Glucose Tolerance Test

Version: 1
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(note that the following list should be linked to the appropriate location.)

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- Reagent 1
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Summary: *(This area will include a brief description of what the protocol is used for and why someone would need to use it.)*

Glucose tolerance test measures systemic clearance of glucose following an intraperitoneal bolus injection of 20% dextrose. This experiment measures insulin sensitivity in awake mice assuming that there are no alterations in the animal's pancreatic β-cell function and insulin secretion. Insulin sensitivity is altered in obese mice.

Reagents and Materials: *(This should be a comprehensive list of stock solutions and material. The reagent list for the stock solutions is included in the reagent preparation area that is included at the end of this SOP.)*

Reagent/Material	Vendor	Stock Number
20% Dextrose, injection, USP	Hospira	NDC0409-7935-19

Protocol:

1. Mice may be fasted overnight (~15 hours) or for 5 hours prior to the start of experiment.
2. Collect plasma sample (10 µl) before the start of experiment (basal-0 min) to measure basal glucose levels.
3. Administer intraperitoneal injection of 20% dextrose (1 or 2 g/kg body weight) using an insulin syringe.
4. Collect plasma samples (10 µl) at 10, 20, 30, 60, 90, and 120 min following injection to measure circulating glucose concentrations.
5. For data analysis, plasma glucose levels vs. time after injection are plotted, and area-under-curve may be calculated to estimate insulin sensitivity.
6. Area-under-curve of glucose tolerance test may be inversely correlated with insulin sensitivity assuming unaffected insulin secretion and pancreatic β-cell function in mice.