Blue Light Effect Study: Impact on Drosophila's Cognitive Ability and Gender Ratios

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Blue light is emitted from all electronic devices. Connections between multiple health problems such as circadian rhythm disorders, eye strain, and even macular degeneration correlated with excess amounts of blue light exposure have been reported, but are hard to quantify. This experiment tests the effect of over exposure of blue light on cognitive functioning and gender ratios in Drosophila. Drosophila raised under a blue light/dark regime were compared to Drosophila raised under a daylight/dark regime. Both regimes were continued for multiple generations. The cognitive functioning of the Drosophila were tested by placing both groups through a maze, and testing how many individuals out of 10 completed the task, and how long it took. The maze would show if blue light overexposure would cause the Drosophila to behave more erratically or to impair their cognitive functioning. Every generation, total offspring and gender ratio of the offspring were noted. Since Drosophila show a skewed sex ratio in response to stress, this would test if the blue light was causing stress on the Drosophila population. The maze averages indicated that the blue light impacted the Drosophila's cognitive ability. In the 6th generation an average of 2.5 (SD=.57) Drosophila completed the maze under blue light, contrasting with 7.25 (SD=.5) Drosophila under daylight. From the third generation on, Drosophila under blue light showed a skewed female sex ratio, which differed significantly from a 50% ratio (significant using a chi square at the .01 level). Drosophila under white light did not significantly differ from 50% females. This indicates that blue light was a factor on stressing the population.

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