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Cardiac Endothelial Impairment In The *Danio rerio* Due to Change in The Circadian Rhythm †

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Abstract: Light is one of the environmental factors which regulates the circadian rhythm in humans and animals. Circadian rhythm is a light and dark cycle that controls awakeness and sleepiness. The circadian rhythm regulates all the physiological functions. Artificial light at night disrupts the circadian rhythm in the population. Most developing and developed country populations are very much prone to disturbance in the circadian rhythm as shift work becomes very common. In this study, we have disturbed the circadian rhythm of the Danio rerio by continuously exposing them to bright light and disturbing their resting period by creating surface waves for 96 hours. At regular intervals, triplicates were meticulously extracted from control and experimental tanks, their hearts tenderly dissected and preserved in formaldehyde for subsequent analysis. Through the lens of a microtome, the intricate architecture of cardiac tissue unveiled a disquieting narrative; after 48 hours and 72 hours, show trabeculae and necrosis in the inner layer of the ventricles and lumens were seen in the bulbus arteriosus. These findings not only mirror the cardiac consequences observed in humans experiencing circadian disruptions but also underscore the potential of zebrafish as valuable models for investigating pharmacological interventions aimed at mitigating such cardiovascular consequences.

Keywords: artificial light; cardiac endothelial impairment; circadian rhythm.

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Conflicts of Interest

The authors declare no conflict of interest.