

# Drexel University Animal Care and Use Committee Policy on Food and Water Restriction in Research Animals

## **1. Purpose**

The purpose of this policy is to provide guidance to principal investigators and their staff in regard to withholding of feed and/or water from laboratory rodents.

The goals of these guidelines are to ensure that (a) dietary restrictions are well justified and necessary for study objectives and  
(b) that animals subjected to dietary restriction are appropriately monitored.

## **2. Scope**

This policy is intended as guidelines for research staff who intend to withhold feed and/or water from laboratory animals in their approved IACUC protocol.

Common experimental protocols that require food/water restriction include:

1. Behavior study protocols in which withholding food and/or water is required to train animals to perform a task, while providing food or water as a reward for the correct behavior.
2. Nutrition studies may require altering levels of specific nutrients in the daily diet.
3. Limit-feeding, which is common for some sedentary laboratory animals in order to control obesity or maximize life-span (such as maintaining 85% of body weight).

### 3. Definition

Food or fluid restriction: any deviation from normal husbandry practices (i.e., *ad lib* feed and water access). This excludes certain clinical situations under the direction of the veterinarian such as altered diets that do not involve restriction (high/low fat diet, medicated food/water, etc.).

Skin turgor: degree of elasticity in the skin. Skin that has lost elasticity, i.e., doesn't 'snap' back after being pinched, is caused by dehydration.

Body Condition Score: a visual assessment of an animal's weight relative to age, strain and stock based on the amount of tissue cover between the points of the hip, over the transverse processes of the lumbar vertebrae, the cover over the ribs, and the pin bones below the tail. Scoring is done on a scale of 1 to 5, with 1 being emaciated and 5 being obese.

### 4. Procedure

1. Food/water restriction (or modification) must be approved by the IACUC and justified based on the scientific objectives of the study. The least amount of restriction that will achieve the scientific objectives must be used.
2. Baseline body weight of animal(s) must be recorded before food or water restriction occurs. In the case of young growing animals, body weight loss should be adjusted to normal body weight gain for age matched animals.
3. Restriction must be based on a measurable parameter, i.e., percentage of *ad lib* intake or duration of water restriction.
4. In the case of a conditioned-response research protocol, use of a highly preferred food or fluid as positive reinforcement instead of restriction is recommended.
5. Experimental endpoints, clinical symptoms, and conditions for temporary or permanent removal of an animal from a study must be described in the IACUC application. Examples include:
  - a. Body weight loss of greater than 15%
  - b. Appearance (sunken eyes, body condition score of 2 or 1 out of 5)
  - c. Behavior (listless, lethargic)
  - d. Other health issues
  - e. Failure for growing animals to gain weight
6. It is important to note that restriction of water will concurrently cause a rodent to eat less and vice versa.

7. Animals that are co- or group-housed must be observed when feed/water is given to ensure that all animals are receiving adequate intake.

### ***Water Restriction***

1. When using fluid rewards as motivation for task performance, it is imperative for the investigator to ensure that the daily requirements to maintain a healthy state are met by the sum of earned rewards and supplemental fluid offered.

2. Skin turgor must be used to assess hydration status. When the skin is 'tented,' it should snap back quickly. If the tent of skin does not snap back, this indicates at least a 5% dehydration status.

3. Animals that have weight loss of 10% from baseline weight are considered clinically dehydrated and should be allowed to freely drink water without interruption. In addition, 0.5-1ml (mouse) or 2-3ml (rat) of subcutaneous warmed isotonic saline (0.9% NaCl) must be administered and the veterinary staff consulted.

### ***Food Restriction***

1. An animal should not lose more than 15% of its baseline weight during a food restriction study.

2. Average feed consumption amounts are determined based on age, sex, stock, and strain of animal and should be established before beginning any restriction study.

## **5. Quality Control & Assurance**

### ***Monitoring and Documentation***

1. Each cage must be marked with "food/water restriction."

2. A daily log sheet must be maintained for each cage of animals on restricted food / water protocols and kept in the animal holding room for the duration of the study. An example of a log sheet is included at the end of this policy.

3. The log sheet should include:

- a. Current approved IACUC protocol number
- b. Investigator name
- c. Contact name, email, and phone number (including after hours)
- d. Animal identification
- e. Animals' initial body weight
- f. Type of restriction
- g. Length of restriction
- h. Daily/weekly body weights (see below)
- i. Daily/weekly body condition score (see below)

- j. Presence/Absence of urine and feces (for fluid restriction only)
- k. Skin turgor (for fluid restriction only)
- l. Amount of food/water given, including amount of time allowed to eat/drink, if applicable
- m. Amount of food/water consumed

4. Body weight must be measured and body condition score recorded once weekly for any animal on food/water restriction that has lost  $\leq 7\%$  body weight.

5. Body weight must be measured and body condition score recorded daily for any animal on food/water restriction that has lost  $> 7\%$  body weight.

6. For animals on lifetime food restriction, such as maintaining 85% body weight based on growth curve for the strain and species, animals must be weighed 2-3 times weekly..

7. Water-deprived/restricted animals must be monitored at least once daily, including weekends and holidays by skin turgor testing.

8. Research staff is responsible for monitoring all animals on food/water restriction studies.

9. Research staff must be trained and competent to evaluate animal's condition.

10. Veterinary staff and/or IACUC have the right to request these documents for review at any time.

Approved 8/2015

Last Review Date: 5/2018




**Body Condition Score (BCS): 1(emaciated)-5(obese)**

**Skin Turgor: N=Normal, A=Abnormal**

**This form is an example, and PI's are able to use either this form or their own, to monitor their animals on Food/Fluid regulation, as long as the documentation of monitoring is available in the animal housing room for ULAR staff. This form can be used to monitor more than one animal. After all the rodents listed on this sheet are euthanized or have died, this sheet should be kept on file in the lab. Frequency of monitoring must be done according to the approved IACUC protocol dealing with the experimental condition under study.**