

TRANSFAUNATION

1. PURPOSE

To describe the process of transferring the rumen content, containing diverse microorganisms, from a healthy donor to the rumen of a sick recipient animal.

2. RESPONSIBILITY

Trained and Qualified Personnel

3. MATERIALS

- 3.1 Shoulder-length breeding glove
- 3.2 Nitrile or latex gloves
- 3.3 60cc syringe or small plastic cup or Thermos
- 3.4 Paper towel
- 3.5 Pail
- 3.6 Coveralls or lab coat
- 3.7 Drench pump

4. GENERAL

- 4.1 Rumen transfaunation is a common practice to treat indigestion in ruminants (Indigestion or cow recovering from a condition that slowed down food intake and rumination during several days). It is used clinically to treat simple indigestion and to enhance the return of normal rumen function following the surgical correction of left sided abomasal displacements. Rumen fluid from a healthy donor provides the recipient with diverse microorganisms that can repopulate the rumen. Transplanted rumen fluid also provides nutrients and energy to the recipient's rumen microbial population.
- 4.2 Indigestion in dairy cattle reduces rumen motility and kills rumen microflora.
 - 4.2.1 Changes that cause indigestion are:
 - Heat stress
 - Anorexia
 - Dietary changes
 - Interruption of water sources
 - Alterations in rumen pH, which disrupt the balance of the microbial population.
 - 4.2.2 Simple indigestion can be an issue during early lactation of the transition period because of changes in diet to higher levels of nonstructural carbohydrates. During the transition period, calving cows experience not only dietary changes, but also physiological changes associated with the metabolic demands of milk production.
 - 4.2.3 Cows are also moved from different pens or stalls during the transition period so changing social structure can be a stressor.
- 4.3 Collection of large volumes of rumen fluid is most easily accomplished using a rumen fistulated animal. Fistulated animals are housed and managed within the herd so there is limited risk of introducing unknown diseases and the rumen fluid reflects the diets fed.

4.4 Timing of Rumen Fluid Collection:

- 4.4.1 The pH of the rumen fluid should be 5.5 or greater and preferably 6.0 or greater. Rumen protozoa are decreased at low pH.
 - 4.4.2 Lactating Cow Donor fed a high starch diet: Rumen fluid pH decreases 2–4 h after feeding with high starch diets so avoid collecting rumen fluid within about 4 h of feeding when the donor is receiving forage and concentrate ingredients.
 - 4.4.3 Non-lactating cows fed a high forage diet: rumen fluid collected from a fistulated cow can be done prior to feeding or about 2–3 h after feeding since pH does not change dramatically.
 - 4.4.4 When using lactating cows with rumen fistulas, rumen fluid collection prior to feeding will likely provide rumen fluid above 6.0 pH.
 - 4.4.5 Lactating dairy cows eat throughout the day, but typically the largest consumption occurs after milking when cows are fed, so collecting rumen samples after 4 h following a large intake of feed will minimize the chance collecting rumen fluid below 6.0 pH.
- 4.5 Avoid using foamy or frothy rumen fluid. The color of normal rumen fluid varies from olive to yellowish-brown depending on the diet.
 - 4.6 Recommended volumes for Transfaunation collection vary from 1 liter for calves and 8 to 16 liters for adult cattle.
 - 4.7 Avoid disturbing the donor cow's rumen mat (ruminal mucosa) during fluid collection. It is best to use a short stomach tube to pump out the necessary fluid.

5. PROCEDURE

*NOTE

Transfaunation for calves and heifers is performed only at the recommendation, and under the supervision, of the Herd Veterinarian.

- 5.1 Collect 5 to 10 liters of rumen fluid as per SOP [DC-713 Rumen Content Collection from a Fistulated Cow](#).
- 5.2 Place the rumen contents into a pail.
 - 5.2.1 Dilute with equal amount of lukewarm water.
 - 5.2.2 If the fluid contains large particles: Filter or strain large particulate matter from the rumen fluid using cheesecloth, colander, or strainer to remove large particles that can clog the drench pump tube. The filtered material should contain small particles, to which bacteria, protozoa, and fungi are attached.
- 5.3 Rumen fluid collected from a healthy cow should be transferred to the recipient (sick) cow within 30 minutes post-collection. If unable to transfer within the recommended period:
 - 5.3.1 Store the fluid at room temperature and in a strict anaerobic environment for a maximum of 2 hours. If kept too long, the starch-digesting organisms increase dramatically in numbers and the fiber-digesting microbes decrease substantially.
- 5.4 Administer the donor rumen fluid to the adult recipient cow via the drenching method as per SOP [DC-701: Substance Administration for Dairy Cattle](#).
- 5.5 Most times, cattle will begin eating shortly after administration of rumen fluid. Repeat 12 hours later. If no improvement within 24 hours, contact the veterinarian.

6. REFERENCES

- 6.1 Sandia National Laboratories. Transfaunation: Supportive Care and Adjunct Therapy. Retrieved July 24, 2020 from <http://www.ava.org.af/books/Transfaunation.pdf>
- 6.2 DePeters EJ, George LW. Rumen transfaunation. Immunol Lett. 2014;162(2 Pt A):69-76. doi:10.1016/j.imlet.2014.05.009

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