



## Curtin University Standard Operating Procedure

### CALCULATING DRUG DOSES

Number: TEC 15

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**Purpose:** To provide guidelines when calculating drug dosages for animal medications and anaesthetics.

**Definitions:**

mg – milligrams

ml – millilitres

kg -- kilograms

**Factors Necessary to Calculate Drug Dosages:**

1. The concentration of the drug:
  - a. The concentration of the medication should be clearly labelled on the dispensing bottle. If the drugs are off label (i.e. not registered for that species) the concentration may be too high for the species being medicated, and may need to be diluted. An example is meloxicam. It comes as a 5mg/ml solution however the amount required for a mouse is very small and too hard to measure out. So a dilution will be required to allow accurate dosing.
  - b. The concentration will be in the form of x mg/ml. This means that in 1ml of the solution it contains 'x' amount of mg of the active compound.
2. The desired dosage of drug required
  - a. The amount required, or dosage, will come often in a range and normally will be given in per kg. For example the dose will be 2-3 mg/kg. That means for an animal which weighs 1kg, the dose required to give will be between 2 and 3 mg.
3. The weight of the animal

**An example calculation is below:**

A mouse is present and weighs 20g.

It requires pain relief postoperatively.

It is to be given meloxicam



Meloxicam comes in a bottle at 5 mg/ml

The Dose of meloxicam recommended for mice is 1-2 mg/kg

So calculate:

Weight = 0.02kg (20 g = 0.020kg)

The animal requires 1 mg/kg so calculate  $1 \times 0.02\text{kg} = 0.02\text{mg}$

At the concentration of 5 mg/ml, use  $0.02\text{mg} \div 5\text{mg/ml} = 0.004\text{ml}$

This dose is too small to be given accurately, so dilute the meloxicam first:

Put 0.1ml meloxicam of 5mg/ml into 0.9ml sterile water for injection which will give a dilution of 0.5mg/ml. then repeat the calculation:

$1\text{mg/kg} = 1.0 \times 0.02\text{kg} = 0.02\text{mg}$

At a 0.5mg/ml dilution, calculate  $0.02\text{mg} \div 0.5\text{mg/ml} = 0.04\text{ml}$  for a 20g mouse

**So:**

<b>Calculate for each drug (Weight X Dosage) = mg</b>	=====	<b>Amount to give (ml)</b>
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<b>Concentration (mg/ml)</b>		

### Practice Calculations:

1. A 200g rat needs an injection of buprenorphine for pain relief. The concentration of buprenorphine is 0.3mg/ml. And the dose required is 0.01mg/kg. How many ml of buprenorphine is required?
2. It is the end of the experiment and time to euthanase the animals. Calculate the dose of barbituate for each animal. The concentration of barbituate is 325mg/ml; the dose recommended is 100 mg/kg, and the animals weigh approximately 30g.

Answers: 1. 0.006ml    2. 0.009ml

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