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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

MATERIALS

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

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

Note:

Hospira, RRID:SCR_003985
Insulin Ultrasensitive ELIZA, Cite this, **(Alpco Diagnostics Cat# 80-INSMSU-E01, RRID:AB_2792981)**

1   Mice may be fasted overnight (~15 hours) or for 5 hours prior to the start of experiment.

2   Collect plasma sample (20 μl) 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 μl) 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 areaunder-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).