Oglesby, Quamya

Q. Oglesby, N.I. Hall, J. Baker, A. Pullum, M. Shobande, A. Kumari, M. Jones, and A.M. Maldonado-Devincci; Departments of Psychology, Biology, and Bioengineering, North Carolina Agricultural and Technical State University

PREGNENOLONE ALTERS ANXIETY-LIKE BEHAVIOR, BUT NOT ALCOHOL CONSUMPTION, IN ADULTHOOD FOLLOWING ADOLESCENT BINGE ALCOHOL EXPOSURE IN MALE C57BL/6J MICE

Background: Alcohol misuse has played an important role in adolescent alcohol drinking behaviors for the past millennia. Studies show that most adolescent alcohol consumption is in the form of binge drinking. Male adolescents have consistently reported consuming alcohol at higher rates than females and this divide increases into adulthood. Binge drinking during adolescence leads to higher rates of dependence on alcohol, abuse, disease, and death. We have previously shown that binge alcohol exposure during adolescence increases voluntary alcohol consumption in adulthood. The present experiment was designed to determine if administering pregnenolone (50 mg/kg) would reverse these effects in adulthood following binge alcohol exposure during adolescence using vapor inhalation exposure paradigm.

Methods: We exposed adolescent C57BL/6J male mice to vapor adolescent intermittent ethanol exposure from postnatal day (PND) 23-37 and measured intermittent voluntary ethanol intake in adulthood from PND 70-97 using a two-bottle choice paradigm, followed by measuring open field, depressive-like behavior, and anxiety-like behavior between PND 99-102. We expected pregnenolone to decrease a voluntary alcohol intake in adulthood in males in the alcohol-exposed mice.

Results: We observed that pregnenolone did not change voluntary alcohol consumption in males exposed to alcohol during adolescence compared to those exposed to vehicle control. There were no differences between any groups in behavior in the open field test between alcohol-exposed and air-exposed mice as measured by rearing, time, entries into, and distance traveled in the open field test. There were no differences in depressive-like behavior using the tail suspension test. We did observe a trend ($p = 0.07$) for alcohol-exposed mice to bury fewer marbles in the marble-burying test compared to control mice.

Discussion: This may be a result of a more severe withdrawal period for control mice, which would increase withdrawal-induced anxiety-like behavior. The alcohol mice may have developed a tolerance following adolescent alcohol-exposure and alcohol drinking in adulthood, thus inducing less severe withdrawal. Our data indicate that adolescent intermittent alcohol exposure modestly alters anxiety-like behavior, but does not alter voluntary alcohol intake in male mice in adulthood.