UW POLICY FOR THE USE OF ANTIBIOTICS IN LABORATORY ANIMALS

BACKGROUND: The rationale for a policy on the use of antibiotics includes the following: 1) Oversight of antibiotics given to animals at the UW is the responsibility of the veterinary staff and the Institutional Animal Care and Use Committee (IACUC); 2) The use of antibiotics can be a complicating factor that alters research results; 3) Antibiotics can potentially be toxic to animals; 4) It is important to prevent the development of antibiotic resistant microorganisms; 5) When the decision is made to use antibiotics, it is desirable to optimize therapeutic efficiency.

POLICY: The use of antibiotics for treatment of clinical infections is only appropriate if prescribed by the veterinary staff. When animals with abnormalities are found, veterinary staff must be notified so that affected animals can be evaluated and treatment prescribed. The drug, dose, frequency, and route of administration must be as prescribed. Prophylactic treatment of individuals or groups of animals potentially exposed to pathogens may be prescribed by the veterinary staff as well as part of clinical care of the research colonies.

The experimental use of antibiotics for prophylaxis is only appropriate if approved by the IACUC. If prophylactic antibiotics are to be administered as a part of a protocol, the drug, dose, frequency, and route of administration must be as described in the IACUC-approved protocol.

See specific guidelines below for prophylactic antibiotic use in irradiated mice and in survival surgery.

Post-irradiation antibiotic use in mice
Although it is recognized that several variables can affect the survival of mice following irradiation, e.g. the dose of bone marrow cells, the dose of irradiation, and the immune status of the animals, the administration of antibiotics in the drinking water may help reduce bacterial contamination within the water source and decrease the levels of gastrointestinal bacteria, which are common sources of systemic infection in irradiated animals. However, the use of antibiotic water does carry significant risks, including the development of antibiotic resistance, the promotion of a growth advantage to bacteria not affected by the chosen antibiotic, reduced water intake in debilitated animals, and alteration of research outcomes.

When antibiotics are used in the drinking water, they should be started one or more days prior to irradiation to acclimate animals to the taste. Antibiotics are typically continued for 10-14 days post irradiation.

Recommended protocols for antibiotic use in post-irradiated mice:
Protocol 1: Enrofloxacin, orally in the drinking water (0.16mg/ml) as a single agent.
Protocol 2: Neomycin, orally in the drinking water (2mg/ml) as a single agent.

Prophylactic antibiotic use in survival surgery
Prophylactic antibiotics should not be used to cover deficiencies in aseptic technique and should only be administered if there is a specific indication for their use. Justifiable indications may include: 1) Inherently contaminated or dirty operations, such as procedures involving the oral or gastrointestinal tract; 2) Chronic implantation of biomaterials with significant risk of infection, such as for the placement of indwelling catheters or other implants that exit the skin; 3) Surgery on animals with pre-existing prosthetic implants; 4) Immunocompromised animals.
Antibiotics must be administered as described in the IACUC-approved protocol.

A single dose providing an effective tissue level during the peri-operative period has been found to be more effective at preventing surgical infections than starting the agent after surgery. The agent should be administered approximately within 1 to 2 hours pre-operatively, depending on the agent used, species, and procedure being performed. A second dose should be considered if the surgery exceeds the effective duration of the particular agent administered. The prophylaxis should employ agents found to be effective based on culture and sensitivity testing of similar cases. The drug, dose, frequency, and route of administration must be as described in the IACUC-approved protocol.

References:

