UTAH STATE UNIVERSITY
REGISTRATION NUMBER: 87-R-0002
CURRENT IACUC EXCEPTIONS

No reportable exceptions for Utah State University for the 2020 fiscal year.

UTAH STATE UNIVERSITY
REGISTRATION NUMBER: 87-R-0002
EXPLANATION FOR THE USE OF ANIMALS LISTED IN COLUMN E

The 2020 Annual Report of Research Facility for Utah State University indicates that 858 hamsters and 62 guinea pigs have been used in studies involving pain and distress without analgesic or other palliative care. All such work conducted at this institution involves experiments examining virus infections in animal models, and associated work to evaluate potential antiviral therapeutic agents. This involves three related categories of experiments, virus titration studies in animals, dose range finding studies for novel therapeutic agents or treatments, and antiviral experiments in which virus infected animals are treated with potential antiviral agents. In the case of all experiments involving viral infections animals are monitored several times daily during virus infection. Based upon previous experience with virus infection models specific criteria for each viral disease indicating likely death have been identified. Animals meeting these criteria are euthanized to minimize pain and distress.

The purpose of preliminary virus titration studies is to identify the minimum viral dose required to produce mortality in approximately 90% of the animals inoculated. Titration experiments are only necessary when evaluating new virus stocks or new virus strains, or new animal models such as different animal strains. As such titration experiments are performed infrequently. Titration experiments are vital to properly establish the animal model, and the information gained from the titration studies is used to determine the dose of virus used in subsequent antiviral experiments. The viruses being studied are often emerging infectious agents, or surrogates for such agents. As such, little is known regarding treatment, means to alleviate pain and distress, and any possible interaction between the virus and potential palliative care. Attempts to alleviate pain or distress in animals involved in virus titration experiments have the potential to alter the outcome of the infection, and thereby provide inaccurate data for the planning of future experiments.

Antiviral experiments conducted at this institution often involve the use of experimental therapeutic agents. Due to the novel and experimental nature of the compounds involved little if any information is known regarding their toxicity profile. Oftentimes, there is no toxic effect associated with any dose of agent tested in dose range finding studies, and when available, previous toxicity information or previously published data regarding compound use is used to determine appropriate drug dose and method of administration. Dose range-finding experiments using small numbers of animals are conducted to identify the maximum tolerable dose and appropriate route of administration. This ensures that animals treated with experimental compounds in subsequent antiviral experiments are not treated with an overtly toxic dose. The experimental status of the agents being tested also means that little or no information is available regarding possible drug-drug interactions. Co-administration of pain relieving compounds could alter their antiviral activity or could enhance drug toxicity. Therefore, the use of pain relieving substances is avoided in these experiments.

A literature search on PubMed identified several published reports where commonly used pain medications such as opioids[1-7] and non-steroidal anti-inflammatory agents[8-12] altered virus infections. Furthermore, published reports identified potential interactions between analgesics and known antiviral drugs[13-16]. Even vitamins or antibiotics can alter disease outcomes in animal models testing antiviral drugs[17,18]. Due to such possible drug-virus and drug-drug interactions pain relieving or other palliative substances are not routinely administered to animals in either virus titration or antiviral experiments. Power analysis and other statistical analyses are performed prior to conducting antiviral experiments to determine the correct number of animals that must be used. This minimizes the number of animals that need to be subjected to the pain and distress associated with a virus infection.

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