CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)
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Project Number
S0526

Project Title
The Effect of the Phytoestrogen Genistin Replacement Therapy on the Reproductive Rate of Fragile-X D. melanogaster

Abstract

Objectives/Goals
In this experiment I am creating a more natural form of hormone estrogen replacement therapy (HRT) using phytoestrogen. I am going to use the phytoestrogen genistin from soy beans, since there have been various HRT studies done with the phytoestrogen red clover. I am hoping that finding a more natural hormone therapy can help girls with Turners Syndrome and other conditions with hormone deficiencies have another option than the synthetic pills and patches that they use today. Turners Syndrome is a genetic disorder that only occurs in females and causes their growth to be stunted and some women to develop slower and have hormone deficiencies (some women with Turner's Syndrome need to even have their ovaries removed), because they only have one X chromosome.

Methods/Materials
I used, Drosophila Melanogaster wild, Drosophila Melanogaster Fragile-X Mutant, yeast, media, Stereo microscope, Estradiol, and Genistin. I used 50 mg of estradiol and 1 mg of Genistion to make the 2.8*10^-4 mg stock solution of both estradiol and Genistin I put into the 14 mL of Distilled water that I use to make food for both types of Drosophila Melanogaster.

Results
The increase in the Fragile-X Drosophila melanogaster rate in the presence of the Estradiol suggest that my model works, and the results for the Fragile-X exposed genistin were inconclusive, but I hope to continue this study.

Conclusions/Discussion
My data suggests that the estradiol increased the reproductive rate of the Fragile-X Drosophila melanogaster, so I know that my model works. The lesser impact on the wild type Drosophila melanogaster is expected, for when women with regular hormone levels use more hormone they are more at risk of cancer and the hormone has a adverse effect on their health. Furthermore, the data for the number of larvae for my Genistin cultures for both wild type and Fragile-X Drosophila melanogaster was inconclusive.

Summary Statement
I found that due to the positive response of the Fragile-X Drosophilamelanogaster to exposure to the estradiol, that my model works and that there needs to be more studies done on the effects of Genistin to understand its full impact.

Help Received
I received help from my Advanced Science Research teacher to make and handle the Estradiol and Genistin when first making my stock solutions, and in getting a better understanding of everything that contributes to the variability of D. melanogaster reproductive rate,