The Effects of Blue Light and AREDS 2 on the Vision and Cognitive Function of Drosophila melanogaster

Ewing, Ava (School: Greens Farms Academy)

The average human spends approximately four to 11 hours viewing electronic screens daily, which may have severe impacts on the human body. This research observed the impact of blue light on the cognitive function and eyesight of male, wild-type Drosophila melanogaster, an applicable model to humans. It was hypothesized that blue light would slow cognitive function and lead to eye degradation in fruit flies. Group 1 fruit flies were exposed to 24 hours of full brightness blue light while group 2 flies were exposed to the same amount and time of red light from an iPad. Group 3 flies experienced the same conditions as group 1, but the AREDS 2 vitamin, an antibody known to help prevent eye degradation, was added to the food. Group 1 flies suffered behavioral decline the most as their flight patterns were more erratic with shorter flight durations than the control flies not exposed to light. Furthermore, they were stationary and rested near the iPad screen by the end of the 24 hour period. Group 2 flies had flight patterns and durations relatively similar to the control. Group 3 flies had less erratic flight patterns, but demonstrated more mobility than group 1. Microscopic observation of the eyes of the flies may further elucidate the extent of damage. The results stated indicate that blue light is negatively impacting the vision and cognitive function of fruit flies, but reduced under the influence of AREDS 2, which could have similar effects on humans.