.

Methods/Materials
Ascorbic acid/lime solutions were prepared at different pH levels ranging from pH 3 to 11. 2 ml pH samples were added to 5 poppy or lettuce seeds and incubated for 6 days at room temperature. Samples from different local bodies of water (ocean, creek, lagoon, etc) were tested for pH level and a 2 ml sample was added to lettuce or poppy seeds. The root length was measured.

Results
The poppy seeds did not germinate in pH levels below 5 using ascorbic acid/lime solutions, but there was slight growth for lettuce seeds at pH 4. From pHs 5-11 root growth was detected in ascorbic acid/lime solution for poppy and lettuce seeds. Poppy seed growth at pH 11 decreased significantly, however for lettuce seeds in pH 11 growth remained high. No seeds grew in ocean water but growth detected in all other sources of water which ranged in pH from 5.3 to 8.

Conclusions/Discussion
In extremely low pHs below 4 the seeds did not germinate within 6 days. However, I did believe that at higher pH levels seed germination would also decrease. This was partially correct as poppy seed germination did decrease at pH 11 however for lettuce seeds growing at pH 11 the root growth was fairly high. This information is important because if a plant does not germinate it may be due to a high level of acidity. However, pH is not the only determining factor in seed germination as indicated by lack of growth also seen with high salt levels (ocean water). I have come to find that different seeds will have different reactions to different pHs and different elements in its environment.

Summary Statement
In my science project I studied the effect of pH on lettuce and poppy seed germination using an ascorbic acid/lime solution and water samples from local bodies of water.

Help Received
School provided chemicals, parents provided other supplies, mother edited and helped type report.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Ryan M. Quint

Project Number
J1423

Project Title
Electromagnetic Fields and Onions: How Was Tip Growth Affected?

Abstract

Objectives/Goals
My objective was to study the affect of an electromagnetic field (EMF) on onion root tip growth. My belief was that EMF would have a positive affect on growth.

Methods/Materials
Eight onions were grown under identical conditions except four were subjected to an electromagnetic field. The electromagnetic field was created using a four foot electrical cord wrapped around the experimental group. The plants were grown for twenty-one days and the onion tips examined. Thin slices of onion tip root are placed onto a microscope slide and stained so the chromosome would be visible. The eight root tips were examined for mitosis. One hundred cells for each test group were counted, recording the number of cells in mitosis.

Results
Onion root tips grown in the electromagnetic field were observed to have cells in mitosis ranging from 13 to 23% with an average of 17.4%. The control group was significantly less with mitosis observed ranging from 5 to 12% with an average of 8.4%. The EMF group on average had twice (2.1) the number of cells in mitosis as compared to the control onion tips.

Conclusions/Discussion
Electromagnetic fields and potential harmful affects on humans have been a widely published topic. There is limited information on how plants are affected by these fields. I have long enjoyed gardening and became interested in plant growth and electromagnetic fields last year. My data supports my hypothesis that EMF has a positive affect on plant growth in the onion. In each of the EMF groups there were more cells in mitosis as compared to the control group. I hope to repeat my experiment with larger numbers of plants. EMF may be beneficial to agriculture to help grow plants at a faster rate.

Summary Statement
How onion tip growth was affected by electromagnetic fields.

Help Received
I used lab equipment at Alta Sierra Intermediate under the supervision of my science teacher, Mr. Piercy. My father helped to review and organize my board.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)

Joshua Soleno; Joseph Soleno

Project Number

J1424

Project Title

A Blood Level Comparison Study of 11 Year Twin Brothers Diabetic Non-Functional and a Non-Diabetic Functional Pancreas

Abstract

Objectives/Goals

To compare different blood sugar levels from a working pancreas and a non working pancreas. Two twin brothers are on the same diet for one month. One twin is a diabetic. Each brother tested their blood 5 times a day at the same times. The blood was compared and charted over a month long period. This will show how often each person is in a non-safe blood sugar level.

Methods/Materials

Blood glucose free style monitor.
Blood glucose lancer
blodd glucose test strip
insulin pump
novolog Human Insulin
Micro infusion set and accessories
Each twin will be using the lancer, monitor and test strip to check blood sugar levels.
Twin with diabetes will use the insulin and insulin pump, along with microinfusion pump

Results

After the one month test period we were able to see how often the blood sugar level was in a dangerous zone. We graphed the results. We were also able to see how much insulin was needed to put twin with diabetes back into safe zone

Conclusions/Discussion

We have a better understanding and appreciation of what a person with diabetes must do on a daily basis to correct the blood glucose levels and how much insulin a diabetic must take to correct the high readings.
We will alos have a better understanding of how diet efffects blood glucose readings

Summary Statement

To clearly show the working pancreas shows know how to keep blood glucose level at a safe level, a non-working pancreas will have high and low peaks on a daily basis.

Help Received

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Samuel C. Spevack

Project Number
J1425

Project Title
The Effects of Magnetic Pole Reversals on Radish Plants

Abstract

Objectives/Goals
Every few hundred thousand years or so the earth's geomagnetic field reverses. Scientists think there could be a possible correlation between the reversals and mass extinction. The experimenter's objective was to see if there was any correlation between the reversal of a magnetic field and the growth of the radish plants (mass in grams).

Methods/Materials
There was a total of twelve groups of radish plants studied for a total of 240 plants. There were four seperate groups of radish plants. Three control groups of twenty, which were grown in the presence of a constant sourthern magnetic field. All other groups were grown in the presence of magnetic fields that reversed during the two week period of the experiment. The first three groups had one reversal, the next three groups had two and the last three groups had three magnetic reversals. The mass was measured with a triple beam balance. For all groups two measurements were taken at the end of the first and second week.

