Future University – Hakodate Operation Procedure in Animal Experiments

September 15, 2006
Decision at the Faculty Meeting

(Purpose)

Article 1

This procedure provides the necessary information on animal experiments operated based on the "Future University – Hakodate Guidelines for Animal Experiments" (September 15, 2006; Decision at the Faculty Meeting; hereinafter referred to as the "Guidelines").

(Facilities)

Article 2

The facilities mentioned in Article 4 of the Guidelines are as follows.

(1) The facilities for the operation of animal experiments are laboratories 255 and 355, and the range of animal experiments must be as follows.

(2) Laboratories must have proper floors so that the stains from excretory substances and blood can be cleansed and disinfected. In addition, local exhaust ventilation must be equipped for adequate ventilation.

(3) The control staff is responsible for maintaining good hygiene and preventing escape of animals. The facilities must be organized so that experimental animals can be caught when they try to escape.

(Management and Carrying in of Experimental Animals)

Article 3

Points of concern regarding management and carrying in of experimental animals mentioned in Article 6 of the Guidelines are as follows.

(1) Procurement of experimental animals

1) Experimental animals must be obtained legally.

2) The transfer of recombinant DNA animals and specific adventives and the import of experimental animals belong to Rodentia or Monkeys must abide by the related laws.

3) The experimenter must use only the experimental animals produced to fit for the purpose, or to which the result of microorganism monitoring or infection examination is attached.

(2) Storage of the records of experimental animals

The experimenter must store the records of experimental animals properly, by clarifying the source of procurement of experimental animals as well as organizing the record files on the storage environment.

(3) Management of cages

Considering the change in temperature and humidity inside of a cage, the following conditions must be fulfilled.

1) Cages must have the structure and the strength in accordance with the kinds of animals to prevent them from escaping.
2) Experimental animals must be able to maintain normal body temperature in a cage.
3) Experimental animals must be able to maintain proper posture for urination or defecation in a cage.
4) According to the behavior unique to each animal, the experimental animal must be kept clean and dry all the time in a cage.
5) Cages must be safe for experimental animals. (Cages must have no sharp edge or projecting part. Body and limbs of experimental animals are not stuck in the gap of the cage.)
6) Cages must have the structure and the materials that allow to be cleansed, disinfected, and sterilized easily.

(Operation of an Experiment)

Article 4

Points of concern regarding operation of an experiment mentioned in Article 7 of the Guidelines are as follows.

(1) Positioning of a body

Points of concern regarding positioning of a body (i.e. to partially or totally limit animals' normal body movement by using positioner to process various experiments) are as follows.

1) The positioner must be appropriate size and easy to operate. When using the positioner, discomfort and injury to experimental animals must be minimized.
2) While positioning, the experimenter must constantly observe the experimental animal. When external injury or deconditioning is found, the experimental animal must be released from the positioner immediately.

(2) Restriction of feeding

When feeding of experimental animals has to be restricted, the experimenter must clarify the scientific basis and make sure the animal is fed the minimum amount of food and water during an experiment.

(3) Surgical procedure

If an animal experiment involves surgical procedure, the following points must be concerned to

minimize pain of experimental animals within the range of the research purpose.

1) In addition to improve surgical skills, aseptic treatment during the experiment and postoperative management must be done appropriately.
2) When non-aseptic body part such as gastrointestinal (GI) tract has to be surgically exposed or the immune function may be decreased due to such surgery, antibiotics must be given to the experimental animal.

(4) Analgesia and anesthesia

1) When experimental animals show peculiar behavior unique to the species: such as crying, glooming, displaying abnormal facial expression or posture, or stopping moving; appropriate analgesia must be given to the animals.
2) If necessary, the experimenter must consult doctors, veterinarians, and pharmacists for choosing analgesia or anesthesia that does not undermine the purpose of research.
3) Suggested methods and dosages for anesthesia are as follows.

a) Injection method

- Pento-barbital sodium: dosage (mg/kg) (route, duration of action)

  Mice: 30-50 (i.p., 30-60 min.)
  Rats: 30-40 (i.p., 30-60 min.)
  Guinea pigs: 20-30 (i.p., 30-60 min.)
  Rabbits: 25-30 (i.v., 30-60 min.)
  Dogs: 25 (i.v., 60 min.)
  Cats: 25-35 (i.v., 60 min.)

- Ketamine hydrochloride: dosage (mg/kg) (route, duration of action)

  Rabbits: 15 (i.m., 20-30 min.)
  Dogs: 10-25 (i.m., 20-60 min.)
  Cats: 15-25 (i.m., 20-60 min.)
  Monkeys: 10-40 (i.m., 20-90 min.)

- Urethane: dosage for euthanasia (mg/kg) (route)

  Rabbits: 1.5 (i.p.)

(Note) i.p.: intraperitoneal injection, i.v.: intravenous injection, i.m.: intramuscular injection

b) Inhalation anesthesia

Ether: Mice, Rats, and Guinea pigs

Halothane: Dogs

(5) Humane Endpoint

Points of concern regarding humane endpoint are as follows.

(Humane endpoint: The timing to terminate an experiment by euthanasia of experimental animals to release them from agony)

1) If necessary, humane endpoint must be set at the stage of planning of animal experiments.
2) When setting humane endpoint, the experimenter must refer to the related international guidelines.
3) The signs to apply humane endpoint are: difficulty of feeding; signs of agony (self-injury, abnormal posture, difficulty of breathing, or crying); long-term abnormal appearance without a sign of recovery (scours, bleeding, dirty external genitals, etc.); rapid weight loss (20% or less of the original body weight in several days); or greatly-increased tumor size (10% or more of the original body weight).

(6) Euthanasia

1) When euthanizing experimental animals (or inducing immediate unconsciousness and death without causing pain), the experimenter must follow international guidelines as well as the "Guidelines Concerning the Disposal of Experimental Animals" (The 40th Notification of Prime Minister's Office on July 4, 1995).
2) Drugs and methods for euthanasia must be chosen properly in accordance with the species and the purpose of the experiment.
3) Common methods for euthanasia are as follows.

Chemical methods: Excessive amount of barbiturate anesthesia, non-explosive inhalation anesthesia, carbon dioxide gas

Physical methods: Bone dislocation of cervical vertebra, beheading, exsanguinations under anesthesia

(7) Consideration of safety management

When operating recombinant DNA experiments; animal experiments using radioactive materials or radioactive ray, experiments using poisonous/deleterious substances or psychopharmaceuticals, and animal experiments using pathogens or toxic chemical compounds; the experimenter must refer to the related laws and regulations.

[List of References]

1. Related laws, guidelines, etc.

(1) Law Governing Animal Protection and Control

http://www.env.go.jp/nature/dobutsu/aigo/amend_law2/index.html

(2) Standards for Feeding, Management, and Pain Alleviation of Experimental Animals

http://www.env.go.jp/nature/dobutsu/aigo/anim guide/index.html

(3) Guidelines Concerning the Disposal of Experimental Animals

http://www.env.go.jp/nature/dobutsu/aigo/anim_guide/index.html

(4) The Ministry of Education, Culture, Sport, Science and Technology

Basic Guidelines Concerning the Operation of Animal Experiments at Research Institutions

http://www.mext.go.jp/b_menu/hakusho/nc/06060904.html

(5) The Ministry of Health, Labor, and Welfare

Basic Guidelines Concerning the Operation of Animal Experiments at the Ministry of Health, Labor, and Welfare

http://www.mhlw.go.jp/general/seido/kousei/I-kenkyu/index.html

(6) Law Concerning the Security of Diversity of Living Things due to the Restriction of the Use of Recombinant DNA Organisms

http://www.maff.go.jp/carta/15hou97.pdf

(7) Law Concerning the Prevention of Damages to Ecology by Specific Adventives

http://www.env.go.jp/nature/intro

(8) Law Concerning the Prevention of Infection and the Medical Practice for Patients with Infection

http://www.acc.go.jp/mlhw/mhw_kansen_law/114.htm

(9) Livestock Infection Prevention Law

http://law.e-gov.go.jp/htmldata/S26/S26HO166.html

(10) Rabies Prevention Law

http://law.e-gov.go.jp/htmldata/S25/S25HO247.html

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2. Description of related laws, textbooks, etc.

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(3) Research Group of Breeding and Management of Experimental Animals; Description of the Criteria Concerning Breeding and Management of Experimental Animals; Gyousei (publisher); 1980
(4) Expert Committee Dealing with the Disposal of Experimental Animals; Description of the Guidelines Concerning the Disposal of Experimental Animals; Japan Veterinary Medical Association; 1996
(5) Animal Experiment Facilities Council of National University; Safety Measures for Infected Animal Experiments; 2001
(6) Animal Experiment Facilities Council of National University/Animal Experiment Facilities Council of Public and Private Universities; Guidelines for the Prevention of Hemorrhagic Fever with Renal Syndrome at Universities; 2001
(7) Architectural Institute of Japan; Architecture and Equipments of Facilities for Experimental Animals; Adthree (publisher); 1996
(8) Japanese Society of Laboratory Animals; Skills and Application Involved in Experimental Animals - Introduction and Practice; Adthree (publisher); 2004
(9) Japanese Society of Laboratory Animals; Monitoring Manual for Laboratory Microorganisms; Adthree (publisher); 2005
(10) Manual for Handling Experimental Animals with Infection, supervised by Kazuyoshi Maeshima; Adthree (publisher); 2000

3. International/Overseas guidelines and textbooks

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(3) CIOMS involving animals, 1985. (Council for internationa1 0rganizations of Medical Sciences)/WHO. international guiding principles for biomedical research
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