## P4.08.

# Inhibition of FAAH during a trauma prevents the development of sleep disturbances

Spitzer, K.[1]; Humli, V.[1]; Nguyen, T. T.[2]; Szőke, A.[2]; Haller, J.[3]; Kántor, S.[3, 4]

*1: Eotvos Lorand University, Budapest, Hungary*
*2: Semmelweis University, Budapest, Hungary*
*3: Department of Behavioral Neuroscience, Institute of Experimental Medicine, Hungarian Academy of Sciences, Budapest, Hungary*
*4: Faculty of Information Technology, Pazmany Peter Catholic University, Budapest, Hungary*

Post-traumatic stress disorder (PTSD) is an anxiety disorder that results from exposure to a traumatic event. Besides distress, PTSD is characterized by cognitive dysfunctions and severe sleep disturbances. Since the cannabinoid CB1 receptor play a central role in trauma-induced plastic changes in the brain that lead to PTSD and CB1 receptors are present in sleep-wake centers of the brain, we hypothesized that an enhanced endocannabinoid signaling during a traumatic event affects the development of PTSD sleep symptoms. To test our hypothesis, we studied the effect of the fatty acid amide hydrolase enzyme inhibitor URB-597 on contextual conditioned fear responses in mice. We instrumented 18 weeks old, male, CD1 mice with EEG/EMG electrodes, and after recovery, we exposed them to a brief session of electric foot-shocks. 40 min before shock exposure, we injected the mice with URB-597 (0.3 mg/kg, i.p.) or vehicle. Sleep/wake behavior was recorded in mice for 24 hours in their home cages a day before (baseline day), a day after and 14 days after the trauma. The re-exposure to the shock context caused hypervigilance in vehicle but not in URB597 treated mice 14 days after the trauma. REM sleep was also reduced in these mice, which effect was prevented by URB597 treatment. These results suggest that an increased endocannabinoid signaling during the trauma alleviates the sleep symptoms of a subsequent PTSD and may explain the interindividual differences in responses to traumatic events.