Lipid metabolism

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

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

Lipid metabolism is estimated by measuring systemic clearance of [1-^{14}C] palmitate following a bolus injection in awake mice. Lipid metabolism 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
Palmitic Acid, [1-^{14}C]	Perkin Elmer	NEC075H250UC

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 experiment (basal-0 min) to measure basal glucose levels.
6. Administer a bolus intravenous injection of 20 µCi of [1-^{14}C] palmitate to start the experiment.
7. Rapidly collect plasma samples (10 µl each) at 0.5, 1, 2, 3, 4, and 5 min after injection to measure systemic [1-^{14}C] palmitate concentrations.
8. At the end of experiment, mice are euthanized, and tissues may be collected for further studies.

9. For data analysis, plasma [1-^{14}C] palmitate levels vs. time after palmitate injection are plotted, and area-under-curve may be calculated to estimate systemic clearance of labeled-palmitate and lipid metabolism.