

CALVING EASE

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Sam Leadley (Attica Veterinary Associates) and Pam Sojda (Offhaus Farms)

Pro's and Con's of Feeding Frozen Colostrum

It is a running joke that no one ever feeds frozen colostrum. They always thaw it before feeding it. There are, however, factual things to know about feeding colostrum after it has been frozen and thawed.

Positives

Bacterial growth stops completely when the colostrum is frozen. Remember that freezing will not decrease the bacteria count. A best management practice when freezing is to divide the colostrum into as small quantities as practical when going into the freezer. For example, two-quart nursing bottles are often used. This allows the liquid to cool rapidly. Rapid cooling is essential in order to stop bacterial growth that may take place in warm colostrum. Smaller containers also thaw more quickly, as well.

Frozen colostrum may be stored for a long time with little or no decrease in antibody concentration. In situations where the interval between calvings is long, it may not be practical to try to preserve fresh colostrum for more than five to seven days.

While not all studies agree on the exact length of time, it is generally agreed that colostrum may be stored up to six months in a manual-defrost freezer without harm. Loss of antibodies may be higher in self-defrosting freezers due to their constant "freeze-thaw" cycles. We have not seen a study documenting the exact rate of loss in these self-defrosting units.

Antibody levels in two-day old calves fed either frozen (for two days) or fresh colostrum have been shown to be very similar. All the study calves were fed 4.2 quarts of colostrum containing an average of 83 grams of antibodies per 1.1 quarts at 3 hours of age. Immunoglobulin type-G antibodies were measured in the calves' blood. Thus, we know that, under these conditions, freezing and thawing does not hinder the absorption of antibodies.

Negatives

Freezing colostrum destroys white blood cells. These cells, leukocytes, are present in colostrum at the level of 1,000,000 per milliliter (ml). These cells directly defend the calf against infections. And, they stimulate her immune cells (1) to be more effective antigen killers and (2) to reproduce more rapidly.

One special kind of these is lymphocytes. Their colostrum concentration is about 10,000/ml. In a four-quart feeding that amounts to roughly 38,000,000 lymphocytes.

Lymphocytes are absorbed into the calf's blood in the same way as antibodies. Once in the blood, they are responsible for recognizing antigens or the bodies that cause infections. Also, it is from these lymphocytes that the antibodies come to help the calf defend herself against viruses, bacteria and parasites.

In some animal species, the dam's lymphocytes are more effective infection fighters in the daughter than ones from a different mother. Currently, we do not know the extent to which this dam-daughter connection is true of dairy cows. If management procedures permit dam-to-daughter colostrum feeding, this practice certainly cannot do any harm and it might be a positive practice.

Freezing and thawing colostrum is less cost effective than storing fresh colostrum. More purchased energy is used to both freeze and thaw colostrum than simply to cool it to 35 to 40 degrees.

Does refrigerated fresh colostrum on your farm spoil in two to three days or sooner? That means current collection, sanitation and cooling practices are allowing high bacteria counts. The frozen colostrum will have excessively high counts, too. If the bacterial contamination problem is solved for frozen colostrum, then the problem of storing fresh colostrum for five to seven days is solved, too.

Freezing colostrum may create the illusion that it is clean. That is, freezing will make the bacteria count low. Not true! The bacteria level when thawed and warmed to feeding temperature is higher than when the colostrum goes into the freezer. This is due to some continued bacterial growth prior to cool down and renewed growth during the thaw-warm process. We cannot avoid, "Garbage in, garbage out."

Recommendations?

Feed fresh colostrum in order to take advantage of the extra boost in immunity that comes from white blood cell transfer. If the herd has unusual disease conditions as defined by the herd veterinarian there may be exceptions to this rule.

Try to keep some frozen colostrum on hand. There are always times when no fresh colostrum is available. Even without maternal immune cells (white blood cells), this colostrum has all the antibodies and lots of excellent nutrition.

Always feed clean, wholesome colostrum. Check the bacteria level regularly.

References:

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