**PRINCETON UNIVERSITY**

303-IACUC Policy for Dose Volumes in Laboratory Animals

**Purpose:**
This document is designed to provide general guidelines about the volume or amount of a substance to be given depending on route of administration. All procedures must be approved by the Institutional Animal Care and Use Committee (IACUC). The method of administration to be performed, the intervals between substance administration, and the volume to be given must be listed in the approved protocol specific to each study. If you have questions or comments about this document, please contact the LAR veterinary staff or the attending veterinarian at x8-7857. Contact the LAR office (x8-1272) if training is needed on these techniques.

**Abbreviations:**
- **PO** = Per os, orally
- **SC** = Subcutaneous
- **IM** = Intramuscular
- **IV** = Intravenous
- **IP** = Intraperitoneal
- **ID** = Intradermal
- **IN** = Intranasal

**Procedures:**

*All volumes are ml/kg unless otherwise noted.*

<table>
<thead>
<tr>
<th>Species</th>
<th>PO gavage (ml/kg)</th>
<th>IV* (bolus) (ml/kg/hr)</th>
<th>IV**</th>
<th>IP (ml/kg/hr)</th>
<th>SC (ml/kg/hr)</th>
<th>IM*** (ml/inj)</th>
<th>IN (ml/inj)</th>
<th>ID* (ml/inj)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mouse</td>
<td>10-30</td>
<td>5-10</td>
<td>1-4</td>
<td>10-20</td>
<td>5-20</td>
<td>0.03-0.05</td>
<td>0.05</td>
<td>0.05-0.1</td>
</tr>
<tr>
<td>Rat</td>
<td>10-30</td>
<td>5-10</td>
<td>1 or 2-4</td>
<td>10-20</td>
<td>5-10</td>
<td>0.1-0.2</td>
<td>0.1</td>
<td>0.05-0.1</td>
</tr>
<tr>
<td>Guinea Pig</td>
<td>10-20</td>
<td>1-5</td>
<td>--</td>
<td>1-10</td>
<td>1-5</td>
<td>0.1-0.2</td>
<td>0.2</td>
<td>0.05-0.1</td>
</tr>
<tr>
<td>Rabbit</td>
<td>2-10</td>
<td>1-5</td>
<td>1</td>
<td>4-20</td>
<td>1-2</td>
<td>0.25-0.5</td>
<td>0.5</td>
<td>0.05-0.1</td>
</tr>
<tr>
<td>Marmoset</td>
<td>5-15</td>
<td>2-5</td>
<td>1</td>
<td>5-10</td>
<td>1-2</td>
<td>0.1-0.5</td>
<td>0.5</td>
<td>0.05-0.1</td>
</tr>
<tr>
<td>Macaque</td>
<td>5-15</td>
<td>2-5</td>
<td>2.5</td>
<td>3-10</td>
<td>1-2</td>
<td>0.5-1.0</td>
<td>0.5</td>
<td>0.05-0.1</td>
</tr>
</tbody>
</table>

*An IV bolus is defined as a dose given over 1 min.

**Continuous IV infusions

***The values listed in this column are the total volume in ml per site.

1. The **first dose listed in bold is the ideal dose**. However, the dose can range up to the second value given, which is the maximum dose.
2. If dosing parenterally toward the maximum quantities listed, ensure that your dosing solution is isotonic, close to physiologic pH (6.8-7.2), stable, not viscous, has appropriate osmolality, biocompatibility, sterility, and does not contain quantities of diluent that could be toxic when dosed. Dosing solutions given parenterally can have a pH range of 3-9 but should be administered through a central (jugular v, femoral v. etc.) rather than a peripheral (cephalic, saphenous v) vessel. When substances are given by IV infusion, the volume should not exceed 5% of the circulating blood volume over 2 hours or 4 ml/kg/h.
3. The maximum recommended injection volume for a dosing solution that is given rapidly IV is 1 ml/kg body weight for most laboratory animal species. If dosing a larger quantity of solution is necessary, infusion of the dose IV over greater than 5 minutes should be considered.
4. When administering large volumes subcutaneously, more than one site of administration should be used.
5. The anatomy of the pharynx in the rabbit and guinea pig species makes gavaging difficult. Please contact LAR to learn or obtain assistance with this technique.
6. The intraperitoneal route of administration is infrequently used in rabbits.
7. Investigators wishing to dose greater volumes than specified above must consult the veterinary staff and provide justification in the IACUC protocol.
8. All substances given parenterally must be sterile. If the preparation is not a commercially manufactured solution, it should be mixed in a laminar flow hood or biosafety cabinet and filtered through a 0.2 μm filter.
9. If a route or species you are considering is NOT on this list, please consult the veterinary staff.
10. In all cases, consult the veterinary staff if you have questions about your dosing material, dose route or technique.

References