

## عنوان مقاله:

Intraperitoneal ozone injection prevents rem sleep deprivation - induced spatial learning and memory deficits by suppressing the expression of Sema3A in the hippocampus in rats

## محل انتشار:

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## خلاصه مقاله:

**Objective(s):** Sleep deprivation is a common health problem in modern society and is negatively associated with deleterious effects on cognitive functions such as learning and memory ability. This study was undertaken to provide a detailed account of the effect of chronic ozone intraperitoneal injection on the deleterious effects of sleep deprivation on brain function in rats. **Materials and Methods:** Sleep deprivation was induced using the modified multiple platform model. The rats received REM sleep deprivation with an intraperitoneal injection of ozone or midazolam for 28 days. The effects of ozone on REM sleep deprivation-induced hippocampus-dependent learning and memory deficits were studied by the following approaches: Morris water maze (MWM) tests were used to evaluate spatial learning and memory of rats. Morphological changes in the brain were evaluated using hematoxylin and eosin (HE) staining. RNA-sequence was performed to seek a common mechanism. The expression of the targeted gene was examined by qPCR and Western blotting. **Results:** Ozone intraperitoneal injection reversed spatial learning and memory deficits associated with REM sleep deprivation, ameliorating pathological brain damage and down-regulating the hippocampal expression of Sema3A in rats after REM sleep deprivation. **Conclusion:** Ozone intraperitoneal injection alleviated sleep deprivation-induced spatial learning and memory deficits by protecting hippocampal neurons via down-

**کلمات کلیدی:**

Cognitive impairment, Midazolam, Ozone therapy, REM sleep deprivation, Sema<sup>3</sup>A

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