

عنوان مقاله:

Light at Night Exposure Effects Differentiation and Cell Cycle in Rat Liver with Autonomic Nervous System Denervation

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خلاصه مقاله:

Abstract Introduction: Exposure to the artificial light at night (LAN) effect human health and causes several functional modification in body. Obesity, diabetes, and hormonal changes are reported after LAN in humans. Aim of this study is highlighting critical features of gene expression changes in liver of rats which are received autonomic nervous system. **Methods:** Liver gene expression profiles of Δ male Wistar rats that were received a sympathetic plus parasympathetic hepatic denervation and 1 hour expose light at night (LAN) from Gene Expression Omnibus (GEO) are compared with controls. The significant differentially expressed genes (DEGs) are screened by protein-protein interaction (PPI) network analysis STRING database (an application of Cytoscape software). CuleGO and CleuDedia the two applications of Cytoscape software were used for more analysis. **Results:** Among 250 DEGs, 133 genes characterized genes with fold change more than 2 plus 100 added relevant genes were included in the PPI network. Analysis of the main connected component (MCC) led to introduce 15 hubs and 15 bottlenecks. CCT2, COPS3A, KAT5A, and ERCC1 were determined as hub-bottlenecks. Among hubs and bottlenecks, DHX15, KAT5A, CCT2, HSPA9-AB1, CCNE1, DHX16, LSM2, WEE1, CWC27, BAZ1B, RAB27A, DNMT2, and DHX30 were linked to the each other's by various kinds of actions. CCT2 and KAT5A, the two hub-bottlenecks are included in the interacted genes in the action map. Four classes of biological terms including negative regulation of non-motile cilium assembly, negative regulation of transforming growth factor beta activation, alpha-tubulin acetylation, and histamine-induced gastric acid secretion were identified as the critical involved biochemical pathways and biological processes. **Conclusion:** Several essential functions as like differentiation, cell cycle, ribosome assembly, and splicing are affected by LAN in rat liver with autonomic nervous system denervation. **Keywords:** Light at night Rat Gene Denervation Network

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