

Galindo, Kayla

K.I. Galindo; A. Serna Castillon; K.M. Serafine. Department of Psychology, The University of Texas at El Paso, El Paso, TX

THE EFFECTS OF EATING A HIGH FAT DIET ON SENSITIVITY OF FEMALE RATS TO ETHANOL

Eating a diet that is high in fat or sugar can impact dopaminergic systems, the same pathways targeted by drugs of abuse. Rats eating a high fat laboratory chow are more sensitive to the behavioral effects of drugs of abuse, including cocaine and methamphetamine. However, it is not known if eating a high fat diet also enhances sensitivity of rats to alcohol. To address this gap in knowledge two experiments were conducted. In Experiment 1, 24 female Sprague Dawley rats eating either standard (18% kcal from fat) or high fat (60% kcal from fat) chow for 5 weeks were trained to drink ethanol solution. Training consisted of a daily 4-hour session for 28 days. Following training, during the test phase, two bottles were presented (one containing 8% w/v ethanol and one containing water) while animals had continuous access to food. In Experiment 2, the effects of once weekly cumulative doses of 15% ethanol (0.5-2.0 g/kg; i.p.) on locomotor activity was studied in 16 female Sprague Dawley rats eating the same types of chow used in Experiment 1 (high fat or standard). In Experiment 1, rats eating high fat chow consumed more milliliters of ethanol on average daily than rats eating standard chow; however, when accounting for body weight, this difference was no longer statistically significant. In Experiment 2, cumulative doses of ethanol decreased locomotion in rats eating both diets; however, two-way ANOVAs analyzing ambulatory distance traveled revealed that on weeks 3 and 4, rats eating standard chow were less active after cumulative doses of ethanol, than rats eating high fat chow. A two-way ANOVA of Area Under the Curve (AUC) with Bonferroni's multiple comparisons to examine effects across time revealed that after 3 weeks of testing, the AUC for rats eating standard chow was smaller than for rats eating high fat chow. These results demonstrate that rats eating high fat chow were less sensitive to the motor suppressant effects of ethanol than rats eating standard chow. Taken together these data suggest that eating a high fat diet might decrease sensitivity of rats to some of the effects of ethanol (e.g., motor impairment) without impacting others (e.g., reinforcement). Future experiments will replicate these procedures with males, and explore possible sex differences, as well as examine other methodological approaches to induce ethanol self-administration in rats.