Euthanasia

Selection of the method of euthanasia is dependent upon the animal species involved, objective of the procedure and skill of personnel. It is essential that proper physical control over the animal be maintained prior to euthanasia and that fear and apprehension be minimized. Noxious stimuli induce various responses including vocalization, struggling, escape, aggression, salivation, urination, defecation, pupillary dilation, tachycardia, sweating, shivering, tremors and spasms. Not only are these responses undesirable from an aesthetic and humane point of view, they are usually undesirable complications of research where variation in baseline levels of cellular or extracellular biological values must be minimized.

Euthanizing agents terminate life by one of three basic methods: direct or indirect hypoxia, depression of vital neurons, or physical damage of brain tissue. Regardless of the method, it is essential to induce unconsciousness as rapidly as possible if euthanasia is to be aesthetically and scientifically successful.

When using these or any other method of euthanasia, it is important to take adequate measures to insure animals are dead and have no chance to revive or regain consciousness at any later time, especially when using anesthetics.

All methods must be recommended by the AVMA Guidelines on Euthanasia (June 2007).

You may use decapitation or cervical dislocation of rodents without prior sedation/analgesia, but must provide a scientific justification for doing so. For example, you can provide a statement that analgesia/sedation will affect the end point measurements you make. You should also provide a reference supporting your justification. In addition, you must provide a statement that the persons performing the euthanasia technique are appropriately trained and are using proper equipment. You should specifically indicate who will be performing euthanasia in the Associates section of the protocol.

Procedures such as CO2 euthanasia or anesthetic overdose on rodents, where death may not be immediately evident, must include a secondary physical method for ensuring death. These include decapitation, pneumothorax by opening the thoracic cavity, cervical dislocation of rodents under 200 g, complete severance of the spine just below the base of the skull using a dorsal approach, or perfusion of a histological fixative via the major blood vessels.

There are special considerations for euthanizing rodent embryos, fetuses and neonates. Please see the UCAR policy on Euthanasia for Rodent Embryos, Fetuses and Neonates on the UCAR website.

Approved Euthanasia Dosage and Techniques

Rodents

1. Sodium Pentobarbital 100 mg/kg body weight IV or IP (followed by physical method)

2. Carbon Dioxide Inhalation Chamber according to DLAM SOP (followed by physical method)

3. Cervical dislocation for rats weighing less than 200 grams and all mice after sedation. Cervical dislocation without prior sedation must be scientifically justified and approved by UCAR.

4. Decapitation with guillotine after the animal has been sedated. Decapitation without prior sedation must be scientifically justified and approved by UCAR.

5. Cardiac perfusion or exsanguination under deep plane of surgical anesthesia.