

ABSTRACT

The circadian system is designed to generate circadian rhythms and serve as the human inner clock. This is achieved through the molecular mechanism of autonomous transcriptional-translational feedback loops, in which so-called clock genes are involved. Circadian rhythms regulate the timing of physiological and behavioral processes, including sleep. Sleep is important for the proper functioning of the human organism. As a result of desynchronization of circadian rhythm, disturbances of sleep arise which threaten the mental and physical state of man. One of the examples is sleep deprivation which is defined as a lack of necessary amount of sleep. Besides its negative effect on human health, there had been also reported positive effect in the treatment of symptoms in patients with unipolar depression. Other studies suggest that deprivation causes a reset of the circadian system, correcting the abnormal functioning of the internal clock. These effects have only a short duration, but it appears that they could be stabilized by combining sleep deprivation therapy with other therapeutic approaches. However, it is crucial to understand the exact mechanism that causes the positive effect in sleep deprivation therapy.