

IMPACT OF TWO DIFFERENT RODENT DIETS ON MATERNAL ETHANOL CONSUMPTION, SERUM ETHANOL CONCENTRATION AND PREGNANCY OUTCOME MEASURES.

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Recent studies have reported that varying levels of ethanol consumption by rodents maintained on different commercially available laboratory diets, may impact offspring outcome measures. Here, we compared ethanol consumption by rats maintained on the Envigo 2920 diet used in our lab, with an isocalorically equivalent PicoLab 5L0D diet, used in some alcohol consumption studies.

Compared to the 5L0D diet, female rats maintained on the 2920 diet consumed 14% less ethanol during the daily four-hour drinking sessions prior to pregnancy and 28% less ethanol during gestation. While this difference did not affect litter size, maternal weight gain during pregnancy by 5L0D dams decreased by 5%. However, their offspring birth weights increased by 10% compared to the 2920 dams. A subsequent study revealed that hourly ethanol consumption was not different between diets during the first two hours, but was significantly reduced in 2920 rats at the end of the third and fourth hours. The mean serum ethanol concentration at two hours was 46 mg/dL in 5L0D dams compared to 25 mg/dL in 2920 dams. Further, ethanol consumption at the two-hour blood sampling time was more variable in 2920 dams compared to 5L0D dams.

An *in vitro* analysis mixing each powdered diet with 5% ethanol in acidified saline revealed that 2920 diet suspension adsorbed more aqueous medium than 5L0D suspension diet. The total ethanol remaining in the aqueous supernatant of 5L0D mixtures was nearly twice the amount in supernatants of the 2920 mixture. These results suggest that 2920 diet expands to a greater extent in aqueous medium than 5L0D diet.

We speculate that increasing adsorption of water and ethanol by the 2920 diet may reduce or delay the amount of ethanol absorbed and may decrease serum ethanol concentration to a greater extent than would be predicted from the amount of ethanol consumed.

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