The Effects of E-Cigarette Vapor on Drosophila melanogaster

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This project was aimed to determine the relationship between e-cigarette vapor and Drosophila melanogaster's genome and resulting phenotypic expression and behavior. The creation of the e-cigarette, considered a healthy proxy for malignant cigarettes', has catalyzed experiments to evaluate this claim. The relative effects of this new device are unknown, and studies about risks could span generations allowing 'invincible' manufactures to continually target 6-12 graders. Experimentation on Drosophila melanogaster with the vapor was proposed to analyze and quickly determine the causatum and to combat the deficiency of chemical regulations. It was hypothesized that exposing the fruit flies to 10 puffs of vaporized smoke one time would result in mutations in Drosophila's gene expression and behavior. Vials of identical strain fruit flies were phenotypically purged of mutations and sexed into containers of 10 males and females. These were exposed to the e-cigarette vapor through a volumetric pipette and bulb. This was done comparable, mass-wise, to the daily inhalation of Floridian smokers. The first trial resulted in the death of the flies due to exposure supporting the potency of the chemicals in the vapor. In trials 2, 3, and 4, behavioral changes were seen: the amount of larvae produced was 80% less than the theoretical yield. The next F2 generation was then phenotypically analyzed. Currently at least 93% or more of the flies consist of single/double mutations. The data supports the hypothesis, and further experimentation will be conducted and systematically analyzed. This study supports the research which asserts that e-cigarettes are not a healthy alternative. Eventually, these revelations may start to bridge the knowledge void and finalize nicotine mindsets.