



STANDARD OPERATING PROCEDURE #715 USE OF DOXORUBICIN IN RODENTS

1. PURPOSE

This Standard Operating Procedure (SOP) describes the guidelines for the use of doxorubicin in rodents.

2. CONSIDERATIONS

All chemical hazards must be listed in an approved Animal Use Protocol (AUP).

Doxorubicin, also commonly referred to as adriamycin, is a compound clinically used as an antineoplastic drug. Research indicates that doxorubicin is potentially cytotoxic, embryotoxic, carcinogenic, teratogenic, and mutagenic.

Doxorubicin may cause irritation to the gastrointestinal tract, respiratory tract, skin, and eyes. Primary routes of occupational exposure to doxorubicin include aerosol exposure, ingestion, accidental injection, and tissue/transplacental absorption.

This SOP aims to ensure that the potential of exposure is reduced as much as possible and that these agents pose no risk to research staff, animal care personnel, and other personnel working in the animal facility.

To minimize the risk of exposure, the Principal Investigator and/or delegate(s) must identify all points of hazard and put in place safe work practices for all steps involving contact with doxorubicin, as per procedures presented in this SOP and in consultation with the McGill Environmental Health and Safety (EHS) Officer.

3. RESPONSIBILITY

Principal investigator (PI) and their research staff, animal care staff, veterinarian, veterinary care staff.

4. MATERIALS

- 4.1. Personal protective equipment (PPE):
 - 4.1.1. Two pairs of nitrile gloves
 - 4.1.2. Gown or lab coat
 - 4.1.3. Sleeve covers
 - 4.1.4. Procedure mask
 - 4.1.5. Fit-tested N95 respirator (for cage processing)
- 4.2. Chemical fume hood, Class II Type B1 or Class II Type B2 Biological Safety Cabinet (BSC)
- 4.3. 0.5% sodium hypochlorite (bleach) solution
- 4.4. Absorbent pads
- 4.5. Compressed cotton fiber bedding pads (iso-PADS Enrichment Bedding)
- 4.6. Shock-resistant secondary container for transport of doxorubicin
- 4.7. CSA-approved sharps disposal container
- 4.8. Waste disposal bags and boxes

5. GENERAL PRECAUTIONS

- 5.1. Use of doxorubicin must be described in the Facility Animal Care Committee (FACC) approved Animal Use Protocol (AUP).

- 5.3. Women who are pregnant, expecting to become pregnant, or nursing should not handle or be exposed to doxorubicin or feces/urine of animals treated with doxorubicin. Refer to the University Laboratory Safety Committee's (ULSC) Policy on Reproductive Health in the Laboratory.
- 5.4. Doxorubicin is excreted in urine and feces. The procedures in this SOP must be followed when handling animals and bedding for 4 days after the final doxorubicin administration.
- 5.5. Storage precautions and transportation:
 - 5.5.1. All containers of doxorubicin must be clearly labeled and adequately stored when not in use.
 - 5.5.2. Keep containers

- 6.3.4. When using a Type II B1 BSC, note that only pre-filled syringes must be used, i.e., syringes filled in a chemical fume hood or Type II B2 BSC.
- 6.3.5. Work areas should be protected from spills by placing an absorbent pad with an impervious backing (absorbent material facing up).
- 6.3.6. Clean and decontaminate area after handling or administration using bleach solution. The absorbent pad is disposed of as a hazardous material.
- 6.3.7. Cage bedding is considered contaminated at least 4 days after the last doxorubicin administration. Cages must be clearly labelled with all the administration date(s). During this period, change cages in the following manner:
 - 6.3.7.1. Protect work area by placing an absorbent pad with an impervious backing, absorbent material facing up.
 - 6.3.7.2. Place a waste bag inside the chemical fume hood or BSC.
 - 6.3.7.3. Place a clean, empty cage with lid inside the chemical fume hood or BSC.
 - 6.3.7.4. Bring the cages to the chemical fume hood or BSC. Transfer animal to Tw 22..2 (hfe c)-8 (hem)-12.4 (i)oc

- 6.5.2. Wear personal protective equipment when preparing and using bleach solution.
- 6.5.3. Mix 1 part 5% chlorine bleach with 9 parts water (1:10 dilution).
- 6.5.4. Label all storage containers.
- 6.6. Waste disposal:
 - 6.6.1. All items contaminated or potentially contaminated with doxorubicin (e.g., gloves, bedding, paper towels) are discarded as hazardous waste by incineration.

7. SAFETY

- 7.1. In case of accidental exposure:
 - 7.1.1. Potential routes of exposures include inhalation, skin absorption, ingestion, and unintentional injection.
 - 7.1.2. Report the incident immediately to your supervisor. A McGill University [Accident, Incident & Occupational Disease Report form](#) must be completed.
 - 7.1.3. Splash in eyes:
 - 7.1.3.1. Flush eyes with water or normal saline solution for 15 minutes. Remove contact lenses.
 - 7.1.3.2. Seek medical attention after flushing eyes.
 - 7.1.4. Skin exposure:
 - 7.1.4.1. Immediately flush affected skin with water while removing and isolating all contaminated clothing.
 - 7.1.4.2. Gently wash all affected skin areas thoroughly with soap and water. Rinse for 15 minutes
 - 7.1.4.3. If symptoms such as redness or irritation develop, seek medical attention.
 - 7.1.5. Inhalation:
 - 7.1.5.1. Immediately leave the contaminated area; take deep breaths of fresh air.
 - 7.1.5.2. Immediately call a physician or poison control center.
 - 7.1.6. Ingestion:
 - 7.1.6.1. Do not induce vomiting.
 - 7.1.6.2. Give 1 or 2 glasses of water and immediately call a hospital or poison control center.

8. REFERENCES

- 8.1. van Asperen, J., van Tellingen, O., Tijssen, F., Schinkel, A. H., & Beijnen, J. H. (1999). Increased accumulation of doxorubicin and doxorubicinol in cardiac tissue of mice lacking mdr1a P-glycoprotein. *British journal of cancer*, 79(1), 108–113. <https://doi.org/10.1038/sj.bjc.6690019>
- 8.2.

DOXORUBICIN

Open only Type II B1 or B2 BSC



DATES OF ADMINISTRATION		RECOVERY DATE
1.	5.	
2.	6.	CONTACT
3.	7.	
4.	8.	