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U Mass - Glucose Tolerance Test with insulin secretion

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Protocol status: Working
We use this protocol and it's working

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ABSTRACT

Summary:

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

MATERIALS

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⊗ 20% Dextrose injection USP **Hospira(Pfizer) Catalog #NDC0409-7935-19**

⊗ Insulin Ultrasensitive ELIZA **Alpco Catalog #80-INSMSU-E01**

Note:

Hospira, [RRID:SCR_003985](https://pubchem.ncbi.nlm.nih.gov/compound/20%+Dextrose+injection+USP)

Insulin Ultrasensitive ELIZA, Cite this, (Alpco Diagnostics Cat# 80-INSMSU-E01, [RRID:AB_2792981](https://pubchem.ncbi.nlm.nih.gov/compound/Insulin+Ultrasensitive+ELIZA))

Keywords: Glucose tolerance test, insulin secretion, obesity, Mice

- 1 Mice may be fasted overnight (~15 hours) or for 5 hours prior to the start of experiment.
- 2 Collect plasma sample (20 μ l) before the start of experiment (basal-0 min) to measure basal glucose and insulin levels.
- 3 Administer intraperitoneal injection of 20% dextrose (1 or 2 g/kg body weight) using an insulin syringe.
- 4 Collect plasma samples (20 μ l) at 10, 20, 30, 60, 90, and 120 min following injection to measure circulating glucose and insulin 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. Also, plasma insulin levels vs. time after injection are plotted, and area under curve may be calculated to estimate insulin secretion (pancreatic β -cell function).