

CLIENT EDUCATION HANDOUT

OPTIONAL
LOGO

Customer Name, Street Address, City, State, Zip code

Phone number, Alt. phone number, Fax number, e-mail address, web site

Colostrum and Milk Replacers

Overview

- Ruminants are born with no circulating antibodies to protect them from infections, and therefore rely on ingestion of an adequate amount of good quality colostrum within a narrow time period following birth to derive these antibodies from their dam.
- Failure to achieve this 'passive immunity' can result in systemic bacterial infection with a high likelihood of mortality.
- Colostrum replacers provide nutrients (fat, protein, vitamins and minerals) and antibodies (immunoglobulin G or IgG), and are designed to completely replace the first feeding of colostrum.
- Colostrum supplements provide less IgG than colostrum replacers and are designed to help increase serum IgG concentration in animals fed low or medium quality colostrum.
- Milk replacers provide nutritional requirements for maintenance and growth of neonatal ruminants and do not contribute IgG so they are fed after the period of colostrum provision ends (after 24 to 72 hours).

Species and Animal Groups Affected

- Calves have a high prevalence of failure of passive immunity
- Lambs, goat kids and crias are also at risk

Signs

- Neonates with failure of passive immunity will often appear normal for between 12 hours to several days after birth.
- Normal nursing activity after birth does not guarantee successful passive immunity, particularly in neonates from maiden dams or from dams that are compromised before birthing which may provoke poor quality or volume of colostrum.
- Septic infection results in progressive sleepiness or lethargy, reduced activity and appetite, and eventually weakness, depression and inability to rise before death.
- Other complications such as swollen, painful joints or navels may occur.

Causes and Risk Factors

- Inadequate volume of colostrum ingested or administered.
- Colostrum intake delayed, typically for more than four hours after birth.
- Premature lactation by the dam resulting in colostrum loss.
- Production of poor quality or volume of colostrum by a maiden or diseased dam.
- Use of improperly stored, aged, or overheated colostrum.
- Premature birth (reduces absorption of colostrum by the neonate, and colostrum quality from the dam).

Colostrum replacer/supplementation

- Calves should ideally receive 150-200 grams of IgG in the first feeding.
- Bovine colostrum replacers contain between 100 - 150 g of IgG per dose, therefore, two doses of colostrum replacer are recommended for calves.
- Colostrum supplements alone are insufficient to achieve adequate passive immunity.
- Colostrum supplements should not be mixed with colostrum, since this can impede antibody absorption, but may be fed after colostrum.
- Colostrum feedings can be divided within the first 24 hours of life especially in smaller calves.
- Bovine or egg based colostrum replacers are commercially available for lambs and kids.
- Small ruminants can be fed colostrum based on weight, with recommendations ranging from 5 to 8 grams of IgG per kilogram of bodyweight, or 10-15 % of body weight in colostrum fed in divided feedings during the first 24 hours.
- Valuable animals that are older than 12 hours of age and known to be deficient in passive immunity may be best protected by plasma transfusion ± antibiotics.

Milk replacer/supplementation

- Milk replacer is routinely fed to dairy calves which maintains milk sales, and enhances biosecurity, standardization and monitoring of calf feeding.
- Milk replacer is fed at 15-20% of body weight per day to meet daily nutritional requirements for maintenance and growth.
- Milk replacers contain less fat, and therefore less energy, than whole milk.
- Calf formulations typically contain between 18-24% crude protein, ideally derived from milk proteins rather than less digestible non-milk proteins.
- Milk replacer for lambs and kids contains more protein and fat and less lactose than calf formulations.
- Medicated milk replacers may contain antibiotics and coccidiostat drugs.

Management Considerations

- Poorly digestible ingredients or improper mixing of milk replacer products may result in bloat, diarrhea and colic.
- Lambs fed bovine milk replacer may develop diarrhea due to the higher lactose content.
- Overfeeding of milk can result in bloat or other gastrointestinal complications.
- Serum IgG can be measured 24-48 hours after colostrum or colostrum replacer feeding.
- Failure of passive transfer or the need for colostrum replacers or supplements can be reduced by effective management efforts including:
 - Vaccination and appropriate nutritional management of pregnant dams.
 - Careful observation of parturition and neonatal suckling behavior.
 - Providing high quality colostrum (in cows, colostrum IgG content > 50 g/L) with appropriate volume (typically 4 quarts soon after birth to calves > 100 lb bodyweight) and by an appropriate route (such as esophageal feeder).
- If storing colostrum, it should be refrigerated (33 to 35°F) within an hour of collection and for no longer than 24 hours.
- Colostrum can be frozen (-5°F) for up to one year (avoid frost free freezers).

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Blackwell's 5-Minute Veterinary Consult: Ruminant 2nd Ed.

- Colostrum should be pasteurized to prevent bacterial contamination or transmission of specific infectious diseases.

Notes

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Blackwell's Five-Minute Veterinary Consult: Ruminants, Second Edition, Christopher C.L. Chase, Kaitlyn A. Lutz, Erica C. McKenzie and Ahmed Tibary © 2017 John Wiley & Sons, Inc.