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Working

U Mass - Energy balance – food intake, energy expenditure, physical activity

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Mouse Metabolic Phenotyping Centers

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ABSTRACT

Summary:

The TSE PhenoMaster/LabMaster Metabolic Cage system is used to measure indirect calorimetry, food/water intake, energy expenditure, and physical activity in individually housed awake mice. The experiment noninvasively measures VO_2 consumption and VCO_2 production rates in individual mice using metabolic chambers and calculates the respiratory exchange ratio (respiratory quotient) to reflect energy expenditure. Metabolic cage measurement is conducted continuously for 72 hours (3 days) to account for acclimation of mice housed in home cages during the study. With our high-speed Siemens O_2/CO_2 sensing unit, indirect calorimetry measurements may be performed at a 20-min interval for a full 12-cage study.

EXTERNAL LINK

https://mmpc.org/shared/document.aspx?id=149&docType=Protocol

MATERIALS

NAME	CATALOG #	VENDOR	CAS NUMBER	RRID
TSE Phenomaster Metabolic Cages	TSE Phenomaster Metabolic Cages	TSE		
LabMaster Software	LabMaster Software	TSE		
Mouse diets				
Drinking water				
Corn-cob bedding				

1 Metabolic cage food and water baskets are calibrated.

2 Drink and food baskets are filled with water and appropriate diet.

3 Corncob bedding is added to the cages.

4 Mice are individually housed in metabolic cages and checked daily for access to food and water.

5 Software is set to collect data at selected interval for 3 consecutive days (72 hour measurement period).

6 Post-run data are exported and analyzed using Microsoft Excel program.

7 Mice should be assessed for body composition (whole body lean mass) prior to metabolic cage measurement in order to incorporate whole body lean mass data for energy expenditure calculation.

8 Metabolic cages require monitoring on a daily basis to ensure food and water are accessible to the mice.