



Title: Use of Non-Pharmaceutical Grade Compound in Animal Studies

Policy Number: 014

Policy Intent: The intent of this policy is to outline the use of non-pharmaceutical grade compounds in animal studies.

Table of Contents

1. Objective
2. Background and Rationale
3. Supporting Policy
4. Texas Tech University IACUC Policy Position
5. Situations
6. Determining Pharmaceutical Grade from Labeling or Purchasing
7. Definitions
8. References

1. Objective

- A. Outline and describe Texas Tech University Institutional Animal Care and Use Committee's position on the use of non-pharmaceutical grade compounds / substances in animal studies.

2. Background and Rationale

- A. The purpose of using pharmaceutical-grade compounds in research animals ensures that the substances and drugs administered meet established standards of purity and composition of formulation. This helps to ensure the health and welfare of research animals, support the validity of experimental results, and potentially reduce variation in results among studies, which ultimately may reduce the overall number of animals used in research. The use of non-pharmaceutical grade substances may increase risk of using formulations with higher levels of impurities. In addition, poorly formulated non-pharmaceutical grade preparations may introduce unwanted experimental variability. Both of these (i.e., higher levels of impurities or poor formulations) may lead to additional effects beyond those anticipated for the active pharmaceutical ingredient. Although pharmaceutical grade compounds should be used in experimental animals whenever possible, the use of non-pharmaceutical-grade compounds in experimental animals is an acceptable practice under certain scenarios. Examples of these scenarios are described within this document.

3. Texas Tech University IACUC Policy Position

- A. The Texas Tech University Institutional Animal Care and Use Committee's position on the use of non-pharmaceutical grade compounds / substances in animal studies is directly aligned and in accordance with the policy supported by the USDA and OLAW. Thus, in animal studies conducted at Texas Tech University, the use of non-pharmaceutical grade substances / compounds / drugs must be based on:
 - 1) Scientific necessity, OR
 - 2) Non-availability of an acceptable veterinary or human pharmaceutical-grade compound, AND
 - 3) Specific review and approval by the Texas Tech University IACUC.



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- B. The specifics of the use of non-pharmaceutical compounds in research animals must be described within animal protocols, providing justification that is either based on scientific necessity or non-availability.

4. Situations

- A. In certain situations the Texas Tech University IACUC may review and approve the use of non-pharmaceutical grade substances. Some examples of these scenarios are listed below. The IACUC will consider expanding this list as institution-specific scenarios arise in the future.
- 1) No equivalent veterinary or human pharmaceutical is available for experimental use. Under these circumstances the highest-grade equivalent chemical reagent should be used. If the substance must be formulated, this should be done aseptically and with a non-toxic vehicle as appropriate for the route of administration.
 - 2) Non-pharmaceutical grade substances are required to replicate methods from previous studies because results will then be directly comparable to those of replicated studies. This scenario may be considered even though an equivalent veterinary or human drug is readily available for experimental use.
 - 3) Although an equivalent veterinary or human pharmaceutical is available, dilution or change in formulation is required.
 - 4) The available veterinary or human pharmaceutical is not concentrated enough to meet experimental requirements.
 - 5) The available veterinary or human pharmaceutical does not meet the non-toxic vehicle requirements for the specified route of injection.
- B. Under any of these scenarios using non-pharmaceutical grade substances, consideration should be given to the alternative grade, purity, sterility, pH, pyrogenicity, osmolality, stability, site and route of administration, formulation, compatibility, and pharmacokinetics of the chemical or substance to be administered (ILAR 2011).

5. Determining Pharmaceutical Grade from Labeling or Purchasing

- A. If the grade of a substance or drug is unknown, investigators may examine labeling and purchasing information to extract this information. Several lines of evidence can be explored to determine if a substance / drug is pharmaceutical grade. Below are several examples:
- 1) Presence of National Drug Code number on labels.
 - 2) Purchased from a pharmacy or USDA licensed vendor.
 - 3) Described as pharmaceutical grade in vendors documentation (packing slip, online database).
 - 4) Presence of USP insignia.
 - 5) Presence of text on packaging indicating FDA approved drug.

6. Definitions

- A. The IACUC at Texas Tech University accepts the following definitions as outlined in the NIH document "Guidelines for the Use of Non-Pharmaceutical Grade Compounds in Laboratory Animals" (https://oacu.oir.nih.gov/sites/default/files/uploads/arac-guidelines/b14_pharmaceutical_compounds.pdf).



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- 1) Pharmaceutical grade compound: Drug, biologic, reagent, etc. which is approved by the FDA^a or for which a chemical purity standard has been written/established by USP/NF^b, BP^c
- 2) Analytical grade bulk chemical: ~99% purity; Certificate of Analysis is usually available
- 3) Non-availability: Not commercially available from an active U.S. vendor; includes formulations supplied as tablet, capsule, injectable, etc.
- 4) New investigational compound: Supplied by its manufacturer for testing in an experimental setting only and for this reason would not have chemical purity standards established; by default is considered a non-pharmaceutical grade compound

^a FDA: Food and Drug Administration; FDA approved compounds are manufactured using USP/NF compounds

^bUSP/NF: United States Pharmacopeia/National Formulary, ^cBP: British Pharmacopeia, ^c

7. References

- Guidelines for the Use of Non-Pharmaceutical Grade Compounds in Laboratory Animals. National Institute of Health (https://oacu.oir.nih.gov/sites/default/files/uploads/arac-guidelines/b14_pharmaceutical_compounds.pdf).
- ILAR 2011. Guide for the care and use of laboratory animals. Eight edition. Institute for Laboratory Animal Research (ILAR), National Research Council. The National Academies Press, Washington, DC.
- USDA. 2011. Animal Care Resource Guide. Policy 3 - Veterinary Care: Expired Medical Materials, Pharmaceutical-Grade Compounds in Research, Surgery, Pre- and Post-Procedural Care, Program of Veterinary Care, Declawing and Defanging Practices in Wild or Exotic Carnivores or Nonhuman Primates, Health Records, and Euthanasia. Issue Date: March 25, 2011