# Modulating role of serotonergic signaling in sleep and memory

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## Abstract

Serotonin is an important neurotransmitter with various receptors and wide-range effects on physiological processes and cognitive functions including sleep, learning, and memory. In this review study, we aimed to discuss the role of serotonergic receptors in modulating sleep-wake cycle, and learning and memory function. Furthermore, we mentioned to sleep deprivation, its effects on memory function, and the potential interaction with serotonin. Although there are thousands of research articles focusing on the relationship between sleep and serotonin; however, the pattern of serotonergic function in sleep deprivation is inconsistent and it seems that serotonin has not a certain role in the effects of sleep deprivation on memory function. Also, we found that the injection type of serotonergic agents (systemic or local), the doses of these drugs (dose-dependent effects), and up- or down-regulation of serotonergic receptors during training with various memory tasks are important issues that can be involved in the effects of serotonergic signaling on sleep-wake cycle, memory function, and sleep deprivation-induced memory impairments. This comprehensive review was conducted in the PubMed, Scopus, and ScienceDirect databases in June and July 2021, by searching keywords sleep, sleep deprivation, memory, and serotonin.

**Keywords:** Memory; Serotonin; Sleep; Sleep deprivation.

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PubChem Compound (MeSH Keyword)

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