

# UBC ANIMAL CARE COMMITTEE

## TECH 18 - Ketoprofen (Anafen®) SOP

### Analgesia for Adult Mice and Rats

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#### PURPOSE:

To describe the administration of Ketoprofen, a non-steroidal anti-inflammatory drug (NSAID), to provide pain relief (analgesia) and/or reduce inflammation in cases of mild to moderate pain in mice and rats. See UBC Surgical Class and Analgesia Guidelines.

#### RESPONSIBILITY:

Those persons listed on an approved Animal Care Committee protocol who are responsible for procedures, surgeries, and post-procedure monitoring.

**REFERENCES:** (<https://animalcare.ubc.ca/planning-your-research/sops-guidelines>)

- UBC SOP Subcutaneous Injections (rats and mice)
- UBC Rodent Anesthesia and Analgesia Formulary and General Drug Information
- UBC Surgical Class and Analgesia Guidelines

**MATERIALS:** (*can be purchased from Animal Care Services*)

- Ketoprofen injectable (100 mg/ml) (i.e.: Anafen®)
- Sterile hypodermic needle (25 or 27g, 1/2" or smaller)
- Sterile 1 cc syringe or 0.3-0.5 cc tuberculin syringes
- Sterile multi-use vial for diluted solutions
- Sterile 0.9% Saline (for dilution)
- Sterile Lactated Ringer's solution or 0.9% sterile saline for subcutaneous (SQ) fluid administration
- Sterile 1-10 ml syringes for SQ fluid administration

#### DOSE:

	Dose	Concentration to Dilute to	Frequency
Rat	5 mg/kg	10 mg/ml	Every 24 hours for 1-3 days
Mouse	5 mg/kg	1 mg/ml	Every 24 hours for 1-3 days

## DILUTION:

### **Ketoprofen (100 mg/ml) requires dilution to accurately dose mice and rats.**

**Rats:** Prepare a 1:10 dilution of 100 mg/ml Ketoprofen with sterile 0.9% saline in a sterile, multi-dose vial to give a final concentration of 10 mg/ml.

**Example:** Add 1.0 ml Ketoprofen (100 mg/ml) to 9.0 ml sterile 0.9% saline for a total volume of 10 ml of diluted solution.

**Mice:** Prepare a 1:100 dilution of 100 mg/ml Ketoprofen with sterile 0.9% saline in a sterile, multi-dose vial to give a final concentration of 1 mg/ml.

**Example:** Add 0.1 ml Ketoprofen (100 mg/ml) to 9.9 ml sterile 0.9% saline for a total volume of 10 ml of diluted solution.

**Transfer solutions aseptically to a sterile multi-dose vial. Label vial with drug name, concentration and date of dilution.**

**Diluted solutions must be discarded within 30 days from date of dilution.**

## PROCEDURE:

1. Weigh animal(s) to be treated.
2. Calculate the dose and volume in ml of Ketoprofen required based on animal's weight and dilution used (see examples below).
3. Draw up the calculated dose in a sterile syringe (one, new sterile syringe and needle for each animal).
4. Administer the calculated dose of Ketoprofen subcutaneously in the loose skin at the base of neck or in the loose skin over the rump (hips) of the animal.
5. If animal(s) are or may become dehydrated, administer 20 ml/kg of sterile 0.9% sodium chloride or Lactated Ringers solution subcutaneously (SQ).
6. Reassess for signs of pain at least every 12 hours. If painful, then additional analgesics will be required (e.g. Buprenorphine). Continue monitoring. If no improvement is observed, contact the Principal Investigators and/or the facility's Clinical Veterinarian. Note that Ketoprofen should only be given once in a 24 hour period.

### **Calculating drug volume (ml) to be administered:**

1. Convert animal's weight from grams to kilograms: divide the weight in grams by 1000
2. Volume to give (ml) = (dose (mg/kg) x weight of animal (kg)) ÷ concentration of drug (mg/ml)

**Example:** for a 25g mouse getting a dose of 5 mg/kg of 1 mg/ml Ketoprofen  
Volume (ml) = (5 mg/kg of Ketoprofen x 0.025 kg) ÷ 1 mg/ml = **0.12 ml**

### Examples of Dosing

Weight of Rat	Ketoprofen <b>diluted to <u>10 mg/ml</u></b> Dose: 5 mg/kg
250 g (0.25 kg)	0.12 ml
350 g (0.35 kg)	0.18 ml
450 g (0.45 kg)	0.22 ml
550 g (0.55 kg)	0.28 ml

Weight of Mouse	Ketoprofen <b>diluted to <u>1 mg/ml</u></b> Dose: 5 mg/kg
25 g (0.025 kg)	0.12 ml
35 g (0.035 kg)	0.18 ml
45 g (0.045 kg)	0.22 ml
55 g (0.055 kg)	0.28 ml

### BACKGROUND:

When possible, pain must be treated pre-emptively (before the cause). An adequate analgesic plan must be described in the approved Animal Care Protocol for prevention and treatment of pain associated with the experimental procedures. For spontaneous or unexpected pain, Principal Investigators and the Clinical Veterinarian should be consulted immediately and prior to administration of analgesics so that an appropriate pain management plan can be devised.

### IMPORTANT NOTES:

- \*\*Ketoprofen has been associated with life threatening ulcerative gastritis, especially in rats. Meloxicam (a different NSAID) is preferred. Discuss the use of Ketoprofen with a Clinical Veterinarian before using it in rats.
- Use with caution in animals with pre-existing renal, cardiovascular, gastro-intestinal or blood clotting/coagulation disorders. Use in animals that may be or may become dehydrated can increase the risk of both kidney damage and gastrointestinal ulceration. Ensure animals are well hydrated by administering 20 ml/kg subcutaneously of sterile 0.9% sodium chloride or Lactated Ringers solution (see UBC ACC Guidelines and SOP for the Maintenance of Fluid Homeostasis in Animals).
- Do not treat for more than 3 days with NSAIDs without consulting a Clinical Veterinarian.

### COMPLICATIONS:

- Ulcerative gastroenteritis
  - Clinical signs include weight loss, abdominal pain, pale extremities, diarrhea (sometimes dark due to digested blood which is called melena) and decreased activity.
- Kidney damage
  - Clinical signs include weight loss, dehydration (sunken eyes, loss of skin elasticity), and increased or decreased urine production.