Preclinical Research Center
Ben-Gurion University of the Negev

STANDARD OPERATING PROCEDURE 304

POST-IRRADIATION CARE

1. PURPOSE

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

2. RESPONSIBILITY

Principal investigator (PI) and their research staff.

3. MATERIALS

3.1. Disinfectant

3.2. Antibiotics (sulfamethoxazole/trimethoprim or enrofloxacin)

3.3. Sterile isotonic solution for injection (e.g., 0.9% sodium chloride, Lactated Ringer's Solution)

3.4. Anti-inflammatory analgesic (e.g., Dipyrone, Carprofen)

3.5. Antibiotic ointment (e.g., Chloramphenicol [synthomycin®], gentamycin ointment)

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, cages) until they regain a functional immune system.

4.3. Mice can be irradiated in their home cage, and Anesthesia is not required.

4.4. The animal is placed in the irradiator and irradiated at the dose specified in the Animal Protocol approved by BGU Ethical Committee.

4.5. If appropriate, fractionated doses should be considered to reduce morbidity and mortality.

4.6. Cages of irradiated mice are identified with the following information: **Dose and Date of irradiation**

4.7. Irradiated mice should be monitored on the day following irradiation and **thrice weekly** for two weeks. 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 neoplasia

4.8.11. Damage to incisors (malocclusion)

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/trimethoprim (TMS):

4.9.1.1. Each mL of TMS oral suspension contains 40mg sulfamethoxazole and 8mg trimethoprim.

4.9.1.2. Add 1mL 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 the solution and prepare fresh after 3-4 days.

4.9.2. Enrofloxacin:

4.9.2.1. Add 1mL of enrofloxacin (100mg/mL) 0.5-1 ml per 250ml drinking water.

4.9.2.2. Discard the solution and prepare fresh after 3-4 days.

4.10. Provide 1ml of sterile isotonic fluids (preferably warmed to body temperature) subcutaneously immediately before or after irradiation and repeat after 24 hours.

4.11. Feed at the bottom of the cage daily for 7 days if the animal is recumbent.

4.12. Provide long sipper tubes to bottles if the animals are debilitated.

4.13. In case of skin burns:

4.13.1. Provide carprofen 20mg/kg SC once daily for 2 to 5 days to alleviate discomfort.

4.13.2. Apply antibiotic ointment daily on the wound until healed.

4.14. Humane intervention points:

4.14.1. 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.

4.14.2. If the animal's general condition does not improve after 21 days, euthanize irradiated mice.

4.14.3. Euthanize animals with:

4.14.3.1. Weight loss exceeding 20% of the pre-irradiation weight.

4.14.3.2. A body condition score of less than 2.

4.14.3.3. No or weak response to external stimuli.

4.14.3.4. Hunched posture, lethargy, and lack of grooming.

4.14.3.5. Pale ears and extremities.

4.14.3.6. Hypothermia

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Approved by the BGU Animal Policy and Welfare Oversight Committee