Metabolic Cages and Treadmills

Version: 1
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Summary:

Mice will be housed in CLAMS (Columbus Instruments, Columbus OH) metabolic cages for up to 4 days. While in the cages we can monitor rates of VO2 consumption, VCO2 expenditure, energy expenditure, respiratory quotient (RER), activity (horizontal and vertical), food intake, and water intake. The mice then undergo 1H NMR studies to assess lean body and fat mass.

Alternatively, the mice can be placed in treadmill chambers, also provided by CLAMS, to assess effects of exercise on VO2, VCO2, energy expenditure, and RER.

Reagents and Materials:

Reagent/Material	Vendor	Stock Number
CLAMS	Columbus Instruments	Telephone Number: 800-669-5011
3H-NMR Minispec	Bruker	Mq series
Indicating DRIERITE* Absorbent	Fisher Scientific	075783B
Soda lime, indicating, ACS 500g	VWR	AAA44697-36

Protocol:

1. Install cage including food (different food trays for RC and HFD)
2. Run Ci Diagnostics:Tools-Device ScanTools-Drinking: Enable for all cages, Purge Pump: “on”, empty bubbles, Water Level > 400 ml Oxy Max: Hit “yes” → Start up
3. Weigh and minispec mice. Put the mice into their individual chambers
4. Calibrate Oxy Max, check O2 meter (0.4L/min) and temperature (725oC)
5. Adjust Oxygen sensor until oxygen is 1.000 (+/- 0.003)
6. Calibrate CO2
7. Change Drierite
8. Save file and start run
9. Check mice daily to see that they continue to have proper access to food and water.
10. Remove mice from cages, weigh and minispec.