

# Effect of suvorexant on event-related oscillations and EEG sleep in rats exposed to chronic intermittent ethanol vapor and protracted withdrawal

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## Abstract

### Study Objectives

Insomnia is a prominent complaint in patients with alcohol use disorders (AUD). However, despite the importance of sleep in the maintenance of sobriety, treatment options for sleep disturbance associated with a history of AUD are currently limited. Recent clinical trials have demonstrated that suvorexant, a dual Hc1/OX receptor antagonist, normalizes sleep in patients with primary insomnia; yet, its potential for the treatment of sleep pathology associated with AUD has not been investigated in either preclinical or clinical studies.

### Methods

This study employed a model whereby ethanol vapor exposure or control conditions were administered for 8 weeks to adult rats. Waking event-related oscillations (EROs) and EEG sleep were evaluated at baseline before exposure and again following 24 hr of withdrawal from the exposure. Subsequently, the ability of vehicle (VEH) and two doses (10, 30 mg/kg IP) of suvorexant to modify EROs, sleep, and the sleep EEG was investigated.

### Results

After 24 hr following EtOH withdrawal, the ethanol-treated group had increases in waking ERO  $\theta$  and  $\beta$  activity, more fragmented sleep (shorter duration and increased frequency of slow wave (SW) and rapid eye movement [REM] sleep episodes), and increased  $\theta$  and  $\beta$  power in REM and SW sleep. Suvorexant induced a dose-dependent decrease in the latency to REM and SW sleep onsets but also produced REM and SW sleep fragmentation and increased  $\beta$  energy in waking EROs when compared with VEH.

### Conclusions

Taken together, these studies suggest that suvorexant has overall sleep-promoting effects, but it may exacerbate some aspects of sleep and EEG pathology.

[alcohol](#), [EEG](#), [event-related oscillations](#), [suvorexant](#), [slow-wave sleep](#)

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