

Standard Operating Procedures For 5-Fluorouracil Treated Mice and Exposed Materials

Purpose

The chemotherapy agent 5-Fluorouracil is used in mice to kill cells that are rapidly dividing in the bone marrow, thus killing mature cells and leaving immature cells that are then harvested. 5-Fluorouracil is combustible when exposed to high temperatures and is reactive to oxidizers such as bleach.

Personal Protective Equipment

1. All personnel must wear the following PPE disposable when working in the animal rooms, with animals, or contaminated bedding and caging:
 - N95 disposable respirator masks
 - Disposable gowns
 - Tyvek™ over-sleeves
 - Safety glasses or goggles under full face shield
 - Nitrile gloves
2. It is important to know that 5-Fluorouracil can be absorbed through the skin, with eye contact and by inhalation. 5-Fluorouracil is toxic to blood. Severe over exposure can lead to death. It is imperative that sleeves are long enough to cover the wrist and are covered by the glove. There must not be exposed skin at the wrist when handling 5-Fluorouracil or materials contaminated with this substance.
3. When injecting, a recapper must be used.
4. All drug injections must be done in a chemical or laminar flow hood to minimize exposure to personnel.

Disinfection and Sanitation

1. DO NOT use bleach for disinfection of work surfaces where 5-Fluorouracil has been used.
2. A protective pad should be placed on the work surface to absorb any spills. The soiled pad should be disposed of with the soiled cages.
3. Use quaternary ammonia based disinfectants to clean hoods and work surfaces. Place the soiled paper products with soiled cages for incineration.

Handling Cages and Bedding

1. Approximately 7-20% of the drug is excreted unchanged in the urine, 90% of it within the first hour after treatment. The remaining drug is metabolized to CO₂, urea, and α -fluoro- β -alanine, which are inactive and non-hazardous. Because 90% of the drug is excreted and accounted for in the first 24 hours, cages are changed after 72 hours and animals can be housed in conventional caging provided there is no other Biohazardous agent used.
2. All contaminated bedding must be dumped under a hood and into a 5 gallon sealable bucket. The lid must be secured and the bucket labeled as a Biohazard with "5-Fluorouracil DO NOT AUTOCLAVE".
3. Soiled cages will be double wrapped in biohazard bags. The inner bag will be twisted closed and sealed. The outer bag will be labeled with "5-Fluorouracil Biohazard DO NOT AUTOCLAVE"
4. A chemical pick up tag will be filled out and attached to waste containers.
5. Buckets are opened only under a hood. Once full, the bucket is sealed and not reopened.
6. Risk Management and Safety will pick up buckets and biohazard bags for incineration.

References:

1. Recommendations for the Safe Handling of Parenteral Antineoplastic Drugs. Washington, DC, U.S. Government Printing Office (NIH Publication No. 83-2621).
2. AMA Council Report. Guidelines for Handling Parenteral Antineoplastics. *JAMA* Mar 15, 1985; 253:1590–1592.
3. National Study Commission on Cytotoxic Exposure: Recommendations for Handling Cytotoxic Agents. Available from Louis P. Jeffrey, ScD, Director of Pharmacy Services, Rhode Island Hospital, 593 Eddy Street, Providence, Rhode Island 02902.
4. Aducril Injectable(Fluorouracil) Drug insert, Teva Parenteral Medicines, Inc., July 2007.
5. Jones RB, Frank R, Mass T: Safe Handling of Chemotherapeutic Agents: A Report from the Mount Sinai Medical Center. Sept–Oct 1983; 33:258–263.
6. 5-Fluorouracil Material Safety and Data Sheet, Acros Organics, revised November 11, 2007.
7. Connor, T.H., McDairmid, M.A., Preventing Occupational Exposures to Antineoplastic Drugs in Health Care Settings, *CA Cancer J Clin* 2006; 56:354-365