An Analysis of the Effects of Nicotine on Characteristics of Drosophila melanogaster

Echols, Madison (School: Mississippi School for Mathematics and Science)

Currently, the world suffers from a serious epidemic: one of nicotine products. Using the Drosophila melanogaster as a model organism, a correlation between nicotine exposure and decreased longevity, impaired locomotive activity, phenotypic changes, and decreased mass was tested. Two Drosophila diets were used: a control diet using a standard medium and a nicotine diet. 3 trials were conducted, with 4 groups in each, one for each sex and diet combination. This experiment was run for a week and a half. The data collected was analyzed using a one-way ANOVA test. Significant data was found showing that the survival rate of nicotine-treated flies decreased at a higher rate than that of the control flies, the mass of the nicotine flies decreased compared to that of the control flies, and locomotive activity in female flies was impaired from nicotine exposure. Despite the female significance, the results of the male negative geotaxis assay were not significant, and correlation could not be determined. Still, this study further demonstrates the correlation between behavior, longevity, locomotive ability, and nicotine exposure that is also shown in humans. Further experiments sequencing the flies' DNA and testing varying nicotine concentrations will lend to more clarity regarding the ramifications of nicotine products.

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