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Biological effects of different intensities of blue-enriched white light in light emitting diode (LED) on *Caenorhabditis elegans*

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Caenorhabditis elegans is small free-living and bacterial-feeder rhabditid nematode. It is a good model to study the effects of light emitting diode (LED) on the living systems because of its biological characteristics; such as short lifespan of two to three weeks and easy maintenance at the temperature of 20°C. Multiple cells of *C. elegans* including gut, muscle and neuronal cells share homology with humans. Therefore, it has offered many valuable insights into the field of human biological science. This study aims to analyse whether the chronic exposure of the nematode *C. elegans* to the blue-enriched white light in LED light from egg to adult can impact the biology and behaviour of *C. elegans*. In this analysis, four treatments were prepared to evaluate these effects that were exposed to no light (dark) which is the control, low-blue enriched, medium-blue enriched and high blue enriched white in LED light sources. The results showed that the low- blue enriched treatment was very much similar to control. In medium-blue and high-blue enriched exposed treatments, the worms acted differently in comparison of control with significant biological differences. It was observed in the life span assay, that the mortality rate after 48 h of exposure to low, medium and high-blue light was significantly higher than the control. The worms that were developed while exposed to LED light showed less tolerance and higher mortality when exposed to heat (35°C) and cold (4°C). The reproduction (brood size) was significantly low in Medium and High-blue light comparing to control. The locomotion (body bends) within 20 second was significantly lower in medium-blue light with irregular pattern of movement, and the worm keeps moving in the same area in high-blue light. Therefore, the findings also help in understanding the impact of blue enriched white in LED lights on living organisms and humans.

Speaker Biography

Aldana Aldawsari has completed her master's degree at the age of 25 years from Texas Southern University, USA. She is a researcher in biology who confirmed at which level the blue light is disastrous for our health. She has been involved with studies related to biology. She participated in many scientific conferences, seminars and activities in United States of America. At present, she is a lecturer in Princess Nourah Bint Abdul Rahman University, SA.

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