

Connection between light at night (LAN) and cancer revealed in additional study

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A new study from the Center for Interdisciplinary Chronobiological Research at the University of Haifa has found an additional link between Light At Night (LAN) and cancer. This research joins a series of earlier studies carried out at the University of Haifa that also established the correlation. "High power light bulbs contribute more to 'environmental light pollution', which the study has shown is a carcinogenic pollution," notes Prof. Abraham Haim, who headed the study.

Earlier studies in which Prof. Haim has participated at the University of Haifa, have shown that people living in areas that have more night-time illumination are more susceptible to [prostate cancer](#) in men and [breast cancer](#) in women. The researchers' hypothesis was that LAN harms production of melatonin, a hormone that is released from the pineal gland during the dark part of the 24h cycle and which is linked to the body's cyclical night-day activity and seasonality. When this hormone is suppressed, the occurrence of cancer rises.

The current study, in which Dr. Fuad Fares and Adina Yokler, Orna Harel and Hagit Schwimmer also participated, set out to establish or refute this hypothesis. In order to do so, four groups of lab mice injected with [cancerous cells](#) were examined: one group was exposed to "long days" of 16 hours of light and 8 hours of darkness, simulating exposure to artificial light beyond the natural number of light hours in a day; a second group was exposed to the same "long days" but were treated with melatonin; a third group was exposed to "short days" of 8 light hours and 16 dark hours; and a fourth group was exposed to the same "short days" but during the dark hours was exposed to a half-hour interval of light.

The results show once again the clear link between LAN and cancer: the cancerous growths in mice exposed to "short days" were smallest (0.85 cubic cm. average), while those mice exposed to the

interval of LAN during dark hours had larger growths (1.84 cubic cm. average) and those exposed to "long days" even larger growths (5.92 cubic cm. average).

The study also discovered that suppression of melatonin definitely influences development of the tumor. The size of tumor in mice exposed to "long days" but treated with melatonin was only 0.62 cubic cm. on average, which is not much different from the size of the growth in mice exposed to "short days". The study also found that the death rate in mice treated with melatonin was significantly lower than in those not treated.

The researchers say that their study results show that suppression of [melatonin](#) due to exposure to LAN is linked to the worrying rise in the number of cancer patients over the past few years. However, it is not yet clear what mechanism causes this.

"Exposure to LAN- disrupts our biological clock and affects the cyclical rhythm that has developed over hundreds of millions of evolutionary years that were devoid of LAN. [Light pollution](#) as an environmental problem is gaining awareness around the world, and the World Health Organization's International Agency for Research on Cancer (IARC) has already classified working the night shift as a higher grade of cancer risk," the researchers noted.

Provided by University of Haifa

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