



D4002-Adiposity

Version: 1

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Summary: The major fat pads of mice will be dissected and weighed. This approach provides a way to determine if an intervention has an impact on specific depots of fat.

Reagents and Materials:

Reagent/Material	Vendor	Stock Number
Scalpel		
Surgical scissors		
Tweezers		
Disinfectant solution (70% isopropanol or 70% ethanol)		
Gloves		
Small weigh boats		
Scale (readability at 0.001g)		
Liquid nitrogen (if tissues are being kept for biological assays)		

Protocol:

The procedures follow those of Johnson and Hirsch (Johnson PR, Hirsch J. Cellularity of adipose depots in six strains of genetically obese mice. J Lipid Res 13, 2-11, 1972)

<http://www.ncbi.nlm.nih.gov/pubmed/5059196?dopt=Abstract> with a few modifications. Another great resource is the dissection protocol at the Boston NORC (with pictures and commentary):

<http://bnorc.org/cores/protocols/dissectionx/>

1. Body weight of animal is taken before anesthesia.
2. The mouse is euthanized according to the methods approved in the study's IACUC protocol.
3. A midline incision is made to open the abdominal cavity.

4. Forceps are used to pull up the epididymal fat pad (males). The fat pad is cut just above the epididymis and removed.
5. The parametrial fat pad (females) is cut at the base of the uterus and separated from the horn and ovary.
6. The kidneys are pulled toward the midline to allow the retroperitoneal fat pad to be visualized. The method of Johnson and Hirsch is followed, except fat that extends past the lower pole of the kidney is also removed if it is not surrounding the kidney (perirenal).
7. The kidneys are removed from the abdominal cavity and the white fat surrounding each kidney is dissected.
8. Using fingers, the mesenteric fat is stripped from the duodenum to the colon.
9. After all abdominal fat pads are dissected, the animal is skinned and any fat between the muscle and skin is carefully dissected.
10. Adipose tissue in the intrascapular region is dissected. Care is taken to remove white adipose tissue covering the brown adipose tissue. The brown adipose depot is dissected and cleaned of visible white adipose tissue.
11. Each tissue's weight is recorded. Left and right pad weights are combined for total pad weight.
12. Total white adipose tissue (WAT) is calculated by summing the weights of the gonadal (epididymal or parametrial), retroperitoneal (including perirenal), mesenteric, and subcutaneous depots. % body fat can be calculated by dividing wt of fat tissue by body weight of animal.