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Alcohol and Drug induced Neuronal Stem Cell Losses.

Alcoholism and drug addiction have become a nationwide epidemic causing substantial increases in overdose deaths and decreased quality of life. Alcohol consumption by pregnant woman leads to Fetal Alcohol Spectrum Disorders (FASD) and similar development miscues are evident from various drugs of abuse. Alcohol and drugs of abuse has been shown to reduce proliferation and increase DNA damage through both oxidative stress and alterations in cell cycle progress in both embryonic and adult stem cell populations. Cell losses from protein expressional changes at the G1/S phase checkpoint, and induces oxidative damage, thus hindering early S-phase progression through altered DNA synthesis. There is little understanding of the extent of DNA damage or the mechanism used to induce cell death. While p53 has been suspected to be a link between cell cycle and apoptotic pathways, CHK1/2 and Cdc25 could be a p53 independent connection between the damaged cell cycle and increased apoptosis seen upon alcohol and methamphetamine exposure.

Research sponsored by WV-INBRE grant **P20GM103434**.