Results
The more reversals there were the more mass the plants had. The control group, with no reversals had the plants with the least amount of mass. The group that reversed, had a small amount of brown discoloration of the roots although the plants were very healthy and had more mass.

Conclusions/Discussion
In conclusion, the experimenter did find a correlation between magnetic reversals and radish plant growth, but it was the opposite of what had been hypothesized. The median (and average) mass of plants that were subjected to magnetic field reversals were greater than those that were grown in the control group. The mass of the plants also increased with increasing number of reversals. Although this is the opposite of what was orginally expected. The experimenter believes that the greater growth shown by the radish plants still might indicate a link between magnetic pole reversals and mass extinctions as the greater growth of some plants and animals might have a negative effect on others (cats on mice).

Summary Statement
The experimenter's project was about magnetic pole reversals and its effect on radish plant growth.

Help Received
My mother helpd to type part of my report and assisted in the purchasing of materials.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Evan R. Szablowski

Project Number
J1426

Project Title
The Effect of Nicotine and Alcohol on the Movement of Lumbriculos variegatus

Abstract

Objectives/Goals
The objective of my project was to determine if nicotine and alcohol affect the movement of Lumbriculus Variegatus (California Blackworms). My hypothesis was that these substances would have a negative effect on the movement of the worms.

Methods/Materials
A. Mix diluted solutions of both alcohol and nicotine.
B. Use a Petri dish and a small plastic lid to make a "racetrack" for the worms.
C. Make a "wiget" (to prod the worms to move) by taping a boar bristle to a toothpick.
D. Place the first solution and a worm in a Petri "racetrack".
E. Use a stopwatch to time 3 minutes while prodding the worm to move. Record the distance traveled.
F. Repeat for each toxin and the control solution (spring water).

Results
The average distance traveled by the worms in the nicotine solution was 6.5 cm. and 8.0 cm in the alcohol solution. The worms in the control solution (spring water) traveled 19.8 cm.

Conclusions/Discussion
The toxins nicotine and alcohol both reduce the movement of California Blackworms significantly. The distance traveled by the worms in the toxic solutions was less than half that traveled by the worms in the spring water. Nicotine had the greatest negative effect on the worms.

Summary Statement
My project studied the effect of nicotine and alcohol on the movement of Lumbriculus Variegatus (California Blackworms).

Help Received
My mother helped me order the worms on the internet.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Kevin T. Verkaik

Project Number
J1427

Project Title
Can Electromagnetic Fields Cause Mutations in Drosophila melanogaster Bugs?

Abstract

Objectives/Goals
My project was to find out if electromagnetic fields weere bad for people or any living creatures. That is why I did my experimant on non-vertatate Drosophila Melanogaster Bugs.

Methods/Materials
I had two Kritter Keeperswith one half of an orange in each and one half of a tomato in each. I put one vile of flies in one Kritter Keeper with two ballasts, one on each side, that gives off an electromagnetic field of 1250 miligause. I put another vile into a Kritter Keeper without an electromagnetic field. I let them live in their environment for 34 days then I took them out, and froze them, and looked at them through a microscope.

Results
Towards the end of the project I noticed the flies in the electromatic fields were very active. I suspected that the ofspring must have gotten used to the electromatic field's presence. There were also many more flies in the electromatic fields than in the environment.

Conclusions/Discussion
My conclusion os that the electromagnetic field either made the flies produced more eggs than usual, or the electromagnetic field sped up the flies' life cycle so more flies lived, reproduced, and died a lot faster than usual. That would make the many more flies that I saw when I removed the ballasts.

Summary Statement
The effect of electromagnetic fields on Drosophila Melanogaster.

Help Received
My dad showed me how to use a gause meter.

CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Mirna M. Wasef

Project Number
J1428

Project Title
Don't Let the Bed-Bugs Bite

Abstract

Objectives/Goals

My goal was to find out, of the following what is the best way to get rid of dust mites found on a pillowcase?
Soak in hot water, dry in dryer
Soak in hot water, dry in sun
Place directly in the sun
Soak in cold water, dry in sun
Soak in cold water, dry in dryer
Wash in washer (Hot water), dry in sun
Wash in washer (Hot water), dry in dryer
I believed soaking the pillowcase in hot water then drying it out in the sun would be the most succesful method in removing dust mites.

Methods/Materials

The materials I usd in my experiment were: #Microscope; #Pillowcase; #Pair of Scissors; #Pencil; #Notebook; #Washer; #Dryer; #11x8x6 Pot; #Gas Stove; #11x8x6 Bowl; #Thermometer; #½ Pot filled with water (100%); #½ Bowl filled with water (55%); #12 Inch ruler; #Surgical Gloves

Results

The results I found was that the remaining dust mites found on the Hot Soak and Sun method was an average of 10.76%, the Hot Soak and dryer method was 11.47%, the Sun method was 22.49% the Cold Soak and Dryer method was 11.59%, the Cold Soak and Sun method was 11.16%, the Washer (Hot Water) and Sun method was 10.92%, and the Washer (Hot Water) and Dryer method was 11%. From this we can tell that the method that did the greatest in our experiment was the Hot Soak and Sun method, we can also tell that the method that did the worst was placing the cloth directly in the Sun without being washed.

Conclusions/Discussion

After calculating the results, I can safely say my hypothesis was correct. The Hot Soak and Sun method got rid of the greatest number of dust mites in a 1½-hour time span. This method was slightly more successful than washing and drying the pillowcase by machines. This proves to us that even a method as simple as using hot water and the sun is still a successful and useful method. Although dust mites aren't the biggest problem in the world today, we can learn that with a little work and perseverance all problems can be solved.

Summary Statement

My project is about finding the best method in removing dust mites.

Help Received

My father helped me create the question and my teacher helped supply the microscope.