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Bio 1620 – 02

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**Caffeinated Cock Roach’s**

**Introduction-**

“**Caffeine** is widely consumed in foods and beverages and is also used for a variety of medical purposes. Despite its widespread use, relatively little is understood regarding how genetics affects consumption, acute response, or the long-term effects of **caffeine**”(Caffeine, 2010). Caffeine is a natural pesticide found and found naturally in seeds, leaves, and some fruits. We as humans use caffeine as a natural stimulant drug. The compound is C8 + H10 + N4 + O2 (Medline, 2001). I ultimately decided to introduce caffeine to cock roaches. “Cock roaches individual differences have been associated with size, growth rate, survival, and reproductive success. Little research, however, has investigated the effect of developmental environment on individual differences in risk-acceptance. Competing hypotheses offer different explanations of how variation in the quality of the developmental environment affects risk- acceptance in adults”(Roaches, 2011).Cock roaches are a small arthropod that is 2 to 3 inches long and on average have a hard exoskeleton, they typically live in colonies(National Geographic’s, 2010). What is the effect of caffeine on cock roaches weight? I predicted that the caffeine would decrease the weight of the cock roaches.

**Method-**

Southern Utah University provided twelve cock roaches, twelve Tupperware, woodchips, caffeine, and mouthwash cups. I took the twelve Tupperware containers and put a hand full of woodchips into each of the Tupperware containers so that the woodchips covered the bottom of the containers. I cut the bottom off twelve of the mouthwash cups. I took the twelve mouthwash cup bottoms and put six pieces of dog food in each bottoms. I put 0.5 mg of caffeine on top of six of the dog food cups, soaking the twelve dog food cups in water to hide the caffeine powder from the roaches. I took and labeled each of the twelve Tupperware containers and labeled the six Control and six Caffeine with caffeine and control labels. I then labeled the Tupperware containers one through six for both the control and caffeinated. Placed the caffeine covered dog food into the caffeine containers, and place the remainder into the control. I then weighed and recorded each of the cock roaches. I recorded the weight of roaches for the remainder of the nine weeks. After I recorded all my data over the nine weeks I calculated the P-value by using the T-Test. I was comparing the caffeinated roaches with the control.

**Results-**

The results shows us there is the caffeinated cock roaches were that caffeine had no affect on the weight of the cock roaches. The raw data seemed to show that the weight of the cock roaches wouldn’t change that much. The P-Value is 0.7938. The standard deviation for the control cock roaches is 0.370282 and for the caffeinated is 1.13927.

Figure one: Graph above shows the data of both my control and caffeine. The standard deviation is show too. The P-Value is 0.7938.

Figure two: This graph shows the average weight of the caffeine and control groups over the 8 weeks.

**Discussion-**

I was talking to my nutritionist’s cousin some months back; I asked him why I couldn’t gain weight? He replied jokingly, “The reason being is the high amount of caffeine that you consume is probably the reason” (trying to make me stop drinking the energy drink I had in my hand). A couple of months later in class I was thinking about projects that would be interesting and of some use in my life, and then I remember my cousin talking about weight and caffeine. I wondered does caffeine really have an effect on weight?

As the results suggested caffeine tended not to have any effect on the cock roaches weight. The results fail to reject our hypothesis. We hypothesized that the cock roaches would decrease the weight of the said cock roach, but to the contrary the caffeine had no affect on the cock roaches what so ever. Which is surprising because cock roaches are a small arthropod that is 2 to 3 inches long and on average have a hard exoskeleton, they typically live in colonies(National Geographic’s, 2010). My cousin was wrong on the fact the caffeine has any affect on body weight. Caffeine is a natural pesticide found and found naturally in seeds, leaves, and some fruits. We as humans use caffeine as a natural stimulant drug. The compound is C8 + H10 + N4 + O2 (Medline, 2001). As far as I can tell caffeine has no affect on the human body which is good news for me because I mainline caffeine constantly, and I’m trying to gain weight. I realize that caffeine may affect the weight of different animals, including humans. Some additional information is the week before Southern Utah Universities spring break I had to clean out the Tupperware containers because of the extreme presence of mold. I didn’t record data for the week of spring break either.

On a side note I found that the dog food with the caffeine seemed to not mold as fast as the dog food without caffeine. I would like to know if caffeine is a preservative. There are many directions I can take to better understand the effects of caffeine on weight. For example, if I changed the animal would I get different results? If I used a different type of food other than dog food would they gain more weight?

**Bibliography-**

Yang, A., Palmer, A., & de Wit, H. (2010). Genetics of caffeine consumption and responses to caffeine. *Psychopharmacology*, *211*(3), 245-257.

Mishra, S., Logue, D. M., Abiola, I. O., & Cade, W. H. (2011). Developmental Environment Affects Risk-Acceptance in the Hissing Cockroach, Gromphadorhina portentosa. *Journal Of Comparative Psychology*, *125*(1), 40-47.

*National geographic*. (2010). “Madagascar Hissing Cockroach (Gromphadorhina portentosa)”. Retrieved from <http://animals.nationalgeographic.com/animals/bugs/madagascar-hissing-cockroach/>

*Medline plus*. (2001, January 27). “Caffeine”. Retrieved from <http://www.nlm.nih.gov/medlineplus/caffeine.html>

Hansen, Daniel M.(02, 12 2011). [Personal Interview].