

RUM_024 Rumen fluid collection via stomach tube

I. OBJECTIVE

To describe the safe use of a stomach tube for rumen fluid collection in cattle

II. DEFINITIONS

Competent - “the consistent application of knowledge and skill to the standard of performance required regarding the care and use of animals. It embodies the ability to transfer and apply knowledge and skill to new situations and environments.” (as per, Australian code for the care and use of animals for scientific purposes, 2013)

III. COMMENTS / RECOMMENDATIONS

- Relative to animal ethics applications, when using this SOP, the following must be described in the individual ethics application: frequency of rumen fluid collection, volume to be collected (especially if >1% rumen volume is being collected per week), and any intended variations to this SOP.
- Passage of a stomach tube is a relatively routine bovine procedure. If an animal does not tolerate this procedure (without sedation) it should not be used for the procedure, without specific justification.
- Animals should be restrained using appropriate methods for the size and type of animal. For example, mature cattle should be restrained in a cattle crush using a head bail with or without a halter and lead rope for safety of both the animal and operator.
- As per routine the conditions (see document footer) this procedure must be performed by, or under the direct supervision of, personnel who are competent to perform the procedure.

IV. EQUIPMENT

- Stomach tube (see image 1); flexible, vacuum hose with a fenestrated stainless-steel endpiece.
The endpiece is designed as such to mitigate risks associated with damage to the alimentary tract.
- Lubricant (water based, e.g. veterinary obstetric lubricant)
- Mouth gag (see image 1); appropriate type and size for cattle.
Various types exist. An appropriate gag is one which will safely hold the mouth open, enabling oral exam and stomach tube placement, and does not risk the animal being able to crush the gag or otherwise break off parts of the gag, risking foreign body ingestion (this is pertinent when PVC pipe is being used as a gag).
- Vacuum pump, either manual (hand pump) or electric
- Rumen fluid collection vessel; for example, dual outlet 2L plastic conical flask

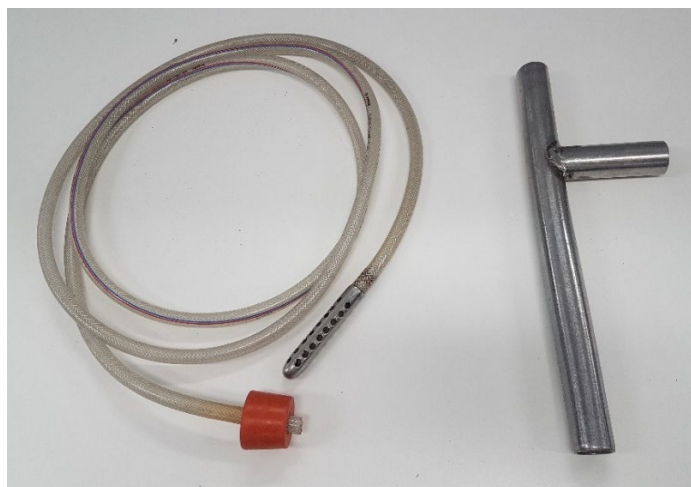


Image 1 | Stomach tube (left) and mouth gag (right).

Conditions:

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- Any variation to this SOP must be described in the relevant animal ethics application
- If this SOP has not been reviewed and approved by a UQ AEC within the last three years it is no longer valid and cannot be used in animal ethics applications until reapproved (see “AEC Reviewed/Approved” date in this document’s header).

V. PREPARATION

- Ensure the rumen fluid collection equipment is set up correctly (e.g. pump is confirmed to be in working order, collection vessels/sample pots labelled etc.)
- For each animal, estimate the length of stomach tube required to reach the rumen, measured from the nares. It may be useful to mark the tube with tape or a permanent marker.
- Ensure the stomach tube is well lubricated prior to use.

VI. PROCEDURE

1. Restrain the animal in a cattle crush. Ensure the head is secured in an elevated position with the neck extended (use of a head bail is recommended)
2. Open the animal's mouth by inserting a thumb or hand into the gap between the incisors and molars.
Your hand/fingers should never be present anywhere else within the mouth without a secure gag in place, as even the molars of a calves are strong enough to amputate a human finger.
3. Use the other hand to insert the gag, guiding it into position. Ensure the gag is secure in its position, articulated with the molars. Taking hands of the animal, the mouth remain in a fixed, open position.
Note: some gags, for example the "Drinkwater" gags (unilateral), may slip and fail if not applied securely.
4. Insert the lubricated stomach tube just past the gag to the back of the throat. As the animal swallows gently advance the stomach tube into the oesophagus. Advancement of the tube into the oesophagus should be smooth and controlled, under gentle, consistent force. Never force the tube, as this significantly increases the risk of damaging the oropharynx/larynx, as well as inadvertent tracheal intubation.
The stomach tube is in the correct placement within the oesophagus if you can feel it behind the trachea.
5. Continue to gently advance the stomach tube until it enters the rumen. There may be little resistance from the cardiac sphincter or the surface of the rumen mat – with gentle consistent pressure you should easily be able to advance through this resistance.
There should be a smell of rumen fluid from the tube once the endpiece is within the rumen fluid.
6. With the endpiece in place within the rumen fluid, attach the stomach tube to the top of the collection vessel and use the vacuum pump to remove the required volume of rumen fluid.
7. Once the required volume has been collected ensure the stomach tube is kinked, then remove the tube from the animal in a smooth action (over ~3 seconds).
It is important that the tube remains kinked while being removed, else rumen fluid will readily leak from the endpiece, significantly increasing the risk for aspiration of this fluid into the trachea as it is being removed.
8. Carefully remove the gag.
9. Monitor the animal for signs adverse events (e.g. abnormal jaw movements or mastication, coughing, difficulty breathing, increased respiratory rate, lethargy). If unexpected adverse events occur take immediate action (it is likely veterinary advise will be required) and follow the appropriate institutional procedures (see the [animal ethics webpage](#) for guidance).

Version #	Reviewing AEC (note: all other relevant AECs ratify the approval)	AEC Review Date	Approval To Date
1	PCA	20/04/2022	20/04/2025

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