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IACUC GUIDELINE:	FOOD AND WATER REGULATION
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Background:

Animal studies may occasionally require the regulation of food or fluid intake to achieve a specific experimental goal, for example, studies of homeostatic regulation of energy metabolism or fluid balance, studies of the motivated behaviors and physiological mediators of hunger or thirst, and studies that regulate food or fluid consumption to motivate animals to perform novel or learned tasks. However, any use of food or fluid restriction to achieve a scientific objective must comply with regulatory standards:

The *Guide for the Care and Use of Laboratory Animals*, 8th Edition (2011), states1:

"The development of animal protocols that involve the use of food or water regulation requires the evaluation of three factors: the necessary level of regulation, potential adverse consequences of regulation, and methods for assessing the health and well-being of the animals…"

"The animals should be closely monitored to ensure that food and fluid intake meets their nutritional needs… Written records should 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 protocol. In the case of conditioned-response research protocols, use of highly preferred food or fluid as positive reinforcement, instead of restriction, is recommended."

The USDA Animal Welfare Act [9 CFR, Subchapter A, Part 2, Section 2.38 (f)(ii)] states:

"Deprivation of food or water shall not be used to train, work, or otherwise handle animals; Provided however: That the short-term withholding of food or water from animals, when specified in an IACUC-approved activity that includes a description of monitoring procedures, is allowed by these regulations."

Definitions:

- Restriction is defined as offering less than ad libitum access to food or water, and less than the normal daily intake of food or water for the species.

- Deprivation is defined as withholding food or water for greater than 24 hours.

IACUC Expectations:

To receive IACUC approval for food or water regulation, investigators must address the following subjects in their IACUC protocol application:

1. A description of the level of regulation required (i.e. deprivation versus restriction).

2. A scientific justification for the need to regulate food and/or water intake.

3. A description of how the food and/or water regulation will be accomplished, including due consideration for:
   - The least restriction possible to achieve the scientific objectives.

   - The use of highly palatable or preferred food or fluid as a positive reinforcement instead of restriction.

4. A description of the monitoring procedures that will be used to assess the health and well-being of the animals and prevent them from becoming dehydrated and/or malnourished, including provisions for:
   - The routine weighing of all animals on food or fluid restriction, which should be not less than once weekly.

   - Establishing target weights or growth rates that are species-, age-, sex-, and strain-specific. However, in the case of food restriction for rodents, target weights or growth rates need not be derived from comparisons to animals with ad libitum access to food, since in most cases ad libitum access is not optimal for long-term health.2, 3 A sensible target growth rate for Sprague Dawley rats on food restrictions might be 4 g/wk in males, and 2 g/wk in females.

   - The criteria (preferably objective and well-defined) for the temporary or permanent removal of animals from deprivation and/or restriction conditions.

References:

Guide for the Care and Use of Laboratory Animals, 8th Edition. National Academies Press. 2011. Pages 105.

Keenan KP, Hoe CM, Mixson L, McCoy CL, Coleman JB, Mattson BA, Ballam GC, Gumprecht LA, and Soper KA. 2005. Diabesity: a polygenic model of diatery-induced obesity from ad-libitum over-feeding of Sprague-Dawley rats and its modulation by moderate and marked dietary restriction. Toxicol Pathol 33:650-674.

Rowland NE. 2007. Food or fluid restriction in common laboratory animals: balancing welfare considerations with scientific inquiry. Comp Med 57(2):149-160.

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