



Curtin University Standard Operating Procedure

GASTRIC GAVAGE TECHNIQUE IN RATS

Number: TEC 23

Version: 1.0

Date: 19/03/2015

Aim/Purpose: To provide guidelines on the procedure of gastric gavage in rats to be used at Curtin University for research.

Definitions:

Gastric Gavage: a technique used to safely deliver substances directly into the oesophagus and stomach of animals.

Gavage- Forced feeding, or the introduction of a material into the stomach by means of a tube.

Substance – must already be approved for usage by the Animal Ethics Committee (AEC) at Curtin University

Equipment:

1. Plastic or Rubber Gastric Lavage Tube – usually 16-20 Gauge (see table below).
2. Appropriate sized syringes
3. Measuring ruler
4. Marker pen
5. Substance to be administered- ensure the amount to be given has been calculated and prepared.
6. Weighing scales

Procedures:

***** MUST ONLY BE DONE BY A PERSON WITH THE APPROPRIATE TRAINING AND COMPETENCY REGISTERED BY THE UNIVERSITY'S AEC**

- 1) Only ever perform on an AWAKE animal.
- 2) Weigh the animal and determine the correct gavage size and dosage.



- 3) Measure the tube for the correct distance between the rat's nose and the end of the ribs and make the appropriate marking on the tube. This is to ensure the tube is not inserted too far or there is a risk of perforation of the stomach.
- 4) Restraining the rat safely, hold the rat upright (vertical) and extend the head gently back to ensure the body, and thus oesophagus, is straight.
- 5) Slowly insert the flexible tube from one side of the mouth (to avoid rat biting tube) along the palate (upper surface of mouth) and slide down the oesophagus to the length dictated by the predetermined tube length. **DO NOT FORCE**. There should not be any resistance otherwise the tube is slightly retracted and then inserted correctly.
- 6) Depress the plunger slowly to avoid instant reflux. The procedure should only take about 10-15 seconds and if done correctly the rats are not unduly stressed and there is no cellular and tissue damage.
- 7) After administration, slowly remove the tube from the oesophagus.
- 8) Hold the animals upright for a further 2-3 seconds before placing the animal carefully back into their cage.
- 9) Observe the rat for a further 5-10 minutes to ensure no adverse signs of pain or discomfort are seen.
- 10) Observe again 12-24 hours later.

WEIGHT (GRAMS)	GAUGE	LENGTH (IN)	BALL DIAMETER (MM)	SHAPE	VOLUME (ML)*
50-75	20	1-1.5	2.25	Straight/Curved	up to 0.75
75-100	18	1-1.5	2.25	Curved	up to 1.0
100-200	18	2-3	2.25	Curved	up to 2.0
200-300	16	3-4	3	Curved	up to 3.0

*(Pregnant animals should only receive 25% of the maximum volume)

Potential Side Effects / Complications and Corrective Measures:

1. Aspiration – the solution has been delivered into trachea and/or lungs – there would have been significant resistance to feeding tube, rat will struggle and show immediate signs of pain and discomfort. Also, solution may bubble from nose. In addition, the animal may display laboured breathing, pale or blue mucous membrane colour, or sudden lethargy. If this occurs or is suspected the animal will



be immediately euthanized and reported according to procedures outlined in approved document for the project.

2. Perforation of stomach or oesophagus– caused by pushing feeding tube too far along the alimentary tract or at an angle to oesophagus. The animal will struggle and show signs of pain. There would have been resistance when the feeding tube was fully inserted and the tip may show blood when retracted. The animal will show immediate signs of pain, struggling and possibly also vocalise pain. Once placed back in cage it will continue to show signs of pain by hunching and retracting from normal-communal activity. If the rat displays these signs and/or if suspected of having received significant tissue/organ damage then it will be immediately euthanized.
3. Other potential complications include:
 - a. Oesophagitis (inflammation of the oesophagus)
 - b. Perforation of the trachea
 - c. Damage to the cardiac sphincter (upper stomach sphincter)
 - d. Damage to the oral cavity
 - e. Traumatic injuries associated with improper restraint.

References:

Information on procedure - this procedure is in accordance with the National Centre for Replacement, Refinement and Reduction of Animals in Research (NC3Rs) in the UK (<https://www.nc3rs.org.uk/our-resources>) Video available at <http://www.procedureswithcare.org.uk/oral-gavage-in-the-rat/>

McGill University Animal Care Committee Laboratory Animal Biotechnology Workshop- the Laboratory Rat.

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Reviewed:

DATE					
REVIEWER					