IACUC Policy 5: Cervical Dislocation or Decapitation of Animals


1. **Euthanasia by Cervical Dislocation**
   
The IACUC will allow cervical dislocation to be used as a primary method for euthanasia only for mice and rats (under 200g body weight), and only after demonstration by appropriate lab members of proficiency in the technique. (Please see Policy 9: Euthanasia for a description of the use of cervical dislocation or decapitation to confirm death after inhalant overdose.) Per AVMA 2020 Guidelines, Section M3.6, Cervical Dislocation: “For mice and rats, the thumb and index finger are placed on either side of the neck at the base of the skull or, alternatively, a rod is pressed at the base of the skull. With the other hand, the base of the tail or the hind limbs are quickly pulled, causing separation of the cervical vertebrae from the skull… Data suggest that electrical activity in the brain persists for 13 seconds following cervical dislocation in rats…” In most cases the IACUC will require anesthesia or sedation prior to cervical dislocation, and bypassing this requirement must be justified and approved.

   In heavier animals (e.g., rats over 200g body weight and rabbits over 1 kg body weight), the greater muscle mass in the cervical region makes manual cervical dislocation physically more difficult. Therefore, other methods of euthanasia must be performed on these types of animals. Please see IACUC Policy 9: Euthanasia.

   It is the PI’s responsibility to determine that all personnel have been trained to perform the technique of manual cervical dislocation, and to monitor that personnel consistently apply it humanely and effectively.

2. **Euthanasia by Decapitation**
   
The IACUC generally discourages the practice of euthanasia by decapitation, but recognizes that for some studies this method may be necessary. Decapitation must be performed by trained personnel, in a safe manner, and using sharp instruments.

   The PI is responsible for maintaining their decapitation apparatus in good working order, including maintenance of blade sharpness. The use of plastic cones to restrain unanesthetized animals appears to reduce distress from handling, minimizes the chance of injury to personnel, and improves positioning of the animal for decapitation. Therefore, the use of plastic cones prior to decapitation is strongly encouraged.

   It is also the PI’s responsibility to determine that all personnel have been trained to perform the technique of decapitation, and to monitor that personnel consistently apply it humanely and effectively.

   A. **Rodents:** Euthanasia by decapitation should normally be performed while the animal is under general anesthesia and may be used in research settings only when its use is required by the experimental design and is approved by the IACUC. Per AVMA 2020 Guidelines, Section M3.7, Decapitation: “Although it has been demonstrated that electrical activity in the rodent brain persists for 13 to 14 seconds following decapitation[1], more recent studies indicate that this activity does not infer the ability to perceive pain, and conclude that loss of consciousness develops rapidly[2].” Therefore, decapitation of rodents and small rabbits (<1 kg) is conditionally acceptable if performed correctly by trained personnel. For age-specific guidelines, please see IACUC Policy 9: Euthanasia.

   B. **Amphibians, Fish and Reptiles:** The central nervous system of amphibians, fish, and reptiles is tolerant to hypoxic and hypotensive conditions[3]. Therefore, decapitation of these species should be performed under anesthesia and must be followed immediately by pithing. Please see IACUC Policy 9: Euthanasia.
References