
1. PURPOSE

This Standard Operating Procedure (SOP) describes the procedures for the care of irradiated mice.

2. RESPONSIBILITY

Principal investigator (PI) and their research staff, veterinary care staff.

3. MATERIALS

- 3.1. Disinfectant
- 3.2. Antibiotics (sulfamethoxazole and trimethoprim or enrofloxacin)
- 3.3. Sterile isotonic solution for injection (e.g., 0.9% sodium chloride, Lactated Ringer's Solution)
- 3.4. Carprofen
- 3.5. Antibiotic ointment (e.g. sulfadiazine ointment, BNP)

4. PROCEDURES

- 4.1. Consider initiating antibiotic treatment approximately 3 days before irradiation.
- 4.2. Mice exposed to whole body irradiation should be housed under sterile conditions (i.e., sterile feed, bedding, water, cages) until, if ever, they regain a functional immune system.
- 4.3. Mice can be irradiated in their home cage. Anesthesia is not required.
- 4.4. The animal is placed in the irradiator and irradiated at the dose specified in the Animal Use Protocol (AUP) as approved by the Facility Animal Care Committee (FACC).
- 4.5. Fractionated doses should be considered, if appropriate, to reduce morbidity and mortality.
- 4.6. Cages of irradiated mice are identified with the following information:
 - 4.6.1. Dose of irradiation
 - 4.6.2. Date of irradiation
- 4.7. Irradiated mice should be monitored on the day following irradiation and then at least three times per week for two weeks thereafter. Observations should be documented on a monitoring log.
- 4.8. Possible clinical signs following whole body irradiation:
 - 4.8.1. Weight loss: due to inappetence and diarrhea
 - 4.8.2. Lethargy
 - 4.8.3. Hunched posture
 - 4.8.4. Rough coat
 - 4.8.5. Anemia: nose and paws appear pale
 - 4.8.6. Infection
 - 4.8.7. Intestinal bleeding: feces may appear dark
 - 4.8.8. Transplant failure: Graft Versus Host Disease
 - 4.8.9. Graying of the hair coat, particularly in black haired mice
 - 4.8.10. Development of secondary neoplasias
 - 4.8.11. Damage to incisors

- 4.9. Provide one of the following antibiotics in the drinking water (as the sole source of drinking water) for two weeks following irradiation and label cages receiving treatment:
 - 4.9.1. Sulfamethoxazole and trimethoprim (TMS):
 - 4.9.1.1. Each mL of TMS oral suspension contains 40mg sulfamethoxazole and 8mg trimethoprim.
 - 4.9.1.2. Add 6mL of TMS oral suspension per 250mL of drinking water.
 - 4.9.1.3. Re-suspend daily by shaking the water bottle.
 - 4.9.1.4. Discard solution and prepare fresh after 7 days.
 - 4.9.2. Enrofloxacin:
 - 4.9.2.1. Add 2.5mL of enrofloxacin (50mg/mL) per 250ml of drinking water.
 - 4.9.2.2. Discard solution and prepare fresh after 7 days.
- 4.10. Provide 1ml of sterile isotonic fluids (preferable warmed to body temperature), subcutaneously, immediately before or after irradiation and repeat after 24 hours.
- 4.11. Provide wet food at the bottom of the cage, daily, for 7 days.
- 4.12. In case of skin burns:
 - 4.12.1. Provide carprofen 20mg/kg SC, once a day, for 2 to 5 days to alleviate discomfort.
 - 4.12.2. Apply antibiotic ointment (e.g. sulfadiazine ointment, BNP) daily on the wound, until healed.
- 4.13. Humane intervention points:
 - 4.13.1. When immune reconstitution has been provided by bone marrow transplant, mice usually recover within 2-3 weeks. Animals that have not received a bone marrow transplant will not recover.
 - 4.13.2. If the general condition of the animal does not improve after 21 days, irradiated mice should be euthanized.
 - 4.13.3. Euthanize animals with:
 - 4.13.3.1. Weight loss exceeding 20% of pre-irradiation weight.
 - 4.13.3.2. Body condition score of less than 2.
 - 4.13.3.3. No or weak response to external stimuli.
 - 4.13.3.4. Hunched posture, lethargy and lack of grooming.
 - 4.13.3.5. Pale eyes and/or extremities.