CNS|CRO
Preclinical Neurological Disease Services

Metabolic Syndrome

Model Overview

Metabolic syndrome is characterized as a combination of several conditions including obesity, hyperglycemia, dyslipidemia, and hypertension that together increase the risk of developing a variety of other health issues such as diabetes, cardiovascular disease, and fatty liver. A metabolic disease model may be produced through feeding mice a commercially available high-fat diet, resulting in obesity, hyperglycemia, and dyslipidemia. In addition, this model has been shown to alter offspring measures, including weight and social behaviours.

Differentiation & Advantages

- Disease mice display progressive weight gain over time
- Mice fed high-fat diet exhibit an increased blood glucose concentration
- Litter viability is decreased in dams fed high-fat diet
- Offspring weight from high-fat dams show decrease in gain compared to normal diet offspring
- Social interactions are decreased in offspring of high-fat diet dams

High-fat diet alterations:

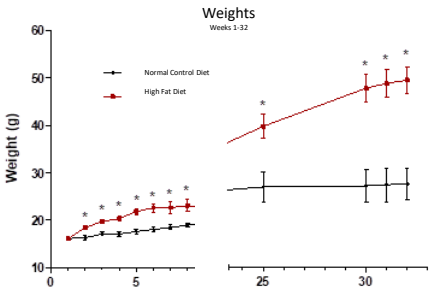

Figure 1: Female mice receiving high-fat diet show increased weight gain during pre-breeding (weeks 1-8), as well as at post-breeding time points. Asterisks indicate a statistically significant difference from Normal Controls, while error bars denote SEM.

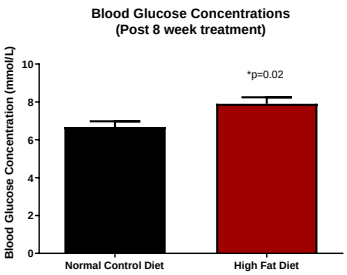

Figure 2: Mice fed high-fat diet exhibit increased blood glucose concentration. Error bars denote SEM.

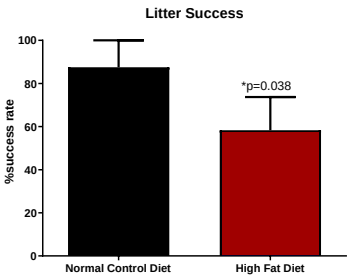

Figure 3: Litter viability is decreased for dams fed high-fat diet. Error bars denote SEM.

Alterations in offspring:

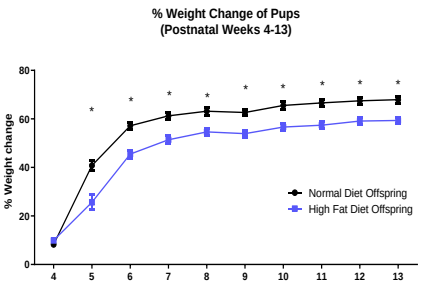

Figure 4: Although all offspring received normal mouse diet post-weaning, pups from high-fat diet dams display differences in weight gain compared to normal diet offspring. Error bars denote SEM.

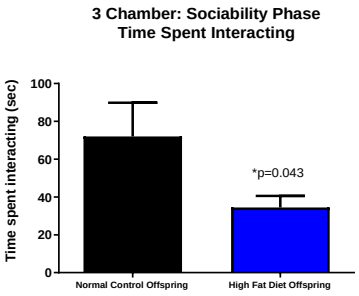

Figure 5: Mouse offspring from high-fat diet dams show decreased interest in reciprocal activities during dyadic testing. Error bars denote SEM.

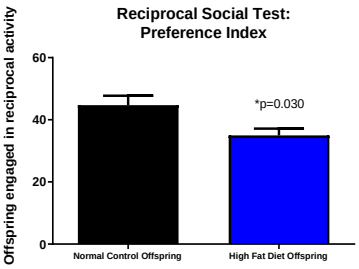

Figure 6: Mouse offspring from high-fat diet dams show decreased interaction time with the novel conspecific during 3 Chamber testing. Error bars denote SEM.