



CHAPMAN UNIVERSITY
OFFICE OF RESEARCH

Institutional Animal Care and Use Committee
Policies & Procedures

FOOD OR FLUID REGULATION OR RESTRICTION

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Policy: The Chapman University IACUC permits the practice of “food or fluid regulation or restriction” in studies when scientifically justified. The principal investigator (PI) is obligated to provide the purpose. The IACUC has oversight of the practice.

Purpose: This policy establishes standards and expectations for research performing food or fluid regulation in healthy mice and rats. The principles in this policy may also be used as a basis for decisions regarding other species or animals, with relevant descriptions included in the IACUC protocol. This policy does not apply to animals restricted at the advice of the veterinary staff or in preparation for anesthesia.

Definitions: (taken from the Guide, 2011)

- **Experimental regulation of food or fluid intake** is a deviation from the standard husbandry practices in the amount or availability of food or water. It includes scheduling and restriction as defined below. Special diets are not inherently considered regulation.
- **Scheduling** of access to food or fluid limits the number of times or length of time during which the animal has access to food or fluid so that the animal consumes a normal portion but at intervals or durations that differ from standard husbandry practices. This definition only applies if food or fluid is removed for greater than 12 hours. Scheduled feeding is not expected to result in a subnormal body weight.
- **Restriction** is the provision of rations such that the volume of food or fluid is strictly monitored and controlled. Restricted feeding typically limits the total volume of food or fluid consumed for the purpose of reducing the animal’s weight to a level lower than that expected for an *ad libitum* fed animal.
- ***Ad libitum*** food intake is the amount of food consumed when the animal has free access to food at all times.

Any food or fluid regulation or restriction that is not part of normal animal husbandry must be scientifically justified, as well as review and approval by the IACUC prior to implementation. The following must always be considered and adequately described in the IACUC protocol:

- The amount of food or fluid regulation/restriction (e.g., 85% of normal caloric intake)
- The duration of food or fluid regulation/restriction
- The nutritive value of any food or fluid used to replace normal rations
- Potential adverse consequences of regulation/restriction
- Methods for assessing the health and well-being of the animals
- Criteria for removing an animal from food or fluid regulation/restriction

In general, investigators should use the least amount and duration of food or fluid regulation/restriction necessary to achieve scientific objectives while maintaining animal well-being. In the case of behavioral studies, use of a highly-preferred food or fluid as positive reinforcement, instead of restriction, is recommended, where possible.

Animals must be closely monitored to ensure that food and fluid intake meets their nutritional needs. Body weights must be recorded at least weekly, and more often for animals requiring greater restrictions. Written records must be maintained for each animal to document daily food and fluid consumption, hydration status, and any behavioral and clinical changes used as criteria for temporary or permanent removal of an animal from a study. These records should be available for veterinary care staff, IACUC members, or other “inspectors” to review, if necessary.

Determining *Ad Libitum* Values:

For any study requiring chronic (over 24 hour) regulation, the investigator should provide the normal range of *ad libitum consumption* values for the same background strain, sex, and age group used in the study. Published values for the same age, sex, background strain, and weight may be used in lieu of in-house determination. See Bachmanov et al for baseline values of 28 common mouse strains.

Outcomes and Endpoints:

Specific humane endpoints that would require intervention must be clearly stated in the protocol. For food regulation, a rodent may not lose more than 20% of its body weight. If greater than 20% weight loss has occurred, the daily food allowance should be adjusted to maintain the animal's weight at or above the 20% cut off. Regulation cannot be attempted again until the animal weighs at least 80% of its original weight.

References:

- Bachmanov AA, et al. 2002. Voluntary consumption of NaCl, KCl, CaCl₂ and NH₄Cl solutions by 28 mouse strains. *Behav Genet* 32:445-457.
- Bekkevold CM, et al. 2013. Dehydration parameters and standards for laboratory mice. *JAALAS* 52(3):233-239.
- National Research Council. 2003. *Guidelines for the Care and Use of Mammals in Neuroscience and Behavioral Research*. Washington (DC): The National Academies Press. pp. 49-61.
- National Research Council. 2011. *Guide for the Care and Use of Laboratory Animals*, 8th ed. Washington, (DC): The National Academies Press. pp. 30-31.
- Rowland NE. 2007. Food or fluid restriction in common laboratory animals: Balancing welfare considerations with scientific inquiry. *Comp Med* 57(2):149-160.
- Toth LA and Gardiner TW. 2000. Food and water restriction protocols: Physiologic and behavioral considerations. *Contemp Top Lab Anim Sci* 39(6):9-17.