



Purpose:

This SOP outlines how to prepare injectable anesthetic ketamine and xylazine cocktails which can be used for surgical plane of anesthesia in mice.

Materials

- Ketamine 100 mg/ml
- Xylazine 100 mg/ml
- Sterile saline or sterile water (Fig. 1)
- 10 ml sterile glass empty vial (Fig. 1)



Figure 1

Mixing Instructions for Delivery of 87mg/kg Ketamine/12.5mg/kg Xylazine:

- Verify the concentration of your drugs prior to mixing
- For a 10ml vial using ketamine 100mg/ml and xylazine 100 mg/ml add:
 - 1.75ml ketamine (100 mg/ml)
 - 0.25ml xylazine (100 mg/ml)
 - 8 ml saline or sterile water for injection
- Use the following template for label:
 - Mouse Anesthetic Mix: Ketamine/Xylazine
 - Dosage: 0.1 ml/20gm IP
 - Delivers **87.5 mg/kg Ketamine/12.5mg/kg Xylazine**
 - Concentration: 17.5mg/ml Ketamine/2.5 mg/ml Xylazine
 - Expires: 90 days from mixing date

Instruction for use if animal needs a “bump” of anesthesia:

- Re-dosing of this combination of drugs for long procedures >1-1.5 hour is not recommended
- Use of isoflurane gas is strongly recommended for maintenance after injectable drugs (>30-45 min)
- If re-dosing is necessary, **use ketamine only** at 1/3-1/2 half of the original dose (do not exceed 50mg/kg). Make a 1:10 dilution of ketamine only in sterile water or saline (10 mg/ml).



Mouse Dosage and Duration Table

Agent	Dosage	Duration of anesthesia
Ketamine/xylazine cocktail*	ketamine 80-100 mg/kg IP, SQ xylazine 5-12.5 mg/kg IP, SQ	20-30 minutes
	KX mouse cocktail 0.1mL/20g mouse wt. IP, SQ Contains: 87.5 mg/kg Ketamine 12.5 mg/kg Xylazine	20-30 minutes
Ketamine/xylazine/acepromazine	ketamine 60-100 mg/kg IP, SQ xylazine 5-12.5 mg/kg IP, SQ acepromazine 2-3 mg/kg IP, SQ	60-90 minutes

*Ketamine/xylazine without combination with an analgesic agent (opioid or NSAID) may be insufficient to produce a surgical plane of anesthesia. Administration of appropriate analgesic agents prior to surgery and/or addition of acepromazine will augment the anesthetic effect of ketamine/xylazine.

Reference

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2786925/> “Beyond-Use Dating of Extemporaneously Compounded Ketamine, Acepromazine, and Xylazine: Safety, Stability, and Efficacy over Time” J Am Assoc Lab Animal Sci 2009 Nov; 48 (6)

Revision History:

Revision	Author	Revisions Made	Replaces version
1	GC	Formatting and addition of Figure 1	10/29/18
2	GC JD	Removal of multiple dosages, add table-reformat, CVS Review	2/25/20
3	GC	Addition of SQ admin. Modification of dosages to match Vet Guidelines	11/4/22

