**MICE**

DRUG DOSE (MG/KG) ROUTEPRE-ANESTHETIC MEDICATIONS Atropine sulfate 0.02-0.05 IM, SQ, IP

 Glycopyrollate 0.02 IM, SC

SEDATIVES/TRANQUILIZERS

 Acepromazine 1-2 IM, SQ

 Diazepam (Valium®) 5 IP

 Ketamine 44 or 100 IM or IP

INJECTABLE ANESTHETICS

 Ketamine 100-200 or 25 IM, IP or IV

 Pentobarbital (acute) 40 or 60 IV or IP

 Propofol 12-26 IV

 Tribomethanol (Avertin)

 [1.25% Solution] 0.2ml per 10gm BW IP

**SEE BELOW FOR AVERTIN FORMULATION AND PRECAUTIONS**

*(AVERTIN Anesthetic in Mice)*

ANESTHETIC COMBINATIONS Ketamine - Xylazine 90-100 + 9-10 IM, IP

 Ketamine & Medazolam 80-100 + 4-5 IP

 Ketamine & Medetomidine 50-75 + 0.5 IP

INHALATION ANESTHETICS Induction Maintenance Isoflurane up to 5% 2-3% (Induce with chamber)

LOCAL ANESTHETICS

 Lidocaine HCL (dilute to 0.5%) 7 max SC intra-incisional

 Bupivacaine (dilute to 0.25%) 8 max SC intra-incisional

ANALGESICS Buprenorphine (Buprenex®) 0.05-0.2 SQ q 8-12 h (see dilution below)

 Carprofen 5-10 SQ sid

 Meloxicam 5-10 PO, IM, SC; sid to bid

 Ketoprofen 2-5 SQ sid

REVERSAL AGENTS

 Atipamezole 0.1-1.0 SQ or IP (for Xylazine or Medetomidine)

NOT RECOMMENDED

 Chloroform, Carbon tetrachloride, Chlorpromazine (Thorazine®), Ether, Trichloroethylene,

AVERTIN ANESTHETIC FOR MICE

I. Components

a. Avertin (2,2,2 tribromoethanol, Aldrich T4,840.2 or eq.)

b. Tert-amyl alcohol

II. Stock solution (1.6 g/ml)

Add 15.5 ml T-amyl alcohol to 25 g. Avertin in dark bottle (the bottle that the avertin is shipped in works great). Stir on magnetic stirrer until the avertin is dissolved (about 12 hours). Avertin stock is light sensitive and hydroscopic. Keep in dark bottle at RT (If the solution is kept at 4 deg. F. the Avertin will "freeze" out, necessitating re-dissolving the Avertin), away from light and tightly sealed. Do not leave the bottle open longer than necessary.

III. Working solution (20 mg/ml)

Mix 0.5 ml Avertin stock solution and 39.5 ml normal saline in glass vessel (graduated cylinder works great). Seal container with parafilm, wrap in foil to exclude light and stir on magnetic stirrer for about 12 hours or until dissolved. It may be necessary to heat solution to 30 OC to facilitate dissolution. This seems to vary with source of chemicals. Filter sterilize through 0.2 micron filter and store at 4 deg C. It can be aliquoted into ~5 ml lots in foil wrapped, sterile serum vials or kept in a dark, capped bottle at 4 deg. C.

IV. Dosages:

250 - 400 mg/kg (0.25 – .4 mg/gm BW)

 0.2 ml of a 1.25% solution / 10 gm BW up to 0.3 ml per 10 gm BW

 0.4 ml of a 1.25% solution / average (20 gram) mouse up to 0.6 ml per mouse

It will take about five minutes for the mouse to become fully anesthetized. (lack of toe pinch reflex) An additional 0.1-0.2 ml can be given to effect if the mouse is not fully anesthetized at this point. The mouse will remain anesthetized for approximately 15-20 minutes and recover within 30-60 minutes. Keep mouse warmed during recovery. Note that the effective dosage is dependent upon the weight of the mouse. Older, fatter or lactating mice seem to need the higher dose of Avertin to become fully anesthetized. It is difficult to over-anesthetize (kill) a healthy, adult mouse even at higher dosages. Neonates, adolescents, and unhealthy or stressed mice may be more sensitive.

V. Shelf life

The stock Avertin solution is quite stable at room temperature. It is advisable to make no more than a six months supply, however. Yellowing of the solution indicates oxidation products (toxic) and the stock must be replaced.

Working solutions must be kept refrigerated in a dark bottle until use and should be replaced at least every month.

Each new preparation of working solution should be used with caution initially, to determine that the anesthetic efficacy is similar from batch to batch. Make sure that the initial, “test mice” are effectively anesthetized and recover completely before proceeding to the next group of mice. These precautions are especially important in genetically modified mice due to the observation that anesthetic response variability is commonly encountered .

BUPRENORPHINE FOR MICE

Trade name: Buprenex or generic

How Supplied: 0.3 mg/ml in 1 ml ampules.

Mouse dose: 0.05 - 0.2 mg/kg

Dilution, Storage and Administration

1) Dilute Buprenex 1/10 in sterile saline or water
 The concentration of the resulting solution is 0.03 mg/ml, in a total of 10 mls.

 2) Store diluted buprenex in sterile vacutainer or 10 cc sterile vial and label appropriately (Name, strength, exp. Date, Drug No.)

3) Store in locked cabinet

4) Administer subcutaneously at rate of
0.06 cc / 20 gm mouse (Delivered dose; 0.1 mg/kg).

 0.08 cc/25 gm mouse (Delivered dose; 0.1 mg/kg).

 0.1 cc/30 gm mouse (Delivered dose; 0.1 mg/kg).

5) Best timing of administration is BEFORE incision, i.e., during anesthesia induction.

6) Analgesic activity is present up to 12 hours.

7) Mice should be re-checked for signs of pain or discomfort 12 hours after initial dose to determine need for additional analgesic.

Notes:

* Buprenorphine is an opioid analgesic with excellent analgesic activity.
* Respiratory depression is not usually a problem with this opioid administered at analgesic levels.
* Opioid analgesics may reduce the quantity of primary anesthetic administered.
* Multiple doses of Buprenorphine in rodents have occasionally been associated with a tendency of the rodent to ingest bedding and subsequently exhibit decreased appetite for food. The reason for this is as yet unexplained. For this reason, no more than three sequential doses are recommended. If the mouse has not responded to the analgesic by this time, it is not likely to do so, and euthanasia should be considered.