

## POSTER 32

### GETTING OVER A HANGOVER: HOW DO WAKE PROMOTING NEURONS IN THE BASAL FOREBRAIN AFFECT ETHANOL INDUCED SLEEP?

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Hangover is a common clinical manifestation of heavy alcohol use. Sleepiness/drowsiness is a common symptom of hangover; however its neuroanatomical substrate is unknown. The basal forebrain (BF) cholinergic neurons play a central role in promoting wakefulness and are associated with sleep promoting effects of ethanol. Are the BF cholinergic neurons important for emerging from alcohol induced hangover/sleep?

**Methods:** Adult male Sprague-Dawley rats were implanted with sleep electrodes and bilateral guide cannulas above the BF region. Following post-operative recovery and habituation, the animals were intragastrically administered deionized water (10ml/Kg) on day 1 and ethanol [35% (v/v); 3 g/Kg] on day 2. The effect of alcohol on sleep (pre-lesion) was examined. On the third day, the rats were divided into control and experimental groups. The BF cholinergic neurons in the experimental rats were lesioned by bilateral microinjections of the immunotoxin, IgG-Saporin (0.28  $\mu$ g/side; specific for BF cholinergic neurons). The control received artificial cerebrospinal fluid bilaterally in the BF. The animals were left undisturbed for 3 week. Subsequently, water and alcohol was administered as described above and the effect of alcohol (post-lesion) on sleep was examined. On completion, rats were euthanized, brains removed and processed for choline acetyltransferase immunohistochemistry in the BF to verify the lesion.

**Results:** We found that the experimental animals had a 50% reduction in the number of BF cholinergic neurons coupled with a significant increase in sleep post-lesion as compared to controls

**Conclusions:** Our results suggest that BF cholinergic neurons play a role in emerging from ethanol induced hangover/sleep.