

University of Colorado Boulder
Office of Research Integrity
Institutional Animal Care and Use Committee
SOP #12
Food and Water Regulation

PURPOSE

The purpose of this SOP is to ensure that food and/or water regulation is appropriate for the species and that animals subjected to regulation are appropriately monitored. Food deprivation is defined as withholding food for 24 hours or longer for simple stomach animals. Fluid deprivation is defined as withholding fluids for 12 hours or longer. Food/fluid deprivation may be required for conducting some physiological, neuroscience, and behavioral research protocols. For example:

- a. Behavioral research protocols that require deprivation of food and/or water in order to train animals to perform a task and are then rewarded with food or water for correct behavior.
- b. Nutrition studies that require altering the levels of specific nutrients.
- c. Food regulations for sedentary laboratory species in order to control obesity.
- d. Withholding food prior to surgery in order to prevent vomiting and aspiration while anesthetized.

POLICY

- a. Mammals and birds are expected to have *ad libitum* access to food and water. Reptiles, fish and amphibians have different food availability requirements depending on species. The IACUC should consider if the length of time for food/fluid deprivation is within the normal range for a species (e.g. snakes in the wild can go several days without food).
- b. Food and fluid restriction, scheduled access, and/or deprivation must be described and justified in an animal use protocol and approved by the IACUC.
- c. For all cases where an animal is in its home cage without food or water present, cages must be labeled with the time the deprivation began and when it is planned to end along with personnel contact information. When an animal is undergoing behavioral testing, surgery, surgical recovery, or other situations where they are outside their normal home cage environment, the cage card does not need to be labelled for food or water deprivation.
- d. The least amount of restriction, scheduled access, or deprivation necessary to achieve the scientific objectives should be used.
- e. A plan for ensuring the animal's health during food or fluid restriction, deprivation, or scheduled access must be clearly described in the animal protocol, including:
 - a. The necessary level of food or fluid manipulation to achieve scientific objectives
 - b. Potential adverse events resulting from food or fluid manipulation, including criteria for removal of the animal from the experiment (such as weight loss or hydration status)
 - c. Methods for assessing the health and well-being of the animals including a schedule for monitoring (physiological/behavioral), criteria used to determine health status, and when an animal needs to be brought to the attention of veterinary staff.
 - d. To facilitate monitoring of food and/or fluid regulation, written records should be maintained for each animal in the animal housing room 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 an experiment. Records should be available to the IACUC, Veterinary staff or other inspectors.

IMPORTANT INFORMATION

- Rodents, especially mice, can become dehydrated very quickly. Physiologically mice and rats are not able to vomit and therefore would not benefit from water restriction prior to surgery like a larger animal, so water restriction for something other than a specific scientific reason is not recommended.
- Rodents, especially mice, have a very high metabolism and gastrointestinal transit time. Therefore, they can be affected very quickly and significantly from food restriction. Physiologically mice are not

able to vomit and therefore would not benefit from food restriction prior to surgery like a larger animal, so any food restriction for something other than a specific scientific reason is not recommended.

- Animals must consume a balanced diet, as food consumption may decrease with fluid restriction. A body condition scoring system should be considered to assist with assessing animals.
- In the case of conditioned-response experiments, use of a highly preferred food or fluid as a positive reinforcement instead of deprivation is recommended.
- When administering compounds in drinking water, verify that animals are drinking enough to avoid dehydration. Unpalatable water might be refused.
- Food is often restricted for training purposes, and maintained at a specific percentage (i.e. 80%) of their starting weight. For growing animals, body weight will be compared to normal growth curves, not to the initial body weight of the animal.
- For water restrictions where water is used as the motivator, personnel should monitor and record the specific volume of water consumed during training/experimental procedure. Animals should be given the opportunity after the training/experimental period to consume the rest of their daily water requirement prior to being placed on restriction again.

REFERENCES: *The Guide for the Care and Use of Laboratory Animals 8th Edition*, pg. 30-31