EUTHANASIA OF RODENT FETUSES AND NEONATES

Overview/Purpose

The AVMA Guidelines for the Euthanasia of Animals provides limited recommendations for the euthanasia of fetal and neonatal animals. Data suggests that mammalian fetuses remain in an unconscious state until the time of birth. It is therefore unnecessary to remove and individually euthanize fetuses following euthanasia of a pregnant dam. Euthanasia of the dam alone is sufficient to ensure death of the fetus.

The purpose of this policy is to ensure the appropriate euthanasia of rodent fetuses if removed from the dam and rodent neonates following parturition. In all cases, the person performing the euthanasia must be trained in the appropriate procedures and the euthanasia methods should be captured within the approved IACUC protocol.

Definitions

1. Fetus - an unborn offspring
2. Neonate – a newly born animal
   a. Altricial - born in an undeveloped state and requiring care and feeding by the parents. e.g. mice, rats, and hamsters.
   b. Precocial - born in an advanced state and able to feed itself almost immediately. e.g. guinea pig pups.

3. Gestation – period of development in animals, from the time of fertilization of the oocyte to birth

Requirements

1. Fetuses:
   a. < 60% gestation: (ie: mouse, rat and hamster fetuses <15 days post fertilization and guinea pig fetuses < 35 days post fertilization). Neural development at this stage is minimal and pain perception is considered unlikely. Euthanasia of the mother or removal of the fetus should ensure rapid death of the fetus due to loss of blood supply.

   b. ≥ 60% gestation (ie: mouse, rat and hamster fetuses at or beyond 15 days post fertilization and guinea pig fetuses at or beyond 35 days post fertilization): At approximately 60 percent of the gestation period, the neural tube has developed into a functional brain. The likelihood that a fetus may perceive pain should be considered and steps should be taken to ensure appropriate euthanasia of the animals. Euthanasia method will depend upon the downstream experimental usage and size of the fetus. Acceptable methods to euthanize rodent fetuses include:
      i. Overdose of injectable anesthetics
      ii. Decapitation with surgical scissors
      iii. Cervical dislocation
      iv. Rapid freezing in liquid nitrogen

   Death of fetuses (if removed from the uterus) must be confirmed after euthanasia and prior to disposal as for adult rodents.
2. **Neonates:** Resistance to hypoxia at this age results in a prolonged time to unconsciousness when CO2 is used as a euthanasia agent.

   a. **Altricial neonates <10 days of age:** (ie: mouse, rat and hamster neonates)
      Acceptable methods for euthanasia include:
      i. Injection of chemical anesthetics (e.g., pentobarbital)
      ii. Decapitation
      iii. Cervical dislocation.
      iv. Overdose of inhalant anesthetics although prolonged exposure may be necessary

      Immersion in liquid nitrogen may be used only if preceded by anesthesia. Similarly, anesthesia should precede immersion or perfusion with chemical fixatives.

      Animals >10 days of age should follow euthanasia guidelines for adults.

   b. **Precocial neonates** (ie: guinea pigs) – Neonatal euthanasia will follow guidelines for adults.

      Death of neonates must be confirmed after euthanasia and prior to disposal as for adult rodents.

**Additional Information/Guidance**

AVMA Guidelines for the Euthanasia of Animals

**History of Revisions**

046-00 - new policy approved 05/17/13
046-01 - Policy revisions reflect formatting in the new template, approved 06/17/16, reviewed 06/21/19 and no changes needed
046-02 – policy reviewed and approved 11/18/22