

## OFFICIAL ABSTRACT and CERTIFICATION

### The Effect of Blue Light on Oxidative Stress in *C. elegans*

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Oxidative stress in blue light-exposed *C. elegans* was assessed because adults spend 11 hours per day exposed to excessive blue light, which disrupts circadian rhythm, causes sleep deficit, and accumulation of beta amyloid in the brain. After 24 hours of blue light exposure, *C. elegans* were submerged in dichlorofluorescein diacetate causing the byproducts of oxidative stress to fluoresce. Locomotive ability was measured by counting body bends per second. The oxidative stress in *C. elegans* exposed to blue light (24,827,083 +/- 33,992,523) was significantly greater than those in darkness (986,199 +/- 1,271,535,  $t=3.838$ ,  $df=20$ ,  $p<0.05$ ). Locomotive ability of blue light exposed *C. elegans* (0.400 body bends per second +/- 0.119) was significantly less than those in darkness (0.788 body bends per second +/- 0.199,  $t=9.165$ ,  $df=29$ ,  $p<0.05$ ). Therefore, blue light exposure elevated oxidative stress and reduced locomotive ability.

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