

RUMEN TRANSFAUNATION



BASICS

OVERVIEW

- Ruminant and pseudoruminant species rely almost entirely on a balanced population of protozoa, bacteria and other microbes in the rumen for nutrient extraction and utilization
- In addition to direct rumen insults, such as acidosis and toxic ingestion, nearly all systemic diseases in ruminants cause some alteration in microbial populations; even short-term inappetance of three days can result in significant rumen microbial losses
- Transfaunation initiates the reestablishment of these microbial populations and is an important tool in restoring rumen motility, appetite and nutrient utilization
- Transfaunation can also be used to facilitate the weaning process in ruminants being weaned early or in cases of weaning maladjustment
- Rumen fluid is taken from a healthy donor animal and administered into the rumen or first compartment of the diseased animal after clinical and rumen fluid examination of the diseased animal suggests rumen compromise
- The author routinely administers rumen fluid across species (cattle fluid to sheep, goats, camelids, etc.) with positive outcomes and without apparent adverse events

PROCEDURE

- Fluid collection from healthy animal
 - Access to an animal with a rumen fistula is ideal for ease of collection of rumen fluid as needed; creation of a fistulated animal does not preclude their retention as part of a commercial herd
 - Alternatively, rumen fluid may be obtained by extracting oral cud or via passage of an orogastric tube and aspiration with a dose syringe (these methods make obtaining sufficient volume difficult). Also, fluid can be obtained from custom slaughter facilities (with proper consideration of biosecurity)
 - Rumen contents should be strained for fluid extraction, as the presence of particulate matter will make administration difficult
 - For extraction via rumen fistula, a sieve is created out of 3 inch PVC pipe, approximately 3 feet long with a single endcap and 1/8 inch holes drilled throughout approximately 2/3 of the length of the pipe to allow inflow of fluid
 - The PVC pipe is placed down through the rumen fistula, reaching the ventral fluid layer of the rumen.
 - A standard stomach tube is dropped into the sieve and a siphon created to remove fluid (the typical dosages listed below)
 - Performing rumen fluid analysis on the obtained fluid provides quality control for administered fluid, with particular attention to pH and microscopic protozoal evaluation
 - Once collected, rumen fluid should be administered to the recipient as soon as possible (in < 30 minutes)
 - When transport is required, the transport container should be sealed with a lid or a sufficient amount of mineral oil added to the fluid to create an oil slick

- on top to mimic the anaerobic environment of the rumen; Note: if the container is lidded, pressure will build as fermentation continues
 - During transport, rumen fluid should be kept warm which is easily done using the floor heater of the vehicle
- Administration
 - Strained rumen fluid can be administered via orogastric or nasogastric tube to the recipient animal
 - For adult cattle, 8-16L of rumen fluid is a common dose; for adult camelids, sheep and goats, 1L may be used
 - If the recipient animal has rumen acidosis, alkalinizing agents should be administered and the rumen pH returned to nearly normal prior to rumen Transfaunation.
 - For prolonged illnesses or severe rumen compromise, daily transfaunation may be required to fully re-establish microbial populations

SEE ALSO

- Indigestion
- Rumen Acidosis
- Rumen Dysfunction: Alkalosis Rumen
- Fluid Analysis (www.fiveminutevet.com/ruminant)

Suggested Reading

Depeters EJ, George LW. Rumen transfaunation. *Immunol letters* 2014;162(2):69-76.

Laflin SL, Gnad DP. Rumen cannulation: procedure and use of a cannulated bovine. *Vet Clin N Am Food Anim Pract* 2008;24(2):335-340.

Rager KD, George LW, House JK, et al. Evaluation of rumen transfaunation after surgical correction of left-sided displacement of the abomasum in cows. *J Am Vet Med Assoc* 2004;225(6):915-920.

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