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Artificial light at night and melatonin production: Possible impact on human health due to epigenetically modifications

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Disappearance of dark nights is the most dramatic change that took place on our planet throughout the 20th century emerging from electrical illumination. The outcome is noted in great changes taking place in human lifestyle as activity extending to 24 h/day, seven days a week. No doubt this has a positive effect on our economy and social activity but, what about the environment and our health? We have been studying the effects of Artificial Light at Night (ALAN) on the circadian system, production and secretion of pineal hormone melatonin (MLT), known as a “jack of all trades” among others as an antioxidant, anti-ageing and anti-oncogenic agent. MLT-suppression is wavelength depended where short wavelength illumination (SWI) is effective in MLT-suppression and among SWI natural light emitting diode (LED) has the greatest MLT-suppression. Epigenetically modifications as global DNA Methylation (GDM) are an expression to environmental changes. Results of studies carried out in our center revealed that exposure to ALAN caused GDM-reduction in cells from different organs this hypo-methylation was emerged presumably from MLT-suppression. However, addition of MLT in drinking water during the dark-period reversed the process and GDM level increased. These results support the idea that hormones, in our case MLT, are important mediators between the environment and epigenetically modifications.

Biography

Abraham Haim has completed PhD in Environmental Physiology from the Hebrew University of Jerusalem and Post-doc from the MRI University of Pretoria South Africa. He is a Zoologist, Eco-physiologist and Chronobiologist. Since 1976, he is a faculty member at the University of Haifa and since 1996 a full Professor. He was the Chair person of several departments, between the years 2002-2008, Dean of natural- sciences faculty. He has published over 170 papers in pre-reviewed journal and two years ago together with Professor Portnov published a book entitled: *Light Pollution as a New Risk Factor for Human breast and Prostate Cancers*, by Springer. He has supervised many MSc and PhD students.

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