

ANESTHESIA & ANALGESIA Standard Operating Procedure

Procedures requiring anesthesia:

- Surgical procedures
- Retro-orbital blood draws and injections
- Procedures requiring the animal to be still, in which restraint would be stressful or impossible (i.e. imaging)
- Procedures that may be distressful to an awake animal
- Procedures involving the use of paralytic agents

LAP Approved Drug Formulary for Laboratory Rodents and Rabbits:

Mouse Anesthesia:

Agent	Dosage	Route
Isoflurane	Induction 3-5% Maintenance 1-3%	Inhalation
Ketamine:Xylazine	80-100mg/kg: 10mg/kg	IP
Lidocaine, Bupivacaine, or Liposomal bupivacaine (Nocita)*	Dripped onto incision site	Local infiltration

*Nocita is preferred for longer duration effect

Mouse Analgesia:

Agent	Dosage (mg/kg)	Route	Frequency
Buprenorphine HCl	0.1-0.5	SC	4-6hr
Buprenorphine SR	0.6	SC	48hr
Ethiq XR Buprenorphine*	3.25	SC	48hr
Carprofen	20	SC	24hr
Meloxicam	10	SC	12hr
Meloxicam SR	4	SC	24hr

*Preferred type of buprenorphine

Rat Anesthesia:

Agent	Dosage	Route
Isoflurane	Induction 3-5% Maintenance 1-3%	Inhalation
Ketamine:Xylazine	40-80mg/kg: 5-10mg/kg	IP
Lidocaine, Bupivacaine, or Liposomal Bupivacaine (Nocita)*	Dripped onto incision site	Local infiltration

*Nocita is preferred for longer duration effect

Rat Analgesia:

Agent	Dosage (mg/kg)	Route	Frequency
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Buprenorphine HCl	0.05-0.1	SC	6-8hr
Buprenorphine HCl	0.5-0.6	PO	24hr
Buprenorphine SR	1.2	SC	48hr
Ethiq a XR Buprenorphine*	0.65	SC	72hr
Carprofen	5	SC	24hr
Meloxicam	1-2	SC	12-24hr
Meloxicam SR	4	SC	48-72hr

*Preferred type of buprenorphine

Chinchilla Anesthesia:

Agent	Dosage	Route
Isoflurane	Induction 3-5% Maintenance 1-3%	Inhalation
Ketamine:Xylazine	80-100mg/kg: 10mg/kg	IM, IP
Ketamine:Dexmedetomidine	4-5mg/kg:0.015mg/kg	IM

Chinchilla Analgesia:

Agent	Dosage (mg/kg)	Route	Frequency
Buprenorphine HCl	0.05-0.2	SC	6-12hr
Buprenorphine SR	1.2-1.8	SC	48-72hr
Carprofen	2-5	SC	12-24hr
Meloxicam	0.1-2	SC	24hr

Rabbit Anesthesia:

Agent	Dosage	Route
Isoflurane	Induction 3-5% Maintenance 1-3%	Inhalation
Acepromazine	0.25-1mg/kg	IM, for sedation
Ketamine:Xylazine	25-35mg/kg: 3-5mg/kg	IM, SC

Rabbit Analgesia:

Agent	Dosage (mg/kg)	Route	Frequency
Buprenorphine HCl	0.01-0.05	SC, IM, IV	8-12hr
Buprenorphine SR	0.12-0.15	SC	72hr
Carprofen	4	SC	24hr
Carprofen	1.2-2	PO	12hr
Meloxicam	0.3	SC, PO	24hr

For other species, please refer to the ACLAM Formulary as described below, or another published formulary. Other drugs may be appropriate for rodents and rabbits based on study needs. All drug usage must be approved in the animal use protocol prior to administration. LAP veterinary staff is available for consultation at lapvet@groups.purdue.edu.

By linking to the ACLAM website at <https://www.aclam.org/publications> and scrolling to the bottom of the page, you will find the Formulary for Laboratory Animals - Third Edition where species-specific information and dosage recommendations for select anesthetic and analgesic agents can be found.

References:

Yardeni T, et al. Retro-orbital injections in mice. *Lab Animal* 40(5):155-160. 2011.

Foley PL, et al. Clinical Management of Pain in Rodents. *Comparative Medicine* 69(6):468-489. 2019.

Ethiqa XR website. <https://ethiqaxr.com/>

Quesenberry K., Orcutt C., Mans C., & Carpenter J., eds. *Ferrets, Rabbits, and Rodents: Clinical Medicine and Surgery*, 4th edition. 2020.

CU Denver Veterinary Formulary.

https://research.cuanschutz.edu/docs/librariesprovider148/orcs_documents/cu-denver-veterinary-formulary-4-4.pdf?sfvrsn=8cb5c2b9_2