

Institutional Animal Care & Use Committee

## Rodent Food and/or Fluid Regulation or Restriction Policy

1. **Purpose**

This policy establishes standards and expectations for researchers performing food or fluid regulation in healthy rodents for experimental purposes. This policy does not apply to animals restricted at the advice of the veterinary staff or in preparation for anesthesia.

1. **Definitions**

**Regulation**: Scheduled access to food or fluid sources during which a rodent may consume as much as desired at regular intervals.

**Restriction**: The provision of rations such that the volume of food or fluid is strictly monitored and controlled.

1. **General Information**
2. Food or fluid regulation or restriction may be required for the conduct of some physiological, neuroscience and behavioral research protocols. The type and extent of regulation or restriction must be described and justified in the approved IACUC protocol that covers the animal(s) in question (ILAR, 2011; AWR). Researchers must state in the protocol the necessary level of regulation, potential adverse consequences of regulation or restriction, and methods for assessing the health and well-being of the animals (ILAR, 2011; AWR). The least restrictive schedule that will achieve scientific objectives while maintaining animal well-being should be utilized (NRC Guide 2011 pg. 30-31).
3. Written records must be maintained for each animal to document daily food and fluid consumption, hydration status, and behavioral and clinical changes used as criteria for temporary or permanent removal of an animal from a protocol (NRC Guide 2011 pg. 31).
4. Investigators utilizing food or water regulation, or restriction protocols must communicate with the animal care staff, by means of a special cage card, about periods of restriction and about rest periods when full or supplemental water can be provided.
5. **Water Restriction – General Information**

A. Because of the individual variation in water requirements, use of average guidelines for water intake or urine output is not appropriate.

B. Water restricted animals must be monitored daily for health as indicated by stability in weight, stability of performance in the experimental protocol, development of signs of dehydration (skin turgor, mucous membrane dryness, urine output and specific gravity, blood analysis), and development of of signs of stress. Body weight must be monitored daily during the first week of restriction and at least weekly thereafter.

C. Weight loss of over 20% must be scientifically justified and approved by the IACUC.

D. Disturbance of normal activities can signal stress, including changes in normal sleep cycles, abnormal social interaction, and emergence of abnormal behaviors such as stereotypic behaviors, cage chewing, hair picking, abnormal vocalizations, and aggression. Careful evaluation of the animal for physiological signs of dehydration should be performed should signs of stress become evident.

1. **Food Restriction – General Information**
2. Due to variation in food requirements and nutritive status, use of average guidelines for food intake is not appropriate. Mature or obese animals can tolerate greater food restriction than their young or thin counterparts.
3. Food restricted animals must be weighed daily for health as indicated by stability in weight. Other parameters for measuring health appropriate to the species should be monitored in consultation with Attending Veterinarian (AV).
4. Weight loss of over 20% must be scientifically justified and approved by the IACUC.
5. Full access to food must be provided to pregnant dams at least 2 days prior to parturition to prevent cannibalization of the pups at birth.
6. **Food or Water Restriction Procedures**

The information provided in this section describes the responsibility of each person involved in the management of water or food restriction for animals and the procedure for taking animals on and off ad libitum food or water.

* 1. Water Restriction Period (WRP) is the period of days during which the animal’s water consumption will be decreased. Food Restriction Period (FRP) is the period of days during which the animal’s food consumption will be decreased.
  2. In general, rats and mice given ad lib access to water drink 10-12 ml per 100g body weight per day on average. Food consumption is typically 5-6 gm per 100 g body weight per day for rats, and 12-18 gm per 100 g body weight per day for mice. These values may be used as a starting point to determine regulation or restriction parameters. However, individual variation in food and water consumption based on factors such as strain, sex, age, health status must be considered when establishing food or fluid regulation or restriction paradigms.

1. Food or water restrictions are prohibited for seven days post-surgery, to ensure the animal’s physiological parameters return to normal before restrictions are introduced.
2. Water restriction is prohibited for animals receiving antibiotics as damage to the kidneys may occur.
3. Exceptions to these guidelines must be scientifically justified and approved by the IACUC.
4. **Responsibility of Lab Members**
   1. Before starting the restriction period:
      * + 1. Record the weight of each animal.
          2. Place a ‘Special Diet’ or ‘Special Water’ cage card on the cage. Indicate that the research staff will provide food or water depending on desired type of restriction.
          3. Unless the approved and planned experiment involves total withdrawal of food and/or water, provide the animal with a minimum of 2/3 of its average daily food and water consumption.
   2. Daily:

Confirm that the animal has received its daily food or water ration by initialing the record one day at a time.

* 1. Ongoing monitoring:

Body weight must be monitored daily when restrictions are initiated and at least weekly once the animal’s body weight appears to have stabilized for at least 2 weeks. Records on body weight must be maintained and made available to the ARC staff and/or the IACUC upon request. If the animal’s body weight drops below the humane endpoint criteria established in the IACUC approved protocol the animal must be taken off the restriction protocol until its weight reaches 95% of its original weight.

The IACUC referenced the following documents in setting this policy:

* [Guide for the Care and Use of Laboratory Animals (Eighth Edition).](https://grants.nih.gov/grants/olaw/guide-for-the-care-and-use-of-laboratory-animals.pdf) Washington

DC: National Academy Press.

* NRC (2003). [Guidelines for the Care and Use of Mammals in Neurosciences and](https://grants.nih.gov/grants/olaw/national_academies_guidelines_for_use_and_care.pdf)

[Behavioral Research.](https://grants.nih.gov/grants/olaw/national_academies_guidelines_for_use_and_care.pdf) Washington DC: National Academy Press.

* [The federal Animal Welfare Regulations](https://www.aphis.usda.gov/animal_welfare/downloads/AC_BlueBook_AWA_FINAL_2017_508comp.pdf) (Code of Federal Regulations, Title 9).
* Toth, LA and Gardiner TW. [Food and Water Restriction Protocols: Physiological](http://www.usp.br/bioterio/Artigos/Restricao%20alimentar/Jejum-toth2000.pdf)

[and Behavioral Considerations.](http://www.usp.br/bioterio/Artigos/Restricao%20alimentar/Jejum-toth2000.pdf) Contemporary Topics, 39(6). pg. 9-17; 2000.