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Embryonic Neuronal Stem Cell Differentiation is Drastically Effected by Single Doses of Alcohol and Methamphetamine.

The objective of this study is to examine population size and differentiation of embryonic neuronal stem cells prior to and after exposure to addictive drugs and alcohol. Prior to differentiation, E14 mouse neuronal stem cells were exposed to methamphetamine, one dose of alcohol (400ug/dL), or two doses of alcohol. The cells were then allowed to differentiate for 4 days, then examined using DAPI (nuclear), anti- oligodendrocyte marker O4, mouse anti-beta 3 tubulin 9 (Neurons), and anti- GFAP antigen (astrocytes). The cells were counted to determine the total number of cells and those with marker expression for each cell type compared to controls. Exposure to both alcohol and methamphetamine caused a large decrease in both stem cell populations and differentiation of neurons. Glial cell populations remained unaffected. Methamphetamine exposure resulted in a drastic increase of un-differentiated stem cells. The results support that consumption of alcohol and methamphetamine does affect population size and differentiation of neuronal stem cells. Research sponsored by WV-INBRE grant **P20GM103434**