The Effects of Secondhand Smoke on Drosophila melanogaster

Parker, Abigail

This project aims to measure the effects of limited side stream secondhand smoke on Drosophila melanogaster. The researcher looked for changes in reproduction rate and the levels of mutation per exposure period: 1, 2, and 3 hours and the control. The researcher's hypothesis states that the reproduction rate and the amount of adult flies will decrease as length of the exposure period increases, and the amount of mutations will increase as the period of exposure increases. The researcher divided 800 flies into 8 tubes of 100 flies.Two tubes were exposed to one cigarette's smoke for one hour, two were exposed to two cigarette's smoke for two hours,two were exposed to three cigarette's smoke for three hours, and two were not exposed. The researcher placed a fish tank under a fume hood to eliminate danger for the researcher but ensure the continued exposure of the flies.The researcher lifted the fish tank to light the cigarette when needed, and placed another cigarette on the foil plate after the first had completely turned through. The control groups had 117/116 adults, 125/97 larvae, and no mutations.The "1-hour exposure" had 105/164 adults, 103/151 larvae, and 7/1 mutations. The "2-hour exposure" had 107/135 adults, 161/107 larvae, and 3/7 mutations. The "3-hour exposure" had 42/87 adults, 185/95 larvae,and 8/15 mutations. The results show that the limited side stream smoke has an effect on the flies' mutations, development, and reproduction rate. With the similarities in genetics between Drosophila melanogaster and humans, humans should take caution as well.