



## KEY WORDS

- ✓ uridine
- ✓ learning-memory
- ✓ anxiety
- ✓ cytokines
- ✓ sleep deprivation

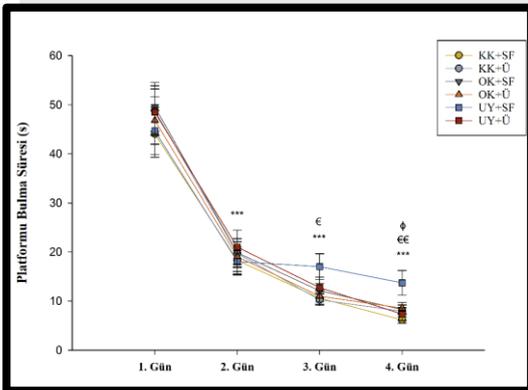
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# THE EFFECT OF URIDINE ON INFLAMMATORY MEDIATORS IN REM SLEEP DEPRIVED RATS

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## THESIS ABSTRACT

Sleep deprivation impairs learning-memory and causes stress, inflammation and behavioral changes. In this study, effects of uridine on learning-memory, cytokines and anxiety in REM sleep deprived (REMSD) rats were investigated. Adult male Wistar albino rats (n=150) were randomized to A, B and C groups. REMSD was induced by modified multiple platform method. Rats were divided into 6 subgroups according to cages they were placed and uridine (1 mmol/kg, i.p.)-saline (1ml/kg, i.p.) injections. Groups A and B were tracked for 96h and treated with uridine or saline twice for 4 days and once on the 5<sup>th</sup> day whereas C was tracked for 24h and treated twice on 1<sup>st</sup> and once on next day. Group A was tested on Morris water maze for learning-memory whereas B and C were tested on open field and elevated-plus maze for anxiety. Afterwards, corticosterone levels from serum and cytokine levels from hippocampi of group A were analyzed by ELISA and RT-PCR.

We conclude that REMSD impairs learning and uridine treatment ameliorates this impairment. It has been observed that corticosterone levels increased in REMSD rats, whereas uridine had no effect. REMSD increased IL-1 $\beta$ , IL-4, IL-6, IL-10 and TNF- $\alpha$  cytokine levels as well as mRNA expressions of IL-1 $\beta$ , IL-4 and IL-6. mRNA expressions of IL-1 $\beta$  were decreased in REMSD rats by uridine treatment. It has been determined that locomotor and exploratory behaviors increase as a result of 24 and 96 hours of REMSD. It has been observed that uridine has a positive effect on these behaviors.

## APPLICATION AREAS OF THE THESIS RESULTS

The results of the study show that uridine has a therapeutic effect on sleep deprivation-induced hyperactivity, learning disability and mania-like behaviors, and the therapeutic efficacy of uridine should be investigated.

## ACADEMIC ACTIVITIES

Öcalan Esmerce B., Çakır A., Çilingir S., Süyen G., Kahveci N. REM Uyku Yoksunluğu Oluşturulan Sıçanlarda Üridin Tedavisinin İnflamatuvar Mediatorler Üzerine Etkisi. 47. Ulusal Fizyoloji Kongresi, 1-4 Kasım 2022, Antalya, Bursa.

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