

Colostrum – Key to a good start

John B. Hall, Ph.D., PAS
Extension Beef Specialist
University of Idaho

Intake of colostrum is essential for calf survival and subsequent health. Calves need to consume at least two quarts of high quality colostrum by 4 hours after calving to ensure high levels of immunoglobulins in their blood stream. Immunoglobulin G and M are important to creating passive immunity in the calf to reduce the incidence of scours or respiratory infections.

By 4 hours after calving, the calf's ability to absorb immunoglobulins is reduced by 50%. The keys to ensuring absorption of immunoglobulins are:

1. Make sure cows have the potential to generate high quality colostrum.
2. Ensure every calf has nursed well by 4 hours after calving.
3. Watch to know the calf is continuing to nurse.
4. Supply colostrum supplements or replacements by 4 hours after calving.

Dam's colostrum best

Colostrum from the calf's dam is usually the best colostrum for the calf because each ranch has its own pathogens, and cows from an individual ranch have the highest immunity to pathogens on that ranch. However, other factors including cow age, nutrition, and vaccinations can influence colostrum quality.

Cows that are well nourished in late gestation produce greater concentrations of immunoglobulins in their colostrum than undernourished cows. Research indicates that cows in poor body condition (< 5) have reduced colostrum immunoglobulin (IgG and IgM) levels. Concentrations of IgG are reduced by 15% and IgM by 50% in thin cows compared to cows in good flesh. In addition, cows that receive inadequate levels of protein in their diet will also produce poor quality colostrum.

Colostrum from first calf heifers contains less immunoglobulin than colostrum from mature cows. In addition, any cow experiencing calving difficulty will have reduced immunoglobulin concentrations in her colostrum.

Having a good vaccination program for all the routine bovine diseases is important. In addition, an 8-way clostridial vaccine at pregnancy check, and sometimes a scours vaccine shortly before calving can increase immunoglobulin levels in the colostrum. Consult your local veterinarian for a vaccination program in your area.

Colostrum replacements or colostrum supplements

There are many dried colostrum products or colostrum containing products available. Which product is used depends on whether supplementation or replacement is the goal. So what is the difference besides price?

Colostrum supplements contain less than 100 grams of immunoglobulin G. These products don't have enough immunoglobulin to be a substitute for the dam's colostrum, but they can help increase the amount of protection a calf gets in the first hours of life. At the UI Nancy M. Cummings Center these products are the primary form of artificial colostrum we use. The reason is most of our calves get plenty of colostrum from the dam, but some need a little extra help. On cold nights, sometimes a feeding of colostrum supplement is all that is needed to get a calf up and nursing.

A colostrum supplement may be warranted if the calf meets any of the following criteria:

- Calf is chilled but only mildly lethargic.
- Calf has good vigor, but does not appear to have nursed by 2 hours.
- Calf is nursing but does not seem to be getting enough colostrum.
- Cow is very thin at calving.
- Cow experiences mild calving difficulty.
- Calf is a twin.

Colostrum replacers contain more than 100 grams of immunoglobulin G. A full feeding of this product can substitute for the dam's colostrum. These products are about three times the cost per feeding as a colostrum substitute. At UI, we keep a few bags of colostrum replacer on-hand.

A colostrum replacer should be used if:

- Calf is very cold and needs to be placed in calf warmer or brought inside.
- Calf has not nursed or gotten up by 4 hours after birth.
- Cow has little or no colostrum.
- Cow experiences severe calving difficulty.
- Cow dies shortly after giving birth.

Many veterinarians consider modern colostrum supplements or replacers as a better and safer choice than using frozen dairy colostrum. Colostrum from dairy cows has a lower concentration of immunoglobulins than beef colostrum. In addition, use of artificial colostrum provides better biosecurity by preventing the spread of Johne's Disease or Bovine Leucosis.

Using an esophageal feeder or tube feeder is the best way to feed artificial colostrum. Purchase a good quality esophageal feeder that has a flexible attachment between bottle and feeding tube. This will allow you to control the flow of colostrum into the calf.