

## Administration of Analgesics, Anesthetics and Antibiotics in Rodents

### I. Purpose

This document provides guidance on the frequently used medications in laboratory rodents used in biomedical research at MSU.

It must be noted that the dosages in the following tables may be species-specific. Please consult with the veterinarian when using medication dosages that are not in this policy, or if you do not have experience with the medication and/or if you have additional questions regarding this policy.

### II. Scope

This policy applies to all personnel administering medications to laboratory rodents.

### III. Guidance

A. Use of expired medications is not permitted. Verify the medication has not expired and has been stored according to the manufacturer's recommendations (temperature, light).

#### B. Medicated Water Treatments

1. When calculating medicated water treatments, the exact amount of medication consumed is dependent on the animal's water intake. A sick animal may not drink as much as a normal animal. The oral doses below are calculated to give the correct dose for an animal that consumes a normal amount of water per day and may need to be adjusted if consumption volumes are different.
2. Medicated water bottles may not be refilled. Water bottles must be replaced at least once every 7 days.

### IV. Definitions/Abbreviations

- A. Intramuscular (IM)
- B. Intravenous (IV)
- C. Intradermal (ID)
- D. Intraperitoneal (IP)
- E. Subcutaneous (SC or SQ)

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- F. Parenteral – administered elsewhere in the body than the through mouth or alimentary canal (i.e., IM, SC or SQ, IV, ID, IP)
- G. Per os, by way of mouth (PO)

<b>Analgesics in Laboratory Rodents</b>				
<b>Analgesics</b>	<b>Mouse Dose</b>	<b>Rat Dose</b>	<b>Route</b>	<b>Frequency</b>
Ibuprofen <sup>1</sup> (Advil®; Motrin®)	40 mg/kg	15 mg/kg	PO	Daily in drinking water <sup>1</sup>
Ketoprofen (Ketofen®)	5-20 mg/kg	5 mg/kg	SC	Once every 24 hours
Carprofen <sup>2</sup>	5-10 mg/kg	5 mg/kg	SC	Mouse: every 12 hrs Rat: every 24 hrs
Meloxicam (Metacam®)	5-10 mg/kg	1-2 mg/kg	SC	Mouse 8-12 hr Rat 12-24 hours
Buprenorphine (Buprenex®)	0.1 - 0.5 mg/kg	0.05- 0.01 mg/kg	SC	Once every 4-6 hours
Extended Release Buprenorphine (Ethiq XR ®)	3.25 mg/kg	0.65 mg/kg	SC	Once every 72 hours
Acetaminophen <sup>3</sup> (Tylenol®)	100-300 mg/kg	100-300 mg/kg	PO or 6mg/ml in drinking water	Once every 4 hours or daily in drinking water <sup>2</sup>
0.25% Bupivacaine (Marcaine®)	5 mg/kg	5 mg/kg	SC or Intra-incisional	Once, prior to surgical incision or prior to closure of incision
0.5% Proparacaine (Alcaine, Ophthetic®) (ophthalmic)	1-2 drops	1-2 drops	topically to cornea	Prior to recovery from procedure (retroorbital blood draw or injection)

<sup>1</sup> *Ibuprofen: Shake bottle prior to use to resuspend medication.*

<sup>2</sup> *Carprofen: May be appropriate for procedures causing mild discomfort only.*

<sup>3</sup> *Acetaminophen: Does not provide adequate analgesia in rodents. May be appropriate for procedures causing mild discomfort only in which administration of an NSAID is contraindicated.*

<b>Anesthetics in Laboratory Rodents</b>		
<b>Anesthetic</b>	<b>Dose</b>	<b>Route</b>
Sodium Pentobarbital (Nembutal®)	40 mg/kg	IP
Ketamine/xylazine	80-100 mg/kg ketamine + 8-10 mg/kg xylazine (mice) 90mg/kg ketamine + 10mg/kg xylazine (rats)	IP
Isoflurane <sup>1</sup>	1-3% to effect (3-5% for induction)	inhalation
Isoflurane in a container in fume hood (no vaporizer) <sup>1</sup>	To effect by inhalation in bell jar, beaker or 50 ml conical tube	Inhalation

<sup>1</sup> *Isoflurane: Requires storage in lightproof container; is an irritant, especially at high doses, high concentrations, or with repeated use, Animals must not come in contact with anesthetic. Place moistened gauze below perforated platform or at the bottom of a 50ml conical tube.*

<b>Antibiotics in Laboratory Rodents</b>		
<b>Antibiotic</b>	<b>Dose</b>	<b>Route</b>
Enrofloxacin (Baytril)	85 mg/kg/day (mice) 10 mg/kg/day (rats)	PO in drinking water
Enrofloxacin (Baytril)	10 mg/kg/day	SC
Trimethoprim/sulfamethoxazole (e.g. TMPS)	60 mg/kg/day based on sulfamethoxazole	PO in drinking water
Maxim (Oxytetracycline)	80/mg/kg/day	PO in drinking water

VI. References

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