

Obesity-induced Type 2 Diabetes

Background: Obesity is associated with the development of many diseases, with Type 2 Diabetes (T2D) the most common one among them. Obesity-induced experimental model of T2D is characterized by significant weight gain, increased fasting glucose, insulin resistance, and a number of metabolic disorders, such as abnormal lipid metabolism, cardiovascular complications, nephropathy, etc. Obesity-induced T2D model in CD-1 (ICR) or C57BL mice demonstrates good reproducibility and reliability of the obtained results. Due to better translatability of the drug candidate testing results to the treatment of this polygenic disease in humans, non-genetic animal models of diabetes have numerous advantages compared to the genetically determined models. This model can be used for pharmacological screening of anti-diabetic and anti-obesity drugs, as well as for the study of drugs intended for the treatment of side effects of diabetes and obesity – diabetic nephropathy, cardiomyopathy, etc.

Service Details: For obesity induction, the standard High Fat Diet (Research Diets, Inc) with fructose supplements in ICR male mice is used. Development of the diabetic state is monitored by routine tests – food and water intake, body weight gain, blood glucose and glycosylated hemoglobin levels, glucose tolerance test (GTT), and insulin tolerance test (ITT). Various markers of diabetes' side effects can be monitored on request. To develop the obesity-induced model of diabetes for testing a drug candidate, we suggest using 8-10 animals per each planned experimental group, 12 weeks of HFD for obesity induction and post-HFD monitoring to confirm that the mice are diabetic. If the study goal is testing an accompanying pathology, the time allowed for disease development may be increased to 6-8 months.

Deliverable: Report including description of the study design, methodology, raw experimental data, graphs and interpretation.

Sample Submission: Dry compound or compound in pre-made dosing formulation (amount required depends on the dosing levels and schedules). For example, to treat a group of 8 mice at 10 mg/kg, twice daily (b.i.d) for 1 week, about 16 mg of test compound is needed.