Changes In Metabotropic Glutamate Receptor Trafficking During Protracted Ethanol Withdrawal

Sarah Mainya MSBS '23[1], Jennifer Giles MA[1], Daniel T Christian PhD[1]

[1]Des Moines University, Physiology and Pharmacology Department, West Des Moines, IA 50266

As a result of chronic ethanol exposure, the brain undergoes neuroadaptive changes as a response to glutamatergic dysregulation. In this study, quantified the expression of group I metabotropic glutamate receptors (mGlu1 and mGlu5), during withdrawal from chronic intermittent ethanol exposure. In addition, we also quantified known trafficking/anchoring partners, including Homer proteins. This quantification was conducted using western blot analysis on whole tissue lysate as well as after a biotin labeling of surface (membrane bound) proteins in withdrawal and control rats. Our exposure paradigm consists of rats being exposed to volatilized ethanol vapor pumped into a sealed chamber for four consecutive days, followed by a three-day withdrawal. This cycle continued for three weeks after which the rats are placed into forced withdrawal withdraw for 35 or 55 days. Tissue from the basolateral amygdala (BLA) was then micro dissected for further processing and western blot analysis. Our results showed no significant changes in metabotropic glutamate receptor trafficking. However, we did notice Homer 1b/c significantly decreased in surface protein expression while Homer 2 was significantly increased in levels of surface protein expression. These data suggest differential trafficking of Homer and mGlu proteins that could differentially impact synaptic function during protracted withdrawal. Future studies will seek to measure the functional contribution of mGlu during protracted withdrawal.