Effects of 20-Hydroxyecdysone and Calcium Supplemented Prednisone on the Body Length of Drosophila melanogaster

Cecrle, Jenna (School: Adams Central Jr.-Sr. High School)

Due to asthma, I took prednisone, an oral corticosteroid that reduces inflammation in the airways. During my 7th grade physical, my doctor noticed my growth rate had decreased from the 50th percentile to the 20th percentile. Wondering if this could be shown in an animal model, the fruit fly (Drosophila melanogaster) was selected because of quick generation time, also the medication and supplements could be mixed in with the food. In past experiments, there was a decrease in the body length of the Drosophila melanogaster as Prednisone dosage increased. This year calcium with prednisone was decided to see if there was still an effect on body length. Prednisone was mixed with calcium supplements to investigate its role in counteracting prednisone. Also a low dosage of prednisone and 20-hydroxyecdysone; a steroid that leads to molting in fruit flies. Different dosages of a muscle supplement containing ecdysone were tested.ANOVA and Scheffe tests showed no significant differences ($P<0.05$) between calcium with prednisone and control, and did not have a consistent significant decrease with the ecdysone muscle supplement, but had a significant decrease with the 20-hydroxyecdysone and prednisone when compared with control. Results showed that 20-hydroxyecdysone and some of the muscle ecdysone had a decrease in body length while calcium with prednisone did not show a decrease. Prednisone may cause an ecdysone-like effect leading to the reduction of body length. Calcium supplemented prednisone may interfere with the effect of prednisone to decrease body length and will require further investigation.

Awards Won: