



Acute lipid infusion

Version: 1
 Edited by: Jason Kim

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

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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.)*

Triglyceride emulsion and heparin will be intravenously infused for 5 hours to acutely raise circulating fatty acids levels in awake mice. Acute lipid infusion is shown to cause insulin resistance in peripheral organs.

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
INTRALIPID® 20%	Baxter Healthcare	NDA 18-449/S-039 NDA 17-643/S-072
Heparin	Hospira	NDC 0409-2723-01
Glycerol	Sigma	G5516

Protocol:

1. Survival surgery is performed to establish a chronic indwelling catheter at 5~6 days prior to experiment for intravenous infusion. (refer to M1023: Surgery-jugular vein cannulation)
2. Mice are fasted overnight (~15 hours) or for 5 hours prior to the start of experiment.
3. Place a mouse in a rat-size restrainer with its tail tape-tethered at one end.
4. Expose and flush the intravenous catheter using saline solution. Then, connect the catheter to the CMA Microdialysis infusion pump.
5. Collect plasma sample (10 µl) before the start of infusion (basal-0 min) to measure basal fatty acids levels.
6. Start the experiment by turning on the pump and intravenously infusing 20% Intralipid (triglyceride emulsion) at 2.5 ml/kg/hr and heparin at 6 U/hr in awake mice.
7. For control experiment, 20% glycerol is infused at 2.5 ml/kg/hr in awake mice.

8. Collect plasma samples (10 μ l each) at 120, 240, and 300 min to measure serum FFA levels.
9. At the end of experiment, tissues may be collected for biochemical and molecular analyses.
10. Alternatively, a 2-hr hyperinsulinemic-euglycemic clamp may follow this 5-hr acute lipid infusion experiment to measure the effects of elevated fatty acids on insulin sensitivity. (refer to M1001: Hyperinsulinemic-euglycemic clamp)