



Standard Operating Procedure: Intravenous Injections in the Guinea Pig

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. Provides the fastest absorption rate, as fluids are administered directly into the venous system.
- b. Primary intravenous (IV) injection site for the guinea pig is the lateral saphenous vein.
- c. Please refer to the Guidelines for Injections in Rodents and Rabbits, Virginia Tech Office of the University Veterinarian for recommended volumes and needles sizes.

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 restraint device
- b. Needles (23-30 gauge; ½ - ⅝ inch)
- c. Prefilled syringes
- d. Heat source (e.g., heating pad, warm water bath or heat lamp)
- e. Antiseptic solution
- f. Gauze pads
- g. Anesthetic agents
 - i. Inhalant
 1. Isoflurane – inhaled to effect
 2. 70% CO₂ + 30% O₂ gas – inhaled to effect
 - ii. Injectable anesthesia

IV. Detailed Procedure

- a. Lateral Saphenous

- i. Restrain the guinea pig with physical or chemical restraint.
 - ii. Extend the hind leg and shave hair to expose the lateral saphenous vein
 - iii. Disinfect the injection site and apply tourniquet-like pressure to the upper portion of the leg.
 - iv. Insert needle into the vein and gently aspirate. Release tourniquet pressure and inject.
 - v. Upon completion, remove needle and apply gentle pressure to ensure proper hemostasis.
- b. Retro-orbital Plexus IV Injection
- i. Considerations
 1. Utilize small gauge needle and syringes (e.g., tuberculin syringe with 27 g needle).
 2. Volume to be injected should not exceed 0.15ml.
 - ii. Anesthetize the animal with the selected anesthetic agent prior to sample collection procedures.
 - iii. Apply a single drop of topical ophthalmic anesthetic (Proparacaine Hydrochloride) prior to procedure. Allow a minimum of 30 seconds for the medication to take effect prior to injection.
 - iv. Place animal in lateral recumbency, and scruff the animal such that the eyeball partially protrudes from the socket.
 - v. Introduce the needle, bevel down so as to not damage the surface of the eye, into the medial canthus of the eye at a 45° angle, between the globe and the eye bony orbit.
 - vi. Advance needle following the edge of the eyeball down until the needle tip is at the base of the eye.
 - vii. Slowly inject, do not aspirate; once administration complete, slowly withdraw needle.
 - viii. Observe animal for full anesthetic recovery.

V. Variations

None

VI. Potential Adverse Events, Mitigation, or Treatment

- a. Potential adverse effects related to lateral saphenous injections
- b. Necrosis secondary to extravasation of injected substances
- c. Bruising, hematoma, continued bleeding
- d. Apply pressure until active bleeding has stopped
- e. Recheck within 24 hours
- f. Distress due to hyperthermia if animal is warmed
- g. Potential adverse effects related to retro-orbital injections
- h. Anesthetic respiratory distress

- i. Eye infection, loss of eye, blindness
- j. Peri-orbital swelling, redness and/or hematoma formation
- k. Death

VII. References

<http://vetmed.duhs.duke.edu/GuidelinesforRodentTechniques.html#INJECTIONTECHNIQUES>