



Standard Operating Procedure: Intravenous Injections in the Rabbit

These SOPs were developed by the Office of the University Veterinarian and reviewed by Virginia Tech IACUC to provide a reference and guidance to investigators during protocol preparation and IACUC reviewers during protocol review. They can be used as referenced descriptions for procedures on IACUC protocols.

However, it is the sole responsibility of the Principal Investigator to ensure that the referenced SOPs adequately cover and accurately represent procedures to be undertaken in any research project. Any modification to procedure as described in the SOP must be outlined in each IACUC protocol application (e.g. if the Principal Investigator plans to use a needle size that is not referenced in the SOP, simply state that alteration in the IACUC protocol itself).

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I. Procedure Summary and Goal

Describes procedure for the administration of fluids or compounds intravenously.

Considerations:

- a. Fastest absorption rate, as fluids are administered directly into the venous system.
- b. Easily performed without general anesthesia, but proper restraint and topical anesthetic and/or sedation preferred.
- c. Primary intravenous (IV) injection site for the rabbit is the marginal ear vein; other sites include lateral saphenous and external jugular veins
- d. Please refer to the Guidelines for Injections in Rodents and Rabbits, Virginia Tech Office of the University Veterinarian for recommended volumes and needles sizes.
- e. Recommended volume should not exceed 1% body weight (1-5ml).

II. Personal Protective Equipment (PPE) and Hygiene

- a. Ensure appropriate PPE is used to protect technician from accidental exposure to blood and other body fluids, such as:
 - i. Gloves
 - ii. Eye protection
 - iii. Mask
 - iv. Other PPE as required by protocol/facility
- b. Hands should be washed and/or gloves changed between animals.
- c. Promptly dispose of used sharps in the provided leak-proof, puncture resistant sharps container.

III. Supply List

- a. Mechanical restrainer
- b. Prefilled syringes
- c. Needles or butterfly catheters (21 -23 gauge; 5/8 - 1 inch)
NOTE: when using butterfly catheters, be sure to displace air in the tubing prior to injection
- d. Clippers with clean sharp blades
- e. Topical anesthetic
- f. Sedation (e.g., acepromazine)
- g. Gauze pads

IV. Detailed Procedure

- a. Frequency

- i. Repeated injections can be made by moving towards the base of the ear on the same vein, or alternating ears.
- b. Anesthesia
 - i. No anesthesia needed, but adequate restraint required
 - ii. Topical anesthetic cream may be applied to surface of ear for approximately 10 minutes prior to venipuncture
 - iii. Acepromazine administered at 1mg/kg body weight (intramuscular) 20 minutes prior to venipuncture provides sedation as well as vasodilation.
- c. Procedure
 - i. Restrain rabbit securely with mechanical rabbit restrainer (Figure 1), towel wrap method, or commercially available sacks.

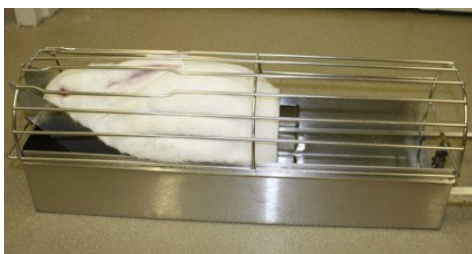


Figure 1. Mechanical Restraint

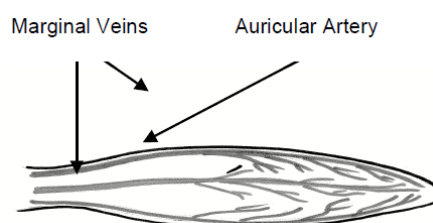


Figure 2. Schematic of Rabbit Auricular Vessels

- ii. Shave the hair over the marginal ear vein (Figure 2).
- iii. Clean site with antiseptic. Apply local anesthetic cream and allow skin contact for a minimum of 10 minutes.
 - 1. To dilate vessel:
 - a. Apply warm compress to ear, or
 - b. Massage ear for 30 to 60 seconds
- iv. Occlude vessel proximal to collection site (base of ear).
- v. Holding the ear flap in the non-dominant hand and keeping the ear straight, insert needle at a slight angle ($< 30^\circ$), bevel up, into the vein (Figures 3 and 4).
- vi. Watch for flash of blood in hub of needle.
- vii. Maintaining control of the needle, slowly administer substance.
- viii. Apply pressure before removing needle to avoid hematoma. Remove needle, and continue to apply firm pressure for one minute with gauze to ensure hemostasis.
- ix. Dispose of the needle into approved sharps container.



Figure 3. Visualize marginal ear vein



Figure 4. Insert needle, draw back gently on plunger of syringe and watch for flash of blood in hub of syringe

- x. Dispose of the needle into approved sharps container.

V. Variations

- a. Needle type
 - i. Use a butterfly catheter with syringe
 - ii. Use of needle and syringe
- b. Alternate venous access - cephalic and saphenous veins

VI. Potential Adverse Effects, Mitigation, or Treatment

- a. Hematoma or thrombus
 - i. Enter vessel at an angle of 30 degrees or less
 - ii. Use a gauge of needle smaller than the vein
 - iii. Apply pressure until bleeding has stopped (1+ minutes)
- b. Pain at injection site
 - i. Use a needle of smaller gauge than the vein
 - ii. Practice on vein models prior to live animal
- c. Infection or reaction to substrate at injection site
 - i. Use sterile single-use devices only
 - ii. Clean work surfaces with disinfectant
 - iii. Wear gloves, wash hands
 - iv. Contact a qualified veterinarian for treatment recommendations if any of the following are noted.
 - 1. Heat, pain, swelling first noted at the injection site, purulent material draining from the site.
 - 2. Induration (hardening) of the vessel

- 3. Pyrexia, local or systemic infections, septic shock
- d. Syncope
 - i. Contact veterinary staff immediately

VII. References

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