

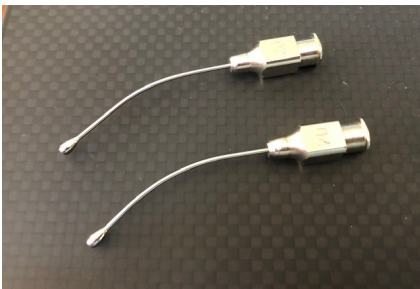
**Oral Gavage
In Mice and Rats
IACUC Standard Procedure
Effective Date: September 29, 2020**

Description of procedure:

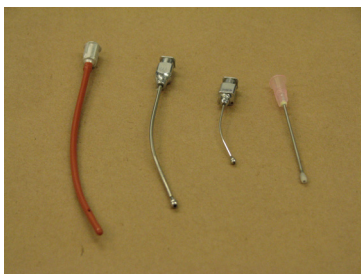
Oral gavage (dosing) is used when a specific volume of an agent needs to be administered orally. Whenever possible, alternatives such as purchasing custom-made chow containing the experimental agent or dosing with a water bottle should be considered. Gavage may only be performed by trained personnel; please contact the IACUC for assistance with training.

Supplies needed:

- **Mouse:** 18-20 gauge feeding tubes about 1.5 inches in length with a rounded tip (see picture below). If gavage is performed on young mice a smaller tube is used.
Rat: 16-18 gauge feeding tube about 2-3 inches in length.
For large mice and small rats (30+ grams) an 18 gauge ball tipped gavage needle can be used.
- If the gavage needle is only available as a straight needle, gently bend the needle to a slightly curved arc as in image below:



- Permanent marker.
- Scale.



Assorted sizes and types of feeding tubes: The two feeding tubes on the left are an appropriate size for use in rats, and the two tubes on the right are an appropriate size for use in mice.

The maximum dosing volume is 10 ml/kg for the mouse and 10-20 ml/kg for the rat. The maximum amount that can be given is less for pregnant animals. Dosing may be repeated up to 3 times within a 24-hour period. If additional dosing is necessary this must be justified in the protocol. It is acceptable to weigh the largest and smallest mouse and use the average of those weights to calculate the maximum dosage for all animals in the same experimental group.

1. Weigh the animal and determine the appropriate dosing volume.
2. Check the length of the gavage tube by measuring from the tip of the animal's head to the last rib (see image 1 below). Mark the tube at the nose and do not pass the tube into the animal past that point to avoid perforation of the stomach. This is particularly important with younger animals (<20 grams). See picture below for measuring technique.
3. Restrain the animal. To restrain the mouse: scruff the mouse, grasping the skin over the shoulders with the thumb and middle fingers. Grasp the skin over the shoulders so that the fore legs are extended out to the side, keeping the front feet from pushing the gavage tube away. To restrain the rat: hold the rat near the thoracic region and support the lower body.
4. Hold the animal's head in place by gently extending the head back - this extension of the head creates a straight line through the neck and esophagus.
5. Place the gavage tube in the diastema of the mouth. The tube is then gently advanced along the upper palate until the esophagus is reached. The tube should pass easily into the esophagus. The animal may swallow as the tube is passed. Pass the tube smoothly in one motion (see image 2 below). Note: If there is any resistance, do not force the tube. Pull the tube out and try again.
6. Once proper placement is verified, the material can be administered by a syringe attached to the end of the tube. Do not rotate the tube because the tip may rupture the esophagus. After dosing, remove the tube gently following the same angle as insertion.
7. Return the animal to the cage and monitor for 5-10 minutes, looking for signs of labored breathing or distress. Monitor animals again between 12-24 hours after dosing.

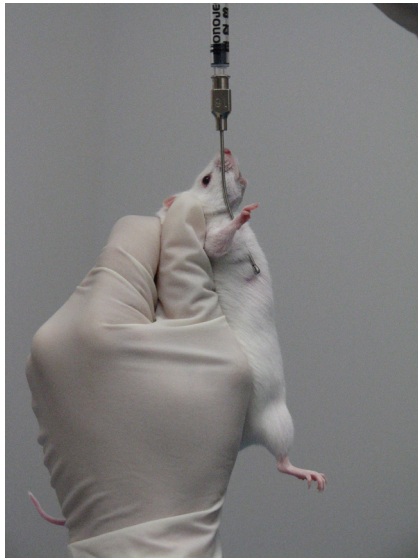


Image 1: Measure the length of the gavage tube from the tip of the nose to the last rib



Image 2: Administer the solution upon verification of proper placement

Agents: All agents administered to animals should be listed in the "Agents" section I. of RIO.

Potential adverse effects to be considered: Perforation or trauma of the esophagus or stomach, aspiration into the trachea/lungs, or respiratory distress.

References

- 1) Dielh KH, Morton R, Morton D, *et al* (2001). "A Good Practice Guide to the Administration of Substances and Removal of Blood, Including Routes and Volumes." Journal of Applied Toxicology. 21: 15–23.
- 2) Turner PV, Brabb T, Pekow C, Vasbinder MA (2011). Administration of substances in laboratory animals: routes of administration and factors to consider. Journal of the American Association for Laboratory Animal Science. 50 (5): 600-613.
- 3) Turner PV, Pekow C, Vasbinder MA, Brabb T (2011). Administration of substances in laboratory animals: equipment considerations, vehicle selection, and solute preparation. Journal of the American Association for Laboratory Animal Science. 50 (5): 614-627.