Exploring the Effects of E-cigarettes Using Drosphila melanogaster

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Although the number of US vaping related deaths is rising, the cause of death remains unidentified. Knowing the long term effects of non-nicotine vape aerosol components, vegetable glycerin (VG) and propylene glycol (PG), is important. Discovering the long term effects these have on Drosophila melanogaster may suggest similar effects in humans. In this study, the number of offspring, changes in behavior, and phenotypic mutations in Drosophila were observed for the parent, F1, and F2 generations after exposure of the parent generationto one of four treatments: 50%PG/50%VG aerosol, 30%PG/70%VG aerosol, 70%PG/30%VG aerosol, or no solution (control). Mixtures were delivered using a nebulizer for 18 seconds each day, for two days. It was found that each of the experimental groups had fewer offspring than the control group. A two-sample T-test (a = 0.05) was used to find that the size of the flies in the F1 generation were significantly smaller in ? of the experimental groups when compared to the control group. Furthermore, it was observed using a two-proportion Z-test (a = 0.05) that in ? of the experimental groups in the parent generation, and all experimental groups in the F1 generation, were significantly more likely to develop at least one phenotypic mutation than the control group. Additionally, significant changes were seen in activity patterns and reflex immediately after exposure. Overall, it is probable that exposure to aerosolized VG and PG is dangerous and a cause for major concern.

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