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"Effects of Chronic Alcohol Consumption on Taste Sensitivity in Female Mice"

Alcohol use among women has increased notably over the past two decades, partly attributed to shifting social norms surrounding alcohol use, mounting stress related to balancing work while raising a family, and targeted marketing of alcoholic beverages for women. This escalating alcohol consumption among females poses significant health concerns, including an increased risk for metabolic disorders. Chronic alcohol use may influence taste perception, and alterations in taste preferences may also increase the risk of metabolic disorders. This study aimed to examine the effects of two alcohol delivery methods on body weight and lingual taste bud density in female mice.

Female C57BL/6 mice were provided with either a liquid ethanol diet or ethanol via vapor inhalation. Mice fed the Lieber-DeCarli diet were provided with *ad libitum* diet containing 5% ethanol or a control solution for 30 days. Following the NIAAA chronic-plus-binge alcohol feeding model, the ethanol group received a gavage of 5g/kg of ethanol on days 10 and 30 of the study. Food intake was measured daily, and body weights were measured weekly. The mice were euthanized at least 24 hours after their last binge, and the tongues were harvested.

Mice exposed to vapor were given intermittent ethanol vapor or volatilized water exposure for 16 hours, followed by room air for 8 hours. Exposure was repeated for 4 days followed by a 3-day break before a second 4-day cycle. Mice were provided with *ad libitum* access to standard chow diet and water. Mice were sacrificed between 41-45 days of age, and the tongues were collected. Body weights were also measured weekly.

Histological analysis of the fungiform papillae using 0.5% Methylene Blue revealed that the Lieber-DeCarli diet led to a significant increase in the density of fungiform papillae, while the ethanol vapor exposure led to a significant decrease in fungiform papillae. Overall, the fungiform papillae density was lower in the mice with the Lieber-DeCarli diet, suggesting an effect of that diet. Furthermore, mice in the Lieber-DeCarli ethanol group gained less weight than their controls, whereas ethanol administration via inhalation did not significantly affect weight gain.

Altogether, these data suggest that the route of administration of ethanol in females may significantly affect taste sensitivity and body weight. Therefore, care should be taken when designing studies to assess the effects of ethanol on taste preferences and sensitivities